Benchmarks Online

Volume 5 - Number 10 * October 2002

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Feature Articles

Campus Computing News

Big news: "Academic Mainframe Services to End After ** SPRING ** 2003." Read all about it.

Mindset 1946

Every year Beloit College in Wisconsin publishes a mindset list at the beginning of the fall term. The idea is to remind faculty that entering freshmen have a very different view of the world from their teachers. Duane Gustavus has penned an answer to that, for students.

New Computer Based Training Courses

Several new courses for Oracle9i and Linux have been added to the SmartForce/SkillSoft server. Details inside.

TODAY'S CARTOON

Click on the title above for an information age laugh.

Don't forget to check out our monthly columns. This month's topics:

- **RSS Matters** -- This month Dr. Herrington discusses exploratory growth curve

modeling. This article is Part I in a series on Multilevel Modeling.

- **SAS Corner --** "So Long, Later" A farewell message from Dr. Karl Ho.

- **The Network Connection --** "My Secret Web Sites" Dr. Baczewski lets you in on a few of his secrets for keeping up with technology changes.

- **Link of the Month --** "The President's Website" Check out Dr. Pohl's new Website.

- **WWW@UNT.EDU --** "The Elixir of Life" What could this possibly be referring to?

- **Short Courses --** The fall Short Courses are underway and many are already full.

- **IRC News --** Minutes of the Information Resources Council are printed here when they are available. The July and September minutes are included this time.

- **Staff Activities --** New employees, people who are no longer employed at the Computing Center, awards and recognitions and other items of interest featured here.

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RSS Matters

The previous issue in this series can be found in the July, 2002 issue of Benchmarks Online: Using Robust Mean and Robust Variance Estimates to Calculate Robust Effect Size

Please make sure and read the farewell message from Dr. Karl Ho in this month's SAS Corner. - Ed.

An Introduction to Multilevel Models (Part I): Exploratory Growth Curve Modeling

By Dr. Rich Herrington, Research and Statistical Support Consultant

This month we discuss exploratory growth curve modeling. This is Part I in a series on Multilevel Modeling. The GNU S language, "R" is used to implement this procedure. R is a statistical programming environment that is a clone of the S and S-Plus language developed at Lucent Technologies. In the following document we illustrate the use of a GNU Web interface to the R engine on the "rss" server (http://rss.acs.unt.edu/cgi-bin/R/Rprog). This GNU Web interface is a derivative of the "Rcgi" Perl scripts available for download from the CRAN Website (http://www.cran.r-project.org), the main "R" Website.   Scripts can be submitted interactively, edited, and then be re-submitted with changed parameters by selecting the hypertext link buttons that appear below the figures. For example, clicking the "Run Program" button below creates a vector of 100 random normal deviates; sorts and displays the results; then creates a histogram of the random numbers. To view any text output, scroll to the bottom of the browser window. To view any graphical output, select the "Display Graphic" link. The script can be edited and resubmitted by changing the script in the form window and then selecting "Run the R Program". Selecting the browser "back page" button will return the reader to this document.
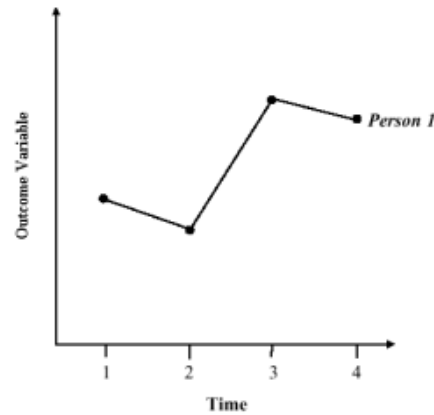
Introduction to Repeated Measure Multilevel Models

In this article we will discuss an exploratory approach to fitting a repeated measures multilevel model. This will serve as a warm up to the more formal estimation methods used in multilevel modeling, which we will cover in coming issues of *RSS Matters*. We will motivate the model with a simulated example that uses Iteratively Re-weighted Least Squares (IRLS) regression to estimate parameters. Our goal here is to keep the example simple to elucidate the main insights that growth curve modeling (multilevel modeling) offers. Additionally, we will learn S language commands that allow us to graphically explore and statistically estimate parameters of a simple multilevel model.

The following graph represents the time course of what we will call the **level-one observed change**, within an individual. Examining such a graph allows the data modeler to attempt to characterize the change process as a simple mathematical function (i.e. linear, quadratic, or cubic) for the individual entity. An assumption of growth curve modeling approaches and multilevel approaches in general, is that a family of functions (e.g. linear) can characterize the change process in different individuals, by allowing the parameters of the linear function to vary

randomly across individuals. Individuals express their unique variability through the parameters of the mathematical function. These randomly varying estimates of the change process (e.g. intercept and slope) can be related to background conditions of the individuals. It is here that we wish to get efficient and unbiased estimates of the predictors of the change process. Do background covariates predict rates of change (slope) or initial status of the outcome variable?

Four Repeated Measures for a Single Individual

[Graph: X-axis labeled "Time" with values 1, 2, 3, 4; Y-axis labeled "Outcome Variable"; a line connecting points labeled "Person 1"]

Summary Measures of the Level-One Model Change Process

Since the observed growth record for an individual is subject to measurement error and sampling variability, it is useful to characterize the growth process as a mathematical function. We will call this the **level-one model** of change. This mathematical function (e.g. linear), if representative, should capture the essential features of the growth profile. The parameters of the function should summarize the characteristics of the change process for the individual. In the following graph, a linear function is considered representative of the change process. An intercept is calculated; the intercept gives a best estimate of the initial status of the outcome variable at the first observation period. Additionally a slope is calculated; a slope gives an estimate of the rate of change in the outcome variable per unit change in the time indicator variable. In our simulated example we have electrophysiological assessments from the scalp of an individual who is engaged in EEG biofeedback (also referred to as neurofeedback - NF), gathered over four observation periods. Individuals use a process of trial and error and an electrical feedback signal from the scalp to change their own scalp electrical potentials. An initial question is posed for our example: Does the rate of change in cortical electrical activity (amplitude in millivolts) relate to background conditions of depression in the individual?

Level One Linear Regression Model – Fitted "True" Growth Trajectory for a Single Individual

$$Y_{t1} = \pi_{01} + \pi_{11} \cdot T_{t1} + e_{t1}$$

Person 1

π_{11}
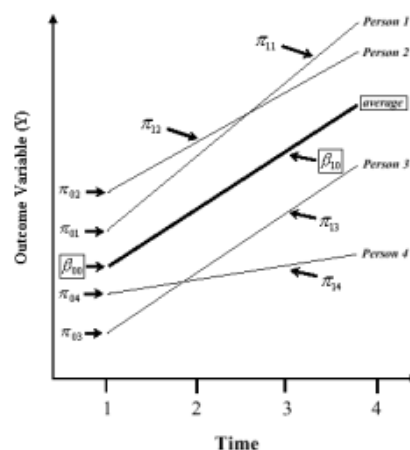
π_{01}

Outcome Variable (Y)
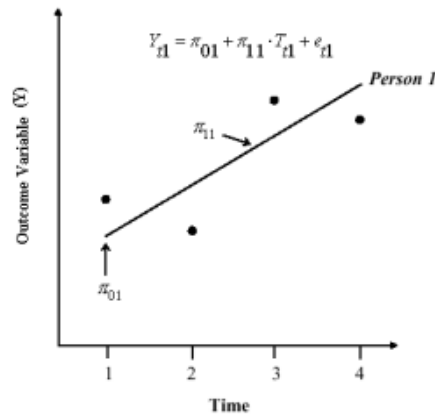
Time

$$Y_{ti} = \pi_{0i} + \pi_{1i} \cdot T_{ti} + e_{ti}$$

where Y_{ti} is the response variable of person i measured at time point t=1,2,3,4; T is the time variable that indicates the time point.
For example Y could represent NF or QEEG assessments at four periods of time.

Individual Variation (Level-One) and Group Level Variation (Level-Two)

The following graph depicts four linear growth curves fit for four different individuals. Additionally, an average curve is estimated which represents the change process of the group as a whole, collapsing over individual variation in the growth process. Each person has an intercept estimate and a slope estimate; these individual estimates can vary from the group intercept and group slope (level-two). The source of this variation may be related to other predictor variables, such as background characteristics, or may represent variation that is not related to a substantial variable of interest. We will call this the **level-two model**. In our example, it might be that the rate of change in electrical activity on the scalp (as measured in millivolts), is related to initial status of depression, as measured behaviorally by a paper and pencil inventory - the Beck's Depression Inventory (BDI).

Fitted Growth Trajectories for Four Individuals

Person 1
Person 2
π_{11}
average
π_{12}
β_{10} Person 3
π_{01}
π_{01}
π_{13}
β_{00}
Person 4
π_{04}
π_{14}
π_{03}

Outcome Variable (Y)

Time

Predicting Outcome as a Function of Time - Allowing Individual Variation in Slopes and Intercepts

We can represent both level-one and level-two models of change as a set of regression equations. The outcome variable (Y) is predicted by the estimates of individuals' slopes and intercepts. Each individuals' slope and

intercept is composed of a constant (fixed) portion and a residual (random) portion. The fixed portion can be thought of as the mean of the group estimate (i.e. group slope and group intercept), and the residual variation can be thought of as unique variation that is not accounted for at the group level. We can substitute level two regression equations into level one regression equations to obtain a single regression equation.

Unconditional Random Effects Growth Model

Level 1 model:

$$Y_{ti} = \pi_{0i} + \pi_{1i} \cdot T_{ti} + e_{ti}$$

Level 2 model:

$$\pi_{0i} = \beta_{00} + u_{0i}$$
$$\pi_{1i} = \beta_{10} + u_{1i}$$

Combining Level 1 and Level 2 by substitution with simple rearrangement of terms give:

$$Y_{ti} = \underbrace{(\beta_{00} + T_{ti} \cdot \beta_{10})}_{\text{1st term}} + \underbrace{(u_{0i} + T_{ti} \cdot u_{1i} + e_{ti})}_{\text{2nd term}}$$

The first term represents the *fixed* component of growth; this represents the **group** level characteristics of growth. The second term represents the *random* component of growth; this represents the **individual** level characteristics of growth. This model is referred to as an unconditional growth model because we are NOT attempting to predict growth using additional measures. To predict growth we must use a ***conditional growth model.*** Both time variant and time invariant predictors of growth can be used in a conditional growth model

It is important to note that this single equation has "heteroscedastic" components. The second term in this regression equation is heteroscedastic because the time variable (T), which is increasing, multiplies by a variance component (u). Hence, the variance increases as a function of observation period, thus violating the assumption of homoscedasticity in classical OLS estimates of the regression equation. It is for this reason that a non-OLS estimate is needed for the parameters in the model; heteroscedasticity can lead to biased and/or inefficient estimates of slope and intercept coefficients

Predicting the Outcome Variable as a Function of Level-One Covariates and Level-Two Covariates

In the system of regression equations below, both time varying level-one covariates, and time-invariant level-two covariates are combined. X is an individual level, time varying covariate, and Z is a time invariant, individual level characteristic, or group level predictor; the six regression parameters (beta coefficients) relate the two predictors to variability in initial status and rate of change over time.

Conditional Random Effects Growth Model

Level 1 model:

$$Y_{ti} = \pi_{0i} + \pi_{1i} \cdot T_{ti} + \pi_{2i} \cdot X_{ti} + e_{ti}$$

Level 2 model:

$$\pi_{0i} = \beta_{00} + \beta_{01} \cdot Z_i + u_{0i}$$
$$\pi_{1i} = \beta_{10} + \beta_{11} \cdot Z_i + u_{1i}$$
$$\pi_{2i} = \beta_{20} + \beta_{21} \cdot Z_i + u_{2i}$$

Y = Neurofeedback Amplitudes
T = Time
X = BDI Score
Z = Gender (coded 0,1)

Combining Level 1 and Level 2 by substitution gives:

$$Y_{ti} = \beta_{00} + \beta_{10} \cdot T_{ti} + \beta_{20} \cdot X_{ti} + \beta_{01} \cdot Z_i + \beta_{11} \cdot Z_i \cdot T_{ti} + \beta_{21} \cdot Z_i \cdot X_{ti} + u_{1i} \cdot T_{ti} + u_{2i} \cdot X_{ti} + u_{0i} + e_{ti}$$

Using Variable Labels: NFA (Neurofeedback Amplitudes), BDI (Beck's Depression Inventory) and Gender:

$$NFA_{ti} = \beta_{00} + \beta_{10} \cdot Time_{ti} + \beta_{20} \cdot BDI_{ti} + \beta_{01} \cdot Gender_i + \beta_{11} \cdot Gender_i \cdot Time_{ti} + \beta_{21} \cdot Gender_i \cdot BDI_{ti} + u_{1i} \cdot Time_{ti} + u_{2i} \cdot BDI_{ti} + u_{0i} + e_{ti}$$

This model is a conditional growth model because the individual variability in initial status and change over time are conditioned upon exogenous predictor variables. The conditional random effects model is sometimes referred to as a: random coefficient model, mixed-effects model, hierarchical linear model (Bryk & Raudenbush, 1992), empirical Bayes model, "slopes as outcomes" model - or, more generally, a multilevel model.

In longitudinal research, we sometimes have repeated measures of individuals who are all measured together on a small number of fixed occasions. This is typically the case with experimental designs involving repeated measures and panel designs. For our example, our group level predictor can be an indicator variable indicating either control or experimental group membership.

For our simulation example, we will use a much simpler model (displayed below), and will only focus on one coefficient of interest. In the following example Y will be electrical voltages from the scalp (amplitude - measured in millivolts) measured over observation period (T). Individuals change their own scalp electrical potential through trial and error, relying on a biofeedback signal coming from their scalp (neurofeedback - NF). Additionally, we have measured levels of depression using a behavioral (self-report) assessment device (Beck Depression Inventory - BDI). Several questions can be posed: Is there evidence for systematic change and individual variability in NF amplitudes over time? Is the post BDI assessment related to the initial levels or rates of change in NF amplitudes? What is the relationship between the initial levels of NF amplitudes and the rates of change in NF amplitudes over time? Is a linear relationship a good description of within-person change?

Our Example Model

Level 1 model:

$$Y_{ti} = \pi_{0i} + \pi_{1i} \cdot T_{ti} + e_{ti}$$

Level 2 model:

$$\pi_{0i} = \beta_{00} + \beta_{01} \cdot Z_i + u_{0i}$$
$$\pi_{1i} = \beta_{10} + \beta_{11} Z_i + u_{1i}$$

We are interested in estimating an unbiased estimate of the correlation between the level one slopes and the background covariate Z

Parameter Estimation Using Iteratively Re-weighted Least Squares (IRLS)

We are interested in unbiased and efficient estimates of the beta coefficients which relate the background covariate Z to the individual level estimates of rates of change and initial status (pi coefficients). Willet (1988) outlines a fairly straightforward approach to estimating a growth curve model for a single, level-two coefficient (relating individual slope coefficients to individual background covariates) . This method relies on weighted least squares (WLS) and can be improved by iterating until the weights or residuals converge (IRLS). This method is appealing because it provides insight into a central point of multilevel modeling: Level-two coefficient estimates are weighted by the precision of the level-one coefficients. Individuals whose growth coefficients are more reliably estimated, provide more input (information) in the estimation of level-two coefficients. Individuals with large residual variability in their growth record, and hence more unreliable estimates of level-one growth coefficients, are down weighted in the second level of analysis of the level-two coefficients. In the table below, a modified form of Willet's algorithm is outlined.

## A Simple Algorithm for a Two Stage Analysis of Growth Rates with a Selected Covariate (See Willet, 1988)

1) Fit the within-individual growth models, retaining the estimated individual growth rates $\hat{\pi}_i$ and their standard errors, s.e.$(\hat{\pi}_i)$, for subsequent between person analysis

2) Regress the estimated individual growth rates $\hat{\pi}_i$ on the selected covariate Z_i by ordinary least squares (OLS) analysis, retaining the estimated residual variance s^2 as a global measure of the "scatter" present in the second phase of analysis

3) Compute a weight matrix using weighted least squares (WLS) regression:

$$W_i = \frac{s^2}{s^2 + s.e.(\hat{\pi}_i)^2}$$

4) Iterate steps 2 and 3 until W_i or s^2 converges within some tolerance (Iteratively Re-weighted Least Squares - IRLS)

An Example Using GNU-S ("R")

We will create a simulated data set that is modeled after real neurofeedback data. The observations represent average neurofeedback session amplitudes (10 averaged sessions per observation period). The covariate represents either a pre or post BDI assessment (we will use a post BDI assessment). We will go through most sections of the S code to illustrate how S can be used to both simulate data according to an assumed model, and then estimate the model, to try and recapture the population parameters. It is recommended that the reader change the population parameters and experiment with the model. In this way, intuition can be gained about how the observed data varies according to changes in the model. A "Live" script is presented below (this script can be run, examined, and re-edited for re-submission and re-examination); below this live script is annotated program output.
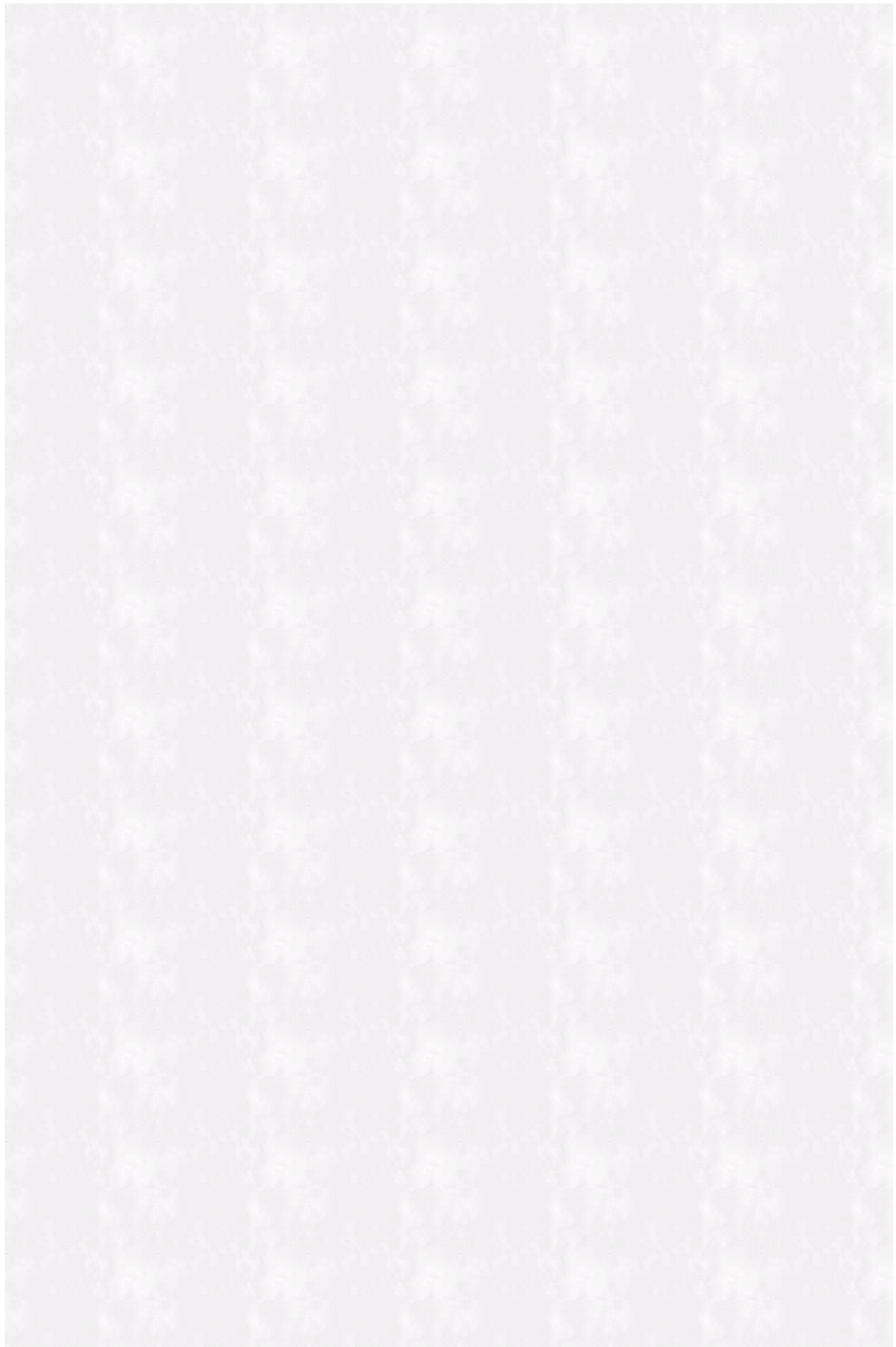
Population parameters are set according to our previous model with one background covariate (Z, the BDI).   A small number of growth curves are generated to examine the effect of small sample size in getting unbiased estimates using OLS versus IRLS parameter estimation. Both the fixed portion and the residual portion (beta and u) for the level-two regressions are set in the population. These will be used with the background covariate to generate the slopes and intercepts for individuals (pi's).

```
> #### Number of Growth Curves
>
> nobs.curves<-20
>
> ############# Level Two Parameters
>
> beta.00<-5.5
> beta.01<-.005
>
> beta.10<-(-.20)
> beta.11<-.20
>
> u.0.std<-.03
> u.1.std<-.15
>
> #### Parameter for Level One Residuals
>
> error.std<-3
>
> #### Parameters for covariate
>
> covar.mean<-10
> covar.std<-2.5
```

A matrix of observation periods must be generated for each individual.

```
> #### Generate Time vector
>
> time<-matrix(rep(c(0,1,2,3), length=4*nobs.curves),
+               nrow=nobs.curves, ncol=4, byrow=T)
>
> time.list<-vector('list', nobs.curves)
> for (i in 1:nobs.curves){time.list[[i]]<-time[i,]}
>
```

Slopes and intercepts of individuals can be correlated across individuals (p0 - intercept, p1 - slope). We create slopes and intercepts whose correlation is -.30: high intercepts lead to rapid rates of change, and low intercepts lead to small rates of change.

```
> #### Generate Correlated Level One Parameters
>
> Sigma.param <- matrix(c(1,-.3,-.3,1),2,2)
> pi.indiv<-mvrnorm(n=nobs.curves, rep(0, 2), Sigma.param,
+                     empirical=TRUE)
> cor(pi.indiv)
      [,1] [,2]
[1,]   1.0 -0.3
[2,]  -0.3  1.0
```

Residuals at level-one (within an individual) are likely to be correlated. We assume a correlation structure that is equal across time periods (compound symmetry).

```
> #### Generate Correlated Residuals
>
> Sigma.error <- matrix(c(1,.2,.2,.2,.2,1,.2,.2,.2,.2,1,.2,.2,.2,.2,1),
+                 4,4)
> z.error<-mvrnorm(n=nobs.curves, rep(0, 4), Sigma.error,
+                 empirical=TRUE)
>
> indiv.error<-z.error*error.std
> indiv.error
              [,1]          [,2]         [,3]         [,4]
 [1,]   5.1871378   3.92186871   4.7762044    1.5447049
 [2,]  -2.7297285  -1.58349909   1.1641684    1.4861057
 [3,]  -0.1038213  -2.00845366   2.3072686    1.6031268
 [4,]   2.4789522  -3.73737318  -5.1474588   -6.3880011
 [5,]   1.2983139  -0.09995374  -3.1199230    2.9683871
 [6,]  -1.6679028   3.66215983   1.0135153    2.0962094
 [7,]  -2.1744504   3.40328453  -2.6881090   -3.5218952
 [8,]   0.5073552   3.84594669   2.3063680   -2.8651158
 [9,]   0.4993936  -0.28892692   0.2376112   -0.1347145
[10,]   4.4785767  -1.30473322   1.7369103   -1.1471286
[11,]   3.1462809  -0.70600709   0.4854152   -1.4005639
[12,]  -6.0050461  -7.08117031  -4.6103369   -2.8585091
[13,]   0.6299895   2.26310343   2.7280101    1.1231027
[14,]  -2.9222697   2.10340089  -3.0063778   -1.2331652
[15,]  -1.0199459  -0.60136666  -0.9304446    4.2259268
[16,]  -2.9397596   1.48798761  -0.4206570   -4.3487363
[17,]   3.8387073  -3.28142206   1.5184872    1.7138605
[18,]  -3.9686504  -1.87733734   5.5083218   -0.5025358
[19,]  -0.7807658  -1.76999505   0.2529361    2.1127997
[20,]   2.2476334   3.65248662  -4.1119095    5.5261419
```

Next, a covariate is generated for each individual:

```
> #### Generate Covariate Scores
>
> covar<-matrix(rnorm(nobs.curves, covar.mean,
+                 covar.std), nrow=nobs.curves)
> covar
            [,1]
 [1,]  10.106585
 [2,]  12.353063
 [3,]  10.182889
 [4,]   6.040697
 [5,]  11.045452
 [6,]  12.187145
 [7,]   8.272381
 [8,]  14.054151
 [9,]  11.690640
[10,]  13.048148
[11,]   9.764001
[12,]   6.764276
[13,]  11.518807
[14,]  10.221173
[15,]  13.825145
[16,]  10.972019
[17,]   8.968430
[18,]  14.283469
[19,]  11.429488
[20,]   6.278810
```

With the group betas (b0, b1), individual background covariate (covar), and level-two residual terms (u0, u1), we can combine the level-two parameters together to obtain the level-one parameters for each individual (p0, p1). We also estimate the average population slope and intercept estimates, and the correlation between the two, once the betas are combined with the covariate and the residual terms. Later, in estimating a statistical model for this simulated data, we might want to use "centered" estimates of the covariate (covar) to aid in interpretation and estimation (Hox, 2002).

Once the pi coefficients (p0, p1) are calculated for each individual, we can combine them with the time index and add the level-one individual residual term to obtain the "observed score" for each individual, indexed by T - each individual gets four observations since T ranges from 1 to 4.

```
> #### Construct Level One Parameters from level two parameters
>
> pi.0<-matrix(beta.00+beta.01*(covar)+pi.indiv[,1]*u.0.std, ncol=1)
> pi.1<-matrix(beta.10+beta.11*(covar)+pi.indiv[,2]*u.1.std, ncol=1)
>
> mean(pi.0)
[1] 5.553252
> mean(pi.1)
[1] 1.930068
> sd(pi.0)
[1] 0.03260155
> sd(pi.1)
[1] 0.5144264
> cor(pi.0, pi.1)
          [,1]
[1,] 0.2941906
>
> #### Construct observed data set
>
> y.obs<-matrix(0, nrow=nobs.curves, ncol=4)
> for(i in 1:nobs.curves){
+   for (j in 1:4){
+       y.obs[i,j]<-pi.0[i]+pi.1[i]*time[i,j]+indiv.error[i,j]
+                  }
+      }
>
```

Some attention needs to be paid to the fact that some observations can fall out of range of reasonable limits (dictated by physical logistics and limitations). We can replace the min and max observation with the mean observation, for each observation period. This process "draws" the tails of the distribution of scores, for an observation period, toward the mean of the distribution. This can be iterated to shape the growth curves is so desired. Here, we only iterate one time, taking the one smallest and one largest observation and replacing with the mean for that observation period.

```
> ######## Eliminate unlikely observations in the simulation
> #          by drawing tails of distribution inward toward mean
>
> y.obs[y.obs[,1]==min(y.obs[,1]),1]<-mean(y.obs[,1])
> y.obs[y.obs[,1]==max(y.obs[,1]),1]<-mean(y.obs[,1])
>
> y.obs[y.obs[,2]==min(y.obs[,2]),2]<-mean(y.obs[,2])
> y.obs[y.obs[,2]==max(y.obs[,2]),2]<-mean(y.obs[,2])
>
> y.obs[y.obs[,3]==min(y.obs[,3]),3]<-mean(y.obs[,3])
> y.obs[y.obs[,3]==max(y.obs[,3]),3]<-mean(y.obs[,3])
>
> y.obs[y.obs[,4]==min(y.obs[,4]),4]<-mean(y.obs[,4])
> y.obs[y.obs[,4]==max(y.obs[,4]),4]<-mean(y.obs[,4])
```

Finally, we list out the observed scores as simulated from a "known" model.

```
> y.obs.list
[[1]]
[1]   5.856097 11.391735 14.167513 12.857456

[[2]]
[1]   2.862320   6.348366 11.435850 14.097604

[[3]]
[1]   5.404281   5.435123 11.686319 12.917652


 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
```

```
              ........................................

[[17]]
[1]   9.384307   3.693321   9.922374  11.546891

[[18]]
[1]   1.600006   6.347898   9.771714  13.035857

[[19]]
[1]   4.778620   5.975849  10.185238  14.231559

[[20]]
[1]   7.792503  10.265817   3.569881  14.276393
```
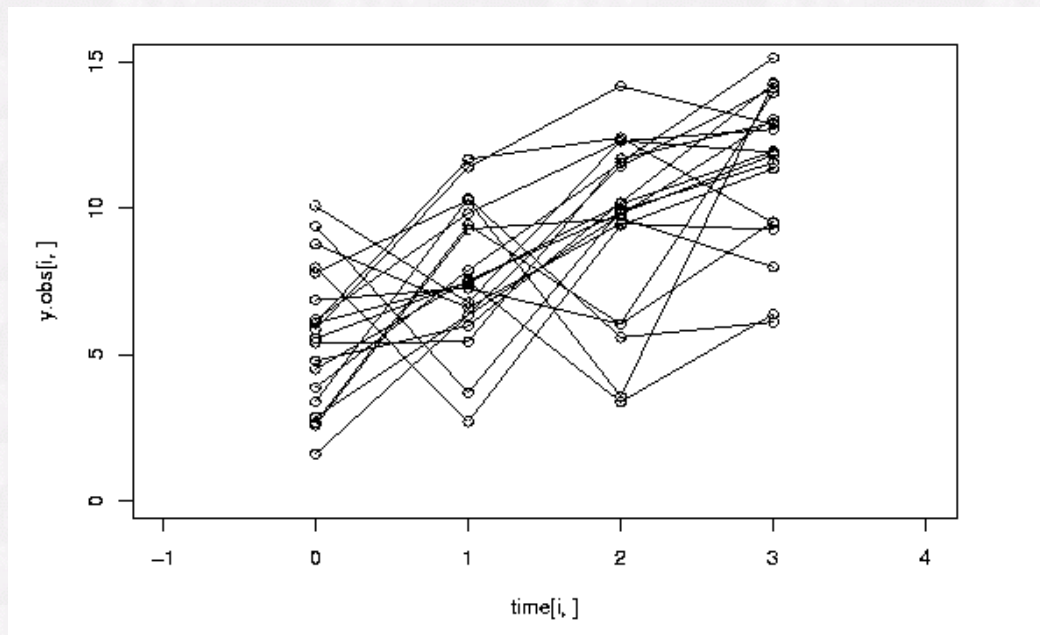
A "not-so-useful" depiction of all the observed growth profiles is a "Profile" plot. A profile plot allows one to discern some random effects structures in the data - we can see that the slopes and intercepts are potentially correlated; we see that there is heteroscedasticity prevalent in the data; and we can examine potential "outlying" growth records.

Parametric Estimation of Growth Curve Models Using OLS and IRLS

Ordinary Least Squares (OLS) is used to estimate the level-one linear regressions for all individuals. Standard errors for each individual regression are used to create weights for the level-two regression of the level-one slopes and background covariates. Additionally, at the level-two regression, iteratively re-weighted least squares (IRLS) is used to converge on the best estimates given the initial level-one weights.
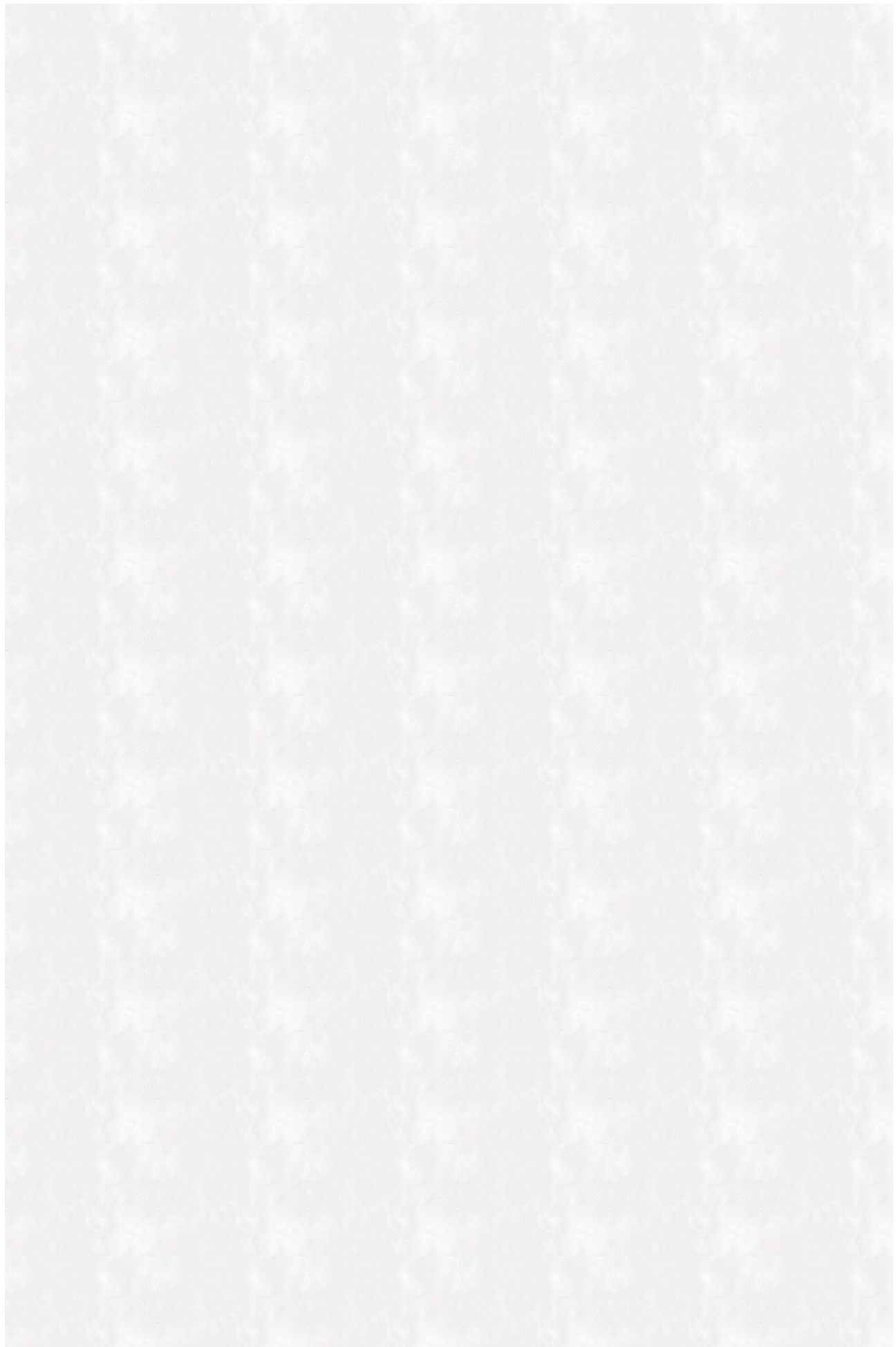
All 20 regressions are performed; the beta coefficients, standard errors (used for weights later), covariates, and other interesting information are combined into a single data frame; informative names are then assigned to the columns.

```
> ####################################################
> ### Perform OLS Regression on all Curves
>
> results<-lapply(1:nobs.curves, function(i, x, y) lm(y[[i]]~x[[i]]),
+           x = time.list, y = y.obs.list)
>
> #### Extract Results into a Dataframe
>
> result.matrix<-matrix(0, ncol=11, nrow=nobs.curves)
> for(i in 1:nobs.curves){
+ result.matrix[i,]<-cbind(summary(results[[i]])$coefficients[1],
+                          summary(results[[i]])$coefficients[3],
+                          summary(results[[i]])$coefficients[2],
+                          summary(results[[i]])$coefficients[4],
+                          summary(results[[i]])$sigma,
+                          summary(results[[i]])$r.squared,
+                          covar[i],
+                          results[[i]]$fitted.values[1],
+                          results[[i]]$fitted.values[2],
+                          results[[i]]$fitted.values[3],
+                          results[[i]]$fitted.values[4])
+ }
>
> #### Label Columns of DataFrame
>
> result.matrix<-data.frame(result.matrix)
> names(result.matrix)<-c('intercept','int.std.err','slope',
+                         'slope.std.err','resid.std.err','R.squared',
+                         'covar','t0.pred','t1.pred','t2.pred',
+                         't3.pred')
>
```

A nice alternative to a profile plot of the observed data, is a profile plot of the level-one predicted values for each observation period. This plot better summarizes the correlation structure of the parameters (slopes and intercepts), and indicates more clearly the nature of the heteroscedasticity in the data.
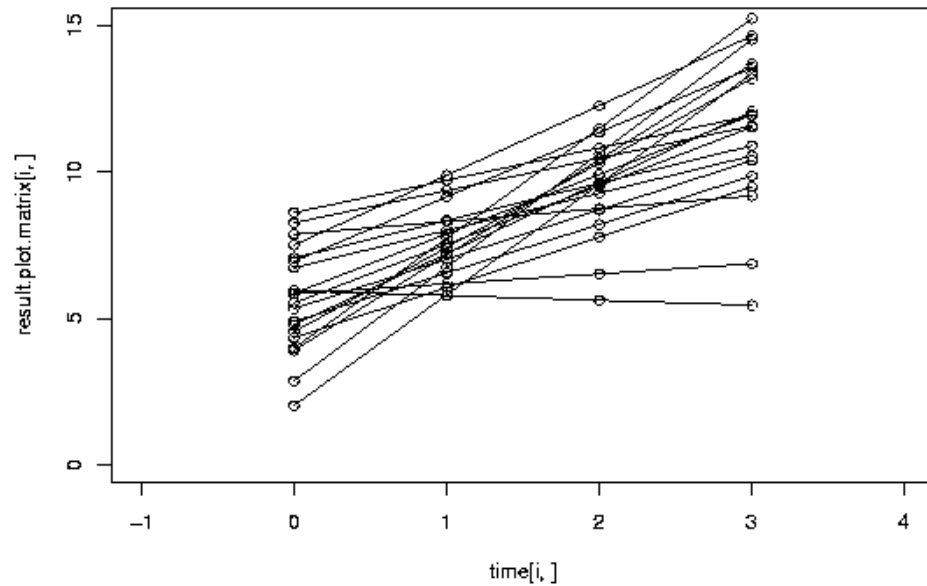
A comparison of the OLS and IRLS solution indicates that the slope estimates are close for both the IRLS and OLS procedures (.25 for OLS versus .36 for IRLS). However, the IRLS procedure gives a substantially smaller residual standard error (1.001 for OLS versus .5483 for IRLS), thereby giving a more efficient estimate for the IRLS procedure. Furthermore, the residuals for the OLS indicate fairly high values (-1.7009, 1.5025), whereas the IRLS residuals are relatively smaller (-.84154, 1.00915) - using 2.0 as a cutoff.

```
> #### OLS Results
>
> result.level2

Call:
lm(formula = result.matrix[, 3] ~ result.matrix[, 7])

Residuals:
    Min      1Q   Median      3Q      Max
-1.7009 -0.5330 -0.0875  0.8958  1.5025

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)         -2.85485    1.02297  -2.791   0.0121 *
result.matrix[, 7]   0.25108    0.09372   2.679   0.0153 *
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 1.001 on 18 degrees of freedom
Multiple R-Squared: 0.2851,     Adjusted R-squared: 0.2453
F-statistic: 7.177 on 1 and 18 DF,  p-value: 0.01532
```

```
> #### WLS Results
>
> summary(result.weighted)

Call:
lm(formula = result.matrix[, 3] ~ result.matrix[, 7], weights = weight)

Residuals:
     Min       1Q   Median       3Q      Max
-0.84154 -0.41529 -0.09472  0.26591  1.00915

Coefficients:
                   Estimate Std. Error t value Pr(>|t|)
(Intercept)         -3.8360     1.4213  -2.699  0.01469 *
result.matrix[, 7]   0.3636     0.1178   3.086  0.00638 **
---
Signif. codes:  0 `***' 0.001 `**' 0.01 `*' 0.05 `.' 0.1 ` ' 1

Residual standard error: 0.5483 on 18 degrees of freedom
Multiple R-Squared: 0.346,      Adjusted R-squared: 0.3096
F-statistic: 9.522 on 1 and 18 DF,  p-value: 0.006375
```

OLS gives a good fit to the observed data even though growth curve parameters are not weighted by the parameter's precision at level-one. This indicates a relatively efficient solution, however IRLS gives a much better fit to the data. Consequently, the estimates of R-squared are significantly larger for IRLS indicating that the OLS is not as efficient in the presence of heterogeneous slopes having differing measurement precisions.

Descriptive statistics for the observed data and the level-one regressions are generated.

```
> #### Descriptives on Observed Scores
>
> cor(y.obs)
             [,1]        [,2]        [,3]        [,4]
[1,]  1.00000000 -0.28130365  0.06113171  0.08572414
[2,] -0.28130365  1.00000000 -0.04777873 -0.22536795
[3,]  0.06113171 -0.04777873  1.00000000  0.38395990
[4,]  0.08572414 -0.22536795  0.38395990  1.00000000
> apply(y.obs, 2, mean)
[1] 5.558872 5.499548 5.127406 5.080371
> apply(y.obs, 2, sd)
[1] 2.385257 2.384481 3.006104 2.612348
> mean(covar)
[1] 10.65034
>
> #### Level Two Means for Intercept and Slope
>
> mean(result.matrix[,1])
[1] 5.587696
> mean(result.matrix[,3])
[1] -0.1807644
> cor(result.matrix[,1], result.matrix[,3])
[1] -0.709922
```

A Graphical Depiction of the Relationship Between the Observed Background Covariate and the Estimate Growth Rates

Another useful graphical depiction is a scatter plot (with an OLS best fit line) of the estimated growth rates (slopes) with the background covariate. One can graphically characterize the impact of the heteroscedasticity present in the data on the level-two regression of slopes and covariates. The heteroscedasticity in the plot appears to be quite large. While significant "outliers" are present, these outliers seem to "counterbalance" one another across the mean of the Y-axis, and counterbalance one another across the mean of the X-axis. This could account for the closeness of the IRLS and OLS parameter estimates. If the size of the residuals are: 1) symmetrical and counterbalanced across both Y and X axes (as is in this case), and 2) the outlying values on the X-axis are close to the mean of the X-axis, this would lead to less bias in the parameter estimates. An interesting experiment would be to generate different data sets with differing patterns of heteroscedasticity, and

observe the difference in the parameter estimates of the OLS and IRLS procedures.

The graph below (panel 1) depicts the relationship between the covariate (Y-axis) and the slopes for individuals (X-axis). The second graph (panel 2) plots the observed data as a function of observation period, and the third graph (panel 3) is the predicted values from the level-one regressions plotted as a function of observation period.
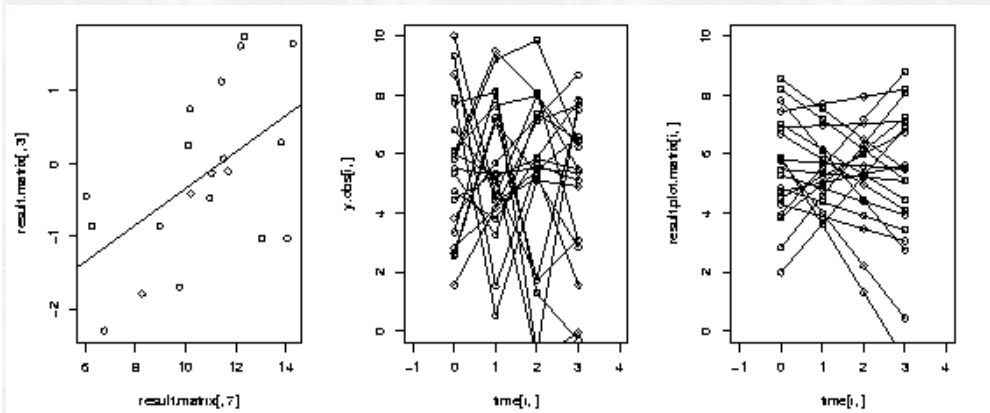
Conclusions

A Two Stage IRLS model of the Post BDI covariate and the individual growth rates indicates that there is reliable differences in growth rates in individuals and is correlated with the post BDI assessment (for the simulated data set). In general, larger negative slopes are correlated with smaller values on the BDI assessment, and lesser negative slopes are correlated with larger values on the post BDI assessment.

In general, larger negative slopes are correlated with larger NF amplitudes at initial status, and smaller negative slopes are correlated with smaller NF amplitudes at initial status. The IRLS and OLS beta estimates (slopes) were fairly close in value - this may be due to the symmetrical pattern of heteroscedasticity in the data. However, IRLS estimation gave significantly smaller level-two residual standard error than OLS estimation, for the level-two regression - IRLS is more efficient than OLS in this example. Consequently, the percentage variance accounted for in the outcome variable (NF amplitudes), by knowledge of the background covariate (BDI), was substantially larger for the IRLS solution.

Next Time

Next time we will explore the use of the S-Plus and R library NLME (linear and nonlinear mixed effects) with the simulated data set used in this article. Additionally, we will look at other parameter estimation algorithms (e.g. Restricted Maximum Likelihood - REML), and other model diagnostic approaches (e.g. AIC).

References

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Research and Statistical Support
University of North Texas

SAS Corner

So Long, Later

By Dr. Karl Ho, Former Research and Statistical Support Services Manager

So long.

After over six years working at the UNT Computing Center, I finally have to bid farewell to Denton, a place I have lived longer than anywhere else except my home city, Hong Kong. Indeed, Denton is like my de facto home away from home. I still remember the days of my life, spent in this little but special city of Texas, and the moments of truth, enjoyment, passions and tears flash through like a montage in my mind every now and then. This is the most memorable period and career of my life.

I can't give enough thanks to the colleagues, teachers and friends in various departments and academic units at UNT. There are so many of them that I can't put their names in this one by one. But I've got to mention my ACS friends and colleagues who are so special that I didn't realize how much I've lost until I left them. They include Claudia, who reigns her _Benchmarks_ kingdom by flagging the monthly reminder: "where is _MY_ article?"; Duane Gustavus, the occasionally long-winded wizard, who philosophizes from Linux guru-age to political freedom in cyber world; Cathy Hardy, the kindest and cutest programmer who pets Shadow and the IBM mainframe; Bahram, the coach, whose students comprise future soccer stars in numerous Denton high schools and UNIX kindergarteners like me; and Dr. Elizabeth Hinkle-Turner, who finalizes our software warehousing project at GAUSS, while juggling with book projects and mothering two J.T.s.   Special thanks also go to Sue Ellen, the most patient and competent administrative officer on earth and Sandy Burke, the genuine expert and the most instant guide in all MS Office apps. Last but not least, Dr. Baczewski, who still tops my list of most amazing people I have ever known. I can pick his brain on almost any area involving a computer. In fact, Phil is the one who really deserves most of the credit for the RSS services. These are my friends and teachers with whom I share my laughs, and enjoyable moments.

Of course, I have to express my gratitude to my staff consultants and friends, Dr. Rich Herrington and Garvii Thomas, whose daily hard work keeps RSS rolling. I am sure Rich and Garvii will team up well and provide even better service at RSS.

Finally, I can't not thank you enough, my RSS customers and readers of my columns. Over the years, I have grown and learned by helping customers with their projects, proposals and dissertations and by getting valuable feedback. It is such an invaluable experience it has certainly made my time here the golden years of my life. As I am heading for new endeavors of my career, I will always remember the years in Denton. Let me wrap this up by bidding a Chinese farewell(再見), pronounced as "*Jai-jen",* meaning "We will meet again".

Later.

Karl Ho is currently working as a Research Scientist at the School of Social Sciences in the University of Texas at Dallas. You can reach him at kyho@utdallas.edu

Network Connection

By **Dr. Philip Baczewski**, Associate Director of Academic Computing

My Secret Web Sites

How do I keep up with all this new technology? Well I frequently visit my secret Websites, known only to me and several million other people. If you promise not to tell anyone else, I'll let you know about them too.

http://slashdot.org/

"Slashdot" bill itself as "news for nerds, stuff that matters" and indeed that is an apt characterization of the site. Slashdot is among other things, an edited compilation of news abstracts which usually reference topical Web sites or commercial news stories. The focus is anything technological or related to technology. Lately, slashdot has been a great place to keep up with intellectual property issues, security alerts, and new open source software. Slashdot leans heavily toward the open source world, but does include news items on commercial hardware and software, with Microsoft topics denoted by an icon of Bill Gates as Borg (if you don't know that last reference, then perhaps slashdot is not for you). An interesting feature of slashdot is that each story comes with comments by readers. Not only can you investigate the links yourself, but you can also see what others are thinking about a particular issue or idea.

http://www.infoworld.com/

Among a number of commercial information technology news sites, InfoWorld's is one which seems to provide a range of coverage on computing software and hardware. It is the online version of the InfoWorld trade publication which is provided at no cost to people (like me) who qualify. Trade publications tend to be supported by the companies they are writing about, so some skepticism is in order when reading feature articles. InfoWorld's news items do report things in a timely manner and cover some commercial developments more frequently than sites like slashdot. InfoWorld has competitors, such as Information Week and others, but I've always found InfoWorld to be the most useful.

http://newsforge.org/

Newsforge is hosted by the same people that host slashdot. Like slashdot, newsforge compiles references to articles on information technology topics and in particular open source projects, but does so in a more formal journalistic style. Newsforge (the "Online Newspaper of record for Linux and Open Source") features articles by Newsforge editors and writers, but includes reader-posted article references as well. Like slashdot, readers can comment on the stories.

http://www.securityfocus.com/

Symantec (you know, the antivirus, etc. people) just bought securityfocus in August,

however, the Website still is a useful place to find the latest news, vulnerabilities, or alerts related to virus or computer security issues. It is one place to look for more information if you read about a virus or system security issue (another is http://www.sans.org/). If you read about it in InfoWorld, you can often find the details at securityfocus.

http://freshmeat.net/

Freshmeat is part of the slashdot/newsforge family and is dedicated to announcing new versions of open source software. This is most useful for the bleeding edge type who is developing or just wants to keep up with the latest software trends. It's worth mentioning that the other significant partner of the group is sourceforge.net which hosts the project development activities of thousands of open source software projects.

OK. That's all the secrets I can reveal today. Remember, this is just between us and a few million other people. Don't tell anyone else.

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Link of the Month

Each month we highlight an Internet, USENET Special Interest Group (SIG), or similar mailing list(s) or Website(s).

The President's Website

Click here to find out about President Norval Pohl

There is a new Website on campus, one that promises to be a great source for all kinds of information. There are links for students, faculty, staff and the general community. Visit there and you can find out more about the President, subscribe to his newsletter (even if you are not an alumnus), view the first issue, find out about the new Research Park and much more. So surf on over to http://www.unt.edu/president/ and check it out. Definitely a site worth a bookmark!

WWW@UNT.EDU

The Elixir of Life,   or is it

Variable Poisoning?

By **Shannon Eric Peevey**, **UNT Central Web Support**

Instead of focusing on ColdFusion this month, as I have done in the past, I thought that it would be fun to delve into the "other" language that I support on web2.unt.edu. That language PHP, which stands for "PHP: Hypertext Processor", is a popular open-source scripting language that is used by many developers around the world. (See the list in "For More Information" for sites that are using PHP.) This scripting language has been a wonderful addition to our dynamic web server, and many of you are taking advantage of its ease and power.

PHP, Here We Go...

To get started, I would like to mention some of the great applications that have been written in PHP.

The first is our very own EagleMail application. This application is a variation on the IMP Webmail Client, which is available at the URL below, and which has been modified to become a great addition to the University of North Texas student communication system. This application allows students and staff to login to check there e-mail from any browser in the world. The stability of the application is seen as thousands of students check and respond to e-mail daily through this interface.

The second example, is an application that many of the web developers on my server are familiar with. This is PHPMyAdmin. This application is a web-based front-end for a MySQL database server, which is housed on one of my servers, and allows a user with the correct rights to administer their database from any browser in the world. As I have been supporting databases in a production environment for over 3 years now, I feel that I am fairly comfortable with a variety of database server/client interfaces. PHPMyAdmin takes the cake. It is not only easy to use, but it locks users down to the appropriate level of security, and allows me, the superuser, to administer everything from this single interface. (It has even replaced Microsoft Enterprise Manager for my favorite database administration tool. More information and a download can be found at the URL below.

The final application that I would like to mention is a shopping cart called osCommerce. This application not only has a complete user shopping cart on the front-end, but it incorporates a wonderful administrative interface as well. With the ability to include/exclude payment types, modify/add categories, monitor orders, osCommerce is a complete e-business solution for any company.

And Now for the Fun...

To initiate the newcomers to PHP, and to bring the old timers up-to-date, I feel that I should cover a basic issue that will need to be addressed in all PHP applications in the future. This is the creating and accessing of variables using PHP.

In the past, PHP3 and earlier, web developers were able to pass variables from page to page with ease. For example:

```
<FORM ACTION="firstApp2.php" METHOD="post">

<P><FONT SIZE=3><B> Please enter your name here:

<INPUT TYPE=TEXT NAME="NAME" SIZE=25></B></FONT></P>

<P><FONT SIZE=3><B> Please enter your telephone here:

<INPUT TYPE=TEXT NAME="TELEPHONE" SIZE=25></B></FONT></P>

</FORM>
```

Would place the variables NAME and TELEPHONE in memory to be accessed from "firstApp2.php". To access these variables from "firstApp2.php", you would write the following code:

```
<p align="left">_____</p>

<p align="left">name: </p><H2> <? print "$NAME\n"; ?> </H2>

<p align="left">telephone: </p><H2> <? print "$TELEPHONE\n"; ?> </H2>

<p align="left">_____</p>
```

First, notice the syntax. Is it hard to see? A little, because there is not much difference between the HTML and PHP coding style. (Even more, or less, confusing for those of you that have done some ASP coding, or a little JavaScript.) PHP was designed in this way. The creators wanted to make it easier for someone that has coded in some of these other scripting languages to be able to write PHP code with minimal difficulty. (They also wanted to pull some users away from the behemoth Microsoft too! ;)) Here is a breakdown of what you see.

<? ?> -- These signify that the code found in between these symbols are PHP. The web server sees this, and send the code to the PHP engine, which then returns the code to the web server and then the browser.

Print – a function that prints text to a specified location.

$NAME – a variable name. A variable is signified by placing a "$" in front of the name of the form object on the originating page.

\n – a new-line character. (Acts like a carriage return.)

; -- line termination character. This is <u>VERY IMPORTANT</u>, as the omission of this character will cause problems when the code is compiled.

"string\n" -- the quotes designate a string, and the PHP engine will generate the code as

such.

As some may notice, the syntax is very close to that of Perl, another favorite open-source language. This is also on purpose. It seems to me that web developers that have done some programming in the past are drawn to PHP, because of the ease with which they may transfer code and concepts from their previous languages. (In my experience, this tends to make for a more complete and stable range of available applications. Check out HotScripts.com for a wide range of available PHP applications.)

As you can see, this is very simple, and as with all simple things, there are some problems that have become apparent to PHP developers through the maturation of the product. This is that there is no scope designation for the variables that were created. This was by design originally. The PHP engine was supposed to guess the scope of the variable, and guess it correctly. As you all know, there are those people that like to find ways of working around things to their advantages, so PHP has had to come up with a different way of specifying the scope of variables, and in particular, global variables. (Scope is the realm within which a variable name's value can be accessed. See the URL below for more information about scope.)

Recommendations from PHP...

To help keep an end-user from "poisoning" the variables in your application, PHP implemented "predefined variables" to help specify the scope of a variable. Here is the example above, with the recommended syntax from PHP.

```
<FORM ACTION="firstApp2.php" METHOD="post">

<P><FONT SIZE=3><B> Please enter your name here:

<INPUT TYPE=TEXT NAME="NAME" SIZE=25></B></FONT></P>

<P><FONT SIZE=3><B> Please enter your telephone here:

<INPUT TYPE=TEXT NAME="TELEPHONE" SIZE=25></B></FONT></P>

</FORM>
```

The first page would remain the same. You will notice the modified code in the second page though.

```
<p align="left">_____</p>

<p align="left">name: </p><H2> <? print "$_POST['NAME']\n"; ?> </H2>

<p align="left">telephone: </p><H2> <? print "_POST['$TELEPHONE']\n"; ?> </H2>

<p align="left">_____</p>
```

Or in its simplest form:

```
<? print "$_POST['NAME']\n"; ?>
```

As you can see, the code is not that complicated, but does force you to understand the process of accessing variables. If you notice, in the <FORM> tag on firstApp.php, you see that the METHOD that we have specified is "post". That means that we are moving the variable to an address in memory, instead of in the URL, as a "get" method would do. Therefore, we choose "$_POST" from our list of "predefined variables". This "predefined variable" knows that it needs to look in memory for the value found in the array of posted form object values. Hence, the syntax of "$_POST['$variable_name']". It is actually pulling the value from the "superglobal_arrays".

Why am I telling you this?

As many of you know, we have had some issues with our local installation of PHP ignoring the register_globals switch, which mimicked a safe_mode=on type installation. This caused some PHP applications to fail over about a two day period, until I worked my "can of the Fonz" on it, and got it to work. What many of you don't know, is that PHP has been recommending the syntax of the second example above for over a year now, and is deprecating the syntax of the first example. (Meaning that it will not be supported by PHP at some point in the future.) Therefore, to be safe, in the sense of prolonging the life of your PHP applications and in the sense of making it more difficult for end-users to poison the variables in your application, it would be advised that you begin to update your applications to reflect the accepted syntax of the PHP creators, and the advise of web developers around the world.

Have a good one :)

For More Information...

- Listing of Predefined Variables and attributes available through them: http://www.php.net/manual/en/reserved.variables.php

- Variable Scope: http://www.php.net/manual/en/language.variables.scope.php

- IMP Webmail Client: http://www.horde.org/imp/

- PHPMyAdmin: http://www.phpMyAdmin.net/

- osCommerce: http://www.oscommerce.org/

- HotScripts.com: http://www.hotscripts.com/

Short Courses

By [Claudia Lynch], *Benchmarks Online* Editor

The fall Short Courses are underway and many are already full. Please consult the [Short Courses] page to see the courses that are being offered.

Customized Short Courses

Faculty members can request customized short courses from ACS, geared to their class needs. Other groups can request special courses also. Contact ACS for more information (ISB 119, 565-4068, [lynch@unt.edu]).

Especially for Faculty and Staff Members

In addition to the [ACS Short Courses], which are available to students, faculty and staff, staff and faculty members can take courses offered through the [Human Resources] Department, the [Center for Distributed Learning], and the UNT Libraries' [Multimedia Development Lab]. Additionally, the [Center] for Continuing Education and Conference Management offers a [variety of courses] to both UNT and the general community, usually for a small fee.

GroupWise Training

If would like to have a Basic GroupWise seminar for your area, please contact Jason Gutierrez, Campus Wide Networks, [jasong@unt.edu] .

GroupWise 6 classes have already been scheduled for the fall semester. Here is the lineup:

      Oct 22-24 - Basic GroupWise 6
      Nov 19-21 - Intermediate GroupWise 6

All classes are from 10 am to 11:50 am in the Eagle student Services Center (ESSC), Room 152. For signup information, go to [https://home.unt.edu/hr/training/treg.htm] or E-mail Melanie Betterson at [MBetterson@ADAF.admin.unt.edu] (565-4246).

ProDirections Instructor-led Training

UNT has formed a partnership with ProDirections to offer instructor-led computer training on Microsoft Word, Excel, PowerPoint, and Access. Classes are $99+$42 for the book. Classes in a series (3 classes in the same series) are $99 for each class and the book is free. The Excel Series includes Basic Excel, Advanced Excel-part 1, and Advanced Excel-part 2. The Access Series includes Basic Access, Intermediate Access, and Advanced Access.

Upcoming workshops:

Basic Access
Monday, December 9, 2002 from 1 p.m.-5 p.m.

Intermediate Access
Wednesday, October 16, 2002 from 9 a.m.-1 p.m. (lunch provided)
Tuesday, December 10, 2002 from 1 p.m.-5 p.m.

Advanced Access
Thursday, October 17, 2002 from 9 a.m.-1 p.m. (lunch provided)
Wednesday, December 11, 2002 from 1 p.m.-5 p.m.

Basic Excel
Tuesday, November 19, 2002 from 9 a.m.-1 p.m. (lunch provided)

Advanced Excel-part 1
Wednesday, November 20, 2002 from 9 a.m.-1 p.m. (lunch provided)

Advanced Excel-part 2
Thursday, November 21, 2002 from 9 a.m.-1 p.m. (lunch provided)

PowerPoint
Tuesday, December 17, 2002 from 9 a.m.-1 p.m. (lunch provided)

To register, send E-mail to Melanie Betterson at MBetterson@ADAF.admin.unt.edu or call Human Resources at x4246. Payments can be made by either a check request or with a Purchasing Card and should go directly to ProDirections. Cancellations must be done 2 days prior to the workshop date to receive a refund.

For a description of each class please go to http://www.prodirections.com/ and click on "Corporate Workshops"

Center for Distributed Learning

The Center for Distributed Learning offers courses especially for Faculty Members. A list of topics and further information can be found at http://www.unt.edu/cdl/training_events/index.htm The center also offers a "Brown Bag" series which meets for lunch the first Thursday of each month at Noon in ISB 204. The purpose of this group is to bring faculty members together to share their experiences with distributed learning. One demonstration will be made at each meeting by a faculty member with experience in distributed learning. More information on these activities can be found at the Center for Distributed Learning Website.

Technical Training

Technical Training for campus network managers is available, from time to time, through the Campus-Wide Networks division of the Computing Center. Check the CWN site to see if and when they are offering any training.

UNT Mini-Courses

These are a variety of courses offered, for a fee, to UNT faculty, staff and students as well as the general public. For additional information surf over to http://www.pware.com/index.cfm .

Alternate Forms of Training

Many of the General Access Labs around campus have tutorials installed on their computers. For example, the College of Education recently acquired some Macromedia Tutorials for Dreamweaver 4.0, Flash 5.0 and Fireworks 4.0.

The Training Web site has all sorts of information about alternate forms of training. Training tapes, Computer Based Training (CBT) and Web-based training are some of the alternatives offered. Of particular interest are courses available via SmartForce (formerly CBT Systems). See http://www.unt.edu/smartforce/ for more information.

There are also handouts for computer training on the following topics:

- GroupWise 5.2 Handout for Win95/NT
- FAQ for GroupWise 5.2
- Computers - Back to the Basics
- Introduction to Windows 95 /98/NT
- Introduction to Word 97
- Advanced Word 97 - MailMerge It Together
- Introduction to PowerPoint 97 (Creating a Slide Show)
- Introduction to Remedy (THE Call-Tracking Program)
- AND, the award winning Introduction to Excel 97

Adobe Acrobat Reader Format only for the following:

- Introduction to Microsoft Word 2000
- Introduction to Microsoft Excel 2000
- Creating a Slide Show with PowerPoint 2000
- Using Netscape Communicator & the UNT Home Page

Use the Internet to search for answers to Microsoft Office problems. See http://www.zdnet.com/zdhelp/filters/office/ December 1999's "List of the Month" offers links to free Microsoft Word and Excel information also.

IRC News

Minutes provided by Sue Ellen Richey, Recording Secretary

IRC Regular and Ex-officio Voting Members: Judith Adkison, College of Education; Donna Asher, Administrative Affairs; Craig Berry, School of Visual Arts; Lou Ann Bradley, Communications Planning Group; Cengiz Capan, College of Business and GALC; Bobby Carter, UNT Health Science Center; Matt Creel, Student Government Association; Christy Crutsinger, Faculty Senate; Jim Curry, Academic Administration; Don Grose, Libraries and University Planning Council; Joneel Harris, EIS Planning Group; Elizabeth Hinkle-Turner, Student Computing Planning Group; Tom Jacob, College of Arts and Sciences; Abraham John, Student Development; Jenny Jopling, Instruction Planning Group; Armin Mikler, Research Planning Group; Kenn Moffitt, Standards and Cooperation Program Group; Ramu Muthiah, School of Community Services; Jon Nelson, College of Music; Robert Nimocks, Director, Information Technology, UNTHSC; John Price, UNT System Center; Philip Turner, School of Library and Information Science and University Planning Council (Chair, IRC); VACANT, Graduate Student Council; VACANT, Staff Council; VACANT, University Planning Council; Virginia Wheeless, Chancellor, for Planning; Carolyn Whitlock, Finance and Business Affairs; IRC Ex-officio Nonvoting Members: Jim Curry, Microcomputer Maintenance and Classroom Support Services; Richard Harris, Computing Center and University Planning Council; Coy Hoggard, Computing Center/Administrative; Judy Hunter, GALMAC; Maurice Leatherbury, Computing Center/Academic; Doug Mains, UNT Health Science Center; Patrick Pluscht, Center for Distributed Learning; Sue Ellen Richey, Computing Center (Recording Secretary); Ken Sedgley, Telecommunications.

July 16, 2002

VOTING MEMBERS PRESENT: PHILIP TURNER, Chair, LOU ANN BRADLEY, MELODY KELLY (for DON GROSE), ELIZABETH HINKLE-TURNER, DUNCAN ENGLER, CRISTINE MITCHAMORE, JUDITH ADKISON, SEAN HIATT, RAMU MUTHIAH, NANCY MCCRAY (for VIRGINIA WHEELESS), CENGIZ CAPAN, WIL CLARK (for JOHN PRICE), JONEEL HARRIS **NON-VOTING MEMBERS PRESENT:** RICHARD HARRIS, CHARLES ANDREWS, PATRICK PLUSCHT, MAURICE LEATHERBURY, SUE ELLEN RICHEY (Recording Secretary) **MEMBERS ABSENT:** BILL BUNTAIN, CRAIG BERRY, TOM JACOB, JENNY JOPLING, ROBERT NIMOCKS, KENN MOFFITT, ARMIN MIKLER, CHRISTY CRUTSINGER, JIM CURRY, COY HOGGARD, BOBBY CARTER, DONNA ASHER, JON NELSON, DOUG MAINS, ABRAHAM JOHN, GINNY ANDERSON **GUESTS:** JENNIFER LAFLEUR, JUDY HUNTER

Minutes Corrected

Maurice Leatherbury pointed out that the word "Linux" was misspelled in the minutes of the June 18, 2002 meeting. With that one correction, the minutes were approved as distributed.

IR Steering Committee

There was no report from the IR Steering Committee, since there had been no meeting since the last IRC meeting.

Strategic Planning Committee

Richard Harris reported that the Strategic Planning Committee had met to evaluate the proposals for the TIF grant funds. He distributed the minutes from their meeting, and

summarized the results of their discussion as follows:

The TIF grant funds were to be distributed as specified:

1) $110,000 for WebCT

2) $46,800 for Videoconferencing for educational diagnosticians

3) $21,000 for Student electronic portfolio development

4) $105,000 for two UNT SCD videoconference rooms

Remaining funds are to be allocated to course development, and if not used, will revert to other proposals.

Cengiz Capan raised the question of the deadlines for responding to the internal RFP for use of TIF grant funds for course development, asking why there are two deadlines and why the early first deadline. Maurice replied that because all of the TIF funds must be committed by August 30, 2003, the planning and course development must begin as soon as possible.

EIS Planning Group

Joneel Harris reported for the EIS Planning Group that the PeopleSoft contract has been signed with an overall $700,000 additional savings to UNT. Negotiations are in progress on the Ciber Implementation contract and it is hoped that it will be signed soon. Joneel noted that some PeopleSoft training is taking place now to prepare project leaders for the initial phases of the software implementation.

Standards and Policy Planning Group

Maurice Leatherbury reported for the Standards and Policy Planning Group that they had not met but have a meeting scheduled for July 30th at which they will be finishing their work on the accessibility policy and begin work on a plan for campus-wide desktop replacement.

Student Computing Planning Group

Elizabeth Hinkle-Turner reported for the Student Computing Planning Group that their plans for providing information on campus computing in Freshman orientation sessions have been very successful. She announced that the equipment in the Adaptive Lab in Chilton Hall is being re-distributed to other general access labs with the intended result being better computing services for special needs students. There will now be separate testing facilities in the Office of Disability Accommodations and the ISB 110 lab will have more adaptive equipment. The ISB 110 lab will be closed during the month of August while renovations are being made and equipment moved. A new Brailler system and scanner are being purchased also. In answer to a question from Cengiz Capan, Elizabeth explained that notification to students will be handled by signs posted across campus, and in Freshman orientation sessions. It was suggested that a mailing be done so that students not coming to campus during the summer will be advised before returning in the Fall; it was also suggested that the ODA office be contacted to see if they plan such a mailing.

Other Business

It was determined that since there is no pressing business to conduct in August, there will be

no August meeting of the IRC.

The meeting was adjourned at 2:35 p.m.

September 17, 2002

VOTING MEMBERS PRESENT: RICHARD HARRIS (Chair, in PHILIP TURNER's absence), LOU ANN BRADLEY, ELIZABETH HINKLE-TURNER, DUNCAN ENGLER, MATT CREEL, RAMU MUTHIAH, CRAIG BERRY, TOM JACOB, KENN MOFFITT, CHRISTY CRUTSINGER, JIM CURRY, ABRAHAM JOHN (for JONEEL HARRIS), DONNA ASHER, CAROLYN WHITLOCK. **NON-VOTING MEMBERS PRESENT:** DOUG MAINS, COY HOGGARD, JUDY HUNTER, PATRICK PLUSCHT, MAURICE LEATHERBURY, SUE ELLEN RICHEY (Recording Secretary) MEMBERS ABSENT: CENGIZ CAPAN, JENNY JOPLING, PHILIP TURNER, JOHN PRICE, VIRGINIA WHEELESS, JUDITH ADKISON, DON GROSE, ROBERT NIMOCKS, ARMIN MIKLER, BOBBY CARTER, JON NELSON **GUESTS:** JENNIFER LAFLEUR, B.K. BLEAKLEY

Minutes Corrected

Maurice Leatherbury corrected the minutes of the July 17th meeting, adding the word "schedule" to the sentence regarding the campus-wide desktop replacement, to read as follows:

> "Maurice Leatherbury reported for the Standards and Policy Planning Group that they had not met but have a meeting scheduled for July 30th at which they will be finishing their work on the accessibility policy and begin work on a plan for campus-wide desktop replacement schedule."

IR Steering Committee

Richard Harris reported that the IR Steering Committee has not met since the last IRC meeting; but that committee has taken the action of approving the move of the Computing Center into the Research Park, 2nd floor, West Bay (designated E-bay). The process of connecting communications and preparing the building is underway in order for the EIS Project Team to move in around late December.

Distributed Computing Support Management Team

Maurice Leatherbury reported for the Distributed Computing Support Management Team that at their last meeting Jim Curry demonstrated a new Tablet PC, a super PDA device, which has full desktop capability.

EIS Planning Group

Coy Hoggard reported for the EIS Planning Group and introduced B.K. Bleakley, who is the Manager of the Ciber implementation team. Coy explained that in the spring a recommendation was made to purchase PeopleSoft software, and Ciber was selected as the consulting firm to serve as our implementation partner. This recommendation was approved by the administration and the Board. In June and July contract negotiations were successfully completed with both of those firms. In August PeopleSoft training began in order to prepare the project team for the Fit Gap Analysis.

The Fit Gap Analysis will point out how the PeopleSoft software will work with UNT's business practices and where gaps occur between the software and the business practices. Ciber is leading the effort on this and plans to be finished in November. They will then prepare a project plan in December. Also in August, the development of a Project Charter began and has just been completed and approved by the EIS Steering Committee. Between

now and November, the team will work on establishing the PeopleSoft technical environment and in November and December Ciber will install PeopleSoft software, after which PeopleSoft will come here to certify Ciber's implementation work. Workspace for 60-70 people will be set up in the Research Park by January and the Training Lab will also be moved from Marquis Hall to the Research Park. In January, the actual implementation will begin. Tentative plans are for the major PeopleSoft modules to be implemented in the following order:

1) Financials;

2) Contributor Relations (concurrent with Financials);

3) Human Resources System, including Payroll; and

4) Student Administration.

They will not have a schedule for implementation of these modules until the Fit Gap Analysis is completed and have the project plan from Ciber. Even the order in which the modules are implemented may change once Ciber has presented their plan and made their recommendations. Coy stated that further information is being provided, and updated regularly at www.unt.edu/eis.

B.K. made a few comments regarding the project, stating that there is a large group involved in the implementation project. She said that the Ciber group is glad to be here and is encouraged by the participation of UNT staff on the project. She said the group would make every effort to get out as much information about the project as possible, as it goes forward.

Instruction Planning Group

Patrick Pluscht reported for the Instruction Planning Group that Jenny Jopling is busy working on the WebCT Texas 2002 Conference.

Communications Planning Group

Lou Ann Bradley reported that the Communications Planning Group plans to meet at the end of September.

Standards & Policy Planning Group

Kenn Moffitt reported for the Standards & Policy Planning Group and distributed copies of the draft Desktop Computer Replacement Schedule; the proposed University of North Texas Web Accessibility Policy; and a second version of the Web Accessibility Policy with Guidelines. There was a short discussion during which it was noted that the Macintosh requirements were omitted in this printing of the Desktop Computer Replacement Schedule and Maurice Leatherbury said he would make sure a revised Schedule was distributed to IRC members. Both of these items will be placed on the agenda for a vote at the IRC's October meeting. Kenn asked that members send him any comments regarding the documents prior to the next IRC meeting.

Student Computing Planning Group

Elizabeth Hinkle-Turner reported that the Student Computing Planning Group has not met since July, but will meet as soon as they have new student representatives for this semester.

Distance Learning Team

Patrick Pluscht reported for the Distance Learning Team that they will meet Thursday, September 19th. He announced that there will be an upcoming series of satellite downlinks dealing with ADA, Copyright, and Plagiarism issues.

IRC Meeting Schedule

The IRC generally meets on the third Tuesday of each month, from 2-4 p.m., in the Administration Building Board Room. From time to time there are planned exceptions to this schedule. This fiscal year, the December meeting was changed to December 11th, the April meeting was cancelled, and the May meeting changed to May 7th. There was no meeting in August. All meetings of the IRC, its program groups, and other committees, are open to all faculty, staff, and students.

Staff Activities

Transitions

The following are new employees:

- **Cathy Jackson** - University Information Operator.

- **Brian Bartels** - I/O Operator, Print Services, Production Services, MTS (part-time)

- **Axton Grams** - Computer Support Specialist in Academic Computing Services, Call Tracking Administration (Remedy).

- **Neda Salahi** - Lab Monitor, ACS General Access Lab, ACS (part-time).

- **Yoke Teo** - Computer Support Specialist in Network Computing Services.

The following people no longer work in the Computing Center:

- **Kathleen Chute** - I/O Operator, Print Services, Production Services, MTS (part-time)

- **Karl Ho** - Research and Statistical Support Services Manager. A farewell message from Karl can be read here.

- **Keith Smith**, Programmer on HRMIS team, ADM.

Changes

- **Samantha Moss** - Was a student assistant (part-time) in the Computing Center Administration division, is now a full-time Administrative Assistant in that same division.

- **Bahram Paiani** - Has moved from Academic Computing Services to the Campus Wide Networking (CWN) Group where he will work closely with the messaging team. He will continue to provide the excellent listserv and mailhost services that you're accustomed to.

Awards, Recognition

The following people were recognized in the October 4 issue of *Inhouse* for their years of service to UNT:

- **Ronnie Seay**, Production Control Specialist - 15 years of service.

- **Minnie Hill**, Programmer with the Fiscal Data Systems Team - 5 years of service.

The following people have been nominated as **Soaring Eagles** and will receive their award at the President's Staff Sack Lunch on October 22:

- **John Kulmacz**, Data Communications Assistant, **Sue Ellen Richey**, Administrative Services, and a host of folks from other areas of the University were recognized for their efforts in helping **Dr. Elizabeth Hinkle-Turner**, Student Computing Services Manager, move/re-establish the adaptive technology lab from Chilton Hall to ISB 110.

- **Philip Brooks**, Production Services Manager, **Joanne Luksich**, Data Entry Coordinator, and **Ronnie Seay**, Production Control Specialist, were recognized in their hard work in support of the production of UNT's annual report.

- **Randy Franek**, Programmer/Analyst Database/Central Programming Support, came to the aid of a fellow employee and helped move boxes.

- **Barbara Heffley**, UNT Fiscal Data Systems Programmer/Analyst, helped a new student to understand information relating to Student Accounting.

- **Judy Tate**, Computer Print Services supervisor, joined with folks from the UNT Libraries to help meet an important deadline.

- **Harold Nogle**, Helpdesk Consultant, went the extra mile when he came in over the Labor Day weekend to help reset network servers.

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Campus Computing News

By **Dr. Philip Baczewski**, Associate Director of Academic Computing

Academic Mainframe Services to End After **SPRING** 2003

It was announced in the May 2002 issue of *Benchmarks Online* that Academic Mainframe services would end as of the beginning of the Summer I session of 2003. Any academic mainframe account holders who have not already moved their files from VM/CMS and MVS should review that article and begin making plans now.

It's important to note that this change primarily affects faculty and some graduate students who use VM/CMS to log on and run statistically analysis programs such as SAS and SPSS. The academic mainframe is a separate service from the administrative mainframe which runs SIMS, HRMIS, and supports the business functions of the university.

The Academic Mainframe is actually a logically separate partition of the University's IBM 9670 mainframe which is used to run registration and other administrative applications at UNT. While the administrative and academic mainframe operations share one large computer, they function like two separate computers and have no overlapping operations.

Historically, the mainframe was the only computer that people could use to teach programming or analyze data for research. When I joined Academic Computing Services in 1987, my job was to assist faculty who used the academic mainframe for their instruction or research. Microcomputers were available at that time, but they were limited in the functions they could perform (including a limitation of 640 Kilobytes of addressable random access memory). Any large-scale computing still required access to the Academic Mainframe.

Over the years, more and more academic computing activity has moved to personal computers. Some activity, however, still remains on the academic mainframe partition, principally, business computing instruction and some social science research data analysis. Business computing instruction classes use the mainframe to teach COBOL programming and mainframe database technology because some businesses still use mainframe technology. Some social sciences researchers still use the mainframe because they have accumulated years of data and programs and it has been easier to keep using the mainframe than to move to using a personal computer.

For years, mainframe computers offered the fastest processing capability and the most storage space available on any computing platform. Mainframe computers were economically advantageous because the processing power could be shared among a large number of users. Microcomputer technology,

however, has greatly outpaced what is available on our mainframe. Most people don't realize that a typical new desktop PC has a much faster processor, a much larger amount of RAM, and much more disk storage capacity than is available via a mainframe account. A CD-ROM holds one-half more data than one of our mainframe tape cartridges.

It is now necessary to retire mainframe technology in favor of more contemporary computing platforms. There are several reasons for doing so:

1. The University is moving away from mainframe technology for administrative computing needs and the mainframe will not be significantly upgraded and will eventually be totally shut down once administrative applications are moved to new processing platforms;
2. Academic Computing Services can provide a higher quality of support for microcomputer applications and those applications incorporate and use the latest computing technology;
3. The number of academic mainframe users has dwindled to the point that it is no longer economically advantageous to use mainframe technology for academic computing needs.

This change is inevitable and it is hoped that a definitive deadline for termination of academic mainframe services will promote an proactive approach to transferring any data and programs which need to be utilized on other platforms. If you have questions about how to start this process, feel free to contact me (baczewski@unt.edu). ACS staff will be available to assist in the process of moving files from mainframe accounts, but since staff time is limited, it is best to get those requests in as soon as possible.

Skip Navigation Links

Mindset 1946

By Duane Gustavus, UNIX Research Analyst

Recently I was made aware of the mindset list published by Beloit College in Wisconsin at the beginning of each fall term. The idea is to remind faculty that entering freshmen have a very different view of the world from their teachers by pointing out significant changes in context (for students born in 1984, apartheid has never been the official policy of South Africa). The idea intrigued me, so I decided to write a mindset for my own context in a similar vein, if less concise style. I was born and raised in the ranching communities of west Texas, the sweaty lower part of the muscular working back of the USA, just after World War II; a "baby boomer".

Ozona, Texas was the residence of my parents, Hap and Virginia Gustavus, at the time of my birth. The small town hospital was not considered optimal for the many potential complexities of a child birth, so the event took place in distant San Angelo. The story goes that my first name was taken from the hero of a Zane Grey novel my Dad read while awaiting my arrival, fathers being generally considered a nuisance in the delivery room at that time. My mother would later tell me I was born on the same day an atomic bomb test obliterated Bikini Atoll on the other side of the world. World War II was over, and we were the winners.

Summers were hot, but in those days the sun was considered a great source of vitamin D, and it was healthier for kids to play outside. To not sport a tan by the middle of June was to qualify for concerned queries from one of the neighborhood Moms picking pallor out of the otherwise unnoteworthy gang of small boys -- brown, barefoot, armed (however imaginatively) and hunting for something too distant down the food chain to enjoy the benefice of non-cruelty to animals.

Dad was the town dentist, having bought the practice and our house from the previous dentist, and walked the two blocks to work to his office in the basement of the hospital. The town square, site of the annual Halloween Carnival under towering pecan trees, boasted a life-sized statue of Davy Crockett. Davy wasn't really Texan, but we claimed him because he died at the Alamo, which every Texas school child knew was part of our glorious war for independence from Mexico. I remember my Dad carefully reading the inscription under the statue to me: "Be sure you're right, then go ahead." That seemed easy enough.

In Ozona I learned about birthday piñatas, hot tamales, broken arms and Saturday afternoon matinees, complete with cartoons and a serial cliff-hanger. We had a community Easter Egg Hunt where prizes retrieved from the rocky hillside, which townsmen had previously cleared of rattlesnakes, could be redeemed at the local bank for silver dollars. Across the square from the hospital was Mr. Williams' grocery store. I remember asking one day why the prices he was painting on his front windows were so big. I judged his answer perfectly reasonable: "So your Daddy can read them from way over yonder at the hospital." Strangers were uncommon in Ozona, and some city types who thought they would rob the small-town bank were dismayed to find themselves greeted on their exit by a dozen ranchers looking down the barrels of the deer rifles they all carried in their pickups.

My Dad was called up from the reserves during the Korean conflict. He sold his practice because the town had to have a dentist, and we moved to Alabama for a couple of years where he served while waiting to be the next dentist sent to war, a call that never came. Major Gustavus' services were required before the end of my older sister's school year, so there was a sad parting at the Ballinger train station late one night. My Mom tells me she was determined not to cry in front of us kids, but remembers I was inconsolable, so she let me in bed with her that night. Some weeks later Mom drove us far away to Alabama, on the third day arriving at our destination where we were greeted by men who were undeniably soldiers in uniform, the first I had ever seen outside a movie. The soldiers informed the Major that his family was at the front gate, and my Dad came zooming up on the most amazing conveyance I had ever imagined: a motor scooter! With my brother on the seat behind him and me standing between his legs where I could see out the front windshield, Dad whisked us away at incredible speed to our new home. I was thrilled.

Alabama was about as pretty a place as I had ever been, glowing green and alive with flowers and huge trees draped with gently waving strands of gray moss. Craig Air Force base, from the perspective of eight to ten year-old boys, was about the most exciting place in the known universe. Our "barracks" in the officer's quarters had a full-length screened front porch that looked across a road and down a grassy slope to a lake bordered by mimosa trees covered with pink blossoms and full of blue gill, frogs and even the occasional snake! Across the lake was the Flight Line where real jet airplanes would thunder to life and streak off into the sky every morning. After a few weeks, you didn't notice the noise.

The cloud which this silver lining wrapped was the seemingly unending series of shots for diseases I had ever heard of before. They hurt bad and made me sick anyway, so I wasn't convinced they were useful. We had to rest during the hot part of the day so we wouldn't catch polio. My cousin Tommy had caught it before I was born and was still in a wheel chair; he was so much fun, I was anxious for him to get well again, but Mom said he never would. When it was cool enough, we would go to the officer's pool, though you couldn't go in the water if you ate anything because you would get cramps and sink to the bottom. It wasn't a creek or stock tank, but like a huge bathtub, only you wore a swimming suit. At night we could watch television! I hadn't seen TV before, but quickly decided my favorite show was "Name That Tune". I had to go to bed when "Inner Sanctum" came on though, because Mom said I wouldn't be able to sleep all night if I watched
that. All I ever saw of it was an old door, creaking open ever so slowly; I was in my bed with the covers over my head before I ever saw what was behind that door. Mom was always right about this sort of thing, but nothing ever scared Daddy.

Life on the base was great; so many new things and new people from far away places I had never heard of. I had never seen black people before, but the black airmen at the non-com swimming pool would throw us up in the air and teach us how to do flips off the diving board. The officer's pool was a little boring compared to that. Most of the time the airmen wore spotless uniforms and would click their heels and salute when my Dad was wearing his. My brother and I practiced saluting a lot, but it was a little hard to click our heels in our high tops. We both decided to be airmen when we grew up. For now we had to settle for "crew cut" haircuts with butch wax to make the front stand up right.

Selma was the closest city and the usual choice for Sunday dinner at the Selma Dell. My first bicycle was bought from the local department store there, my big brother having provided the patient reassurance and maiden push. In the five-and-dime store I wondered aloud why the water fountains labeled colored didn't really have colored water, which sounded much more fun than the clear water that came out of the ones labeled white. I was instructed not to talk so much in public and to stay close to my parents until we got back to the base. I didn't spend much time in Selma, though my older sister went to the high school

there. It was pretty, but everything was old and the people talked funny. The war ended, and I learned we were going back home. This confused me because we had always been at home. They meant we were going back to Texas.

I spent most of my public school years in Abilene, Texas, a city by virtue of the fact that it was the most populous town for a hundred miles around. You could see the whole town from the top of the new highway overpass, and from the steeple of the First Baptist Church spot a break in the line of worn hills to the south. Buffalo Gap whence the legendary herds of yesteryear poured forth to blacken plains now pocked with oil well pumps and stitched together by barbed wire.

Dad built Mom her dream house there. It was pink, built out of the used brick from the old Drive-In theater which was torn down after the newer "twin screens" took all the business away. There were pink double front doors and a big bay window with a flower bed in front filled with pink rose bushes. We had a pink Oldsmobile, and I was dressed in a pink blazer for Easter Sunday. We still refer to it as Mom's Pink Period.

The new house was much bigger than our barracks and modern. That meant carpets on the floor, an automatic dish washer (pink of course) and something called central air-conditioning. My big brother and I shared bunk beds and a chest of drawers with a big wagon wheel on the front. We settled into our new bedroom by hanging our plastic model airplanes from the ceiling with mono-filament fishing line.

In Abilene the soil is red and the wind omnipresent, so the sky can be smeared in rust with the gritty taste of dirt, bruised by a thunderstorm reeking of ozone and tinted with the metallic green of hail, or burning blue when a norther bursts the containment of the jet stream and spills its arctic air mass across the shelter less plains. Range cows know to stand in the lee of a hill with their tails turned into the blast. Those that don't freeze; sometimes those that do.

Weather is the pulse of a ranching community; the topic of most import; the background for every tale. Spring rains run the creeks, fill the stock tanks, sprout new grass, spawn tornadoes and sometimes scour the ground with golf balls made of ice. Summer belongs to the sun, however, and the local radio station ran an annual contest won by the closest guess for the day and time the temperature first breaks 100 degrees; early June is obvious, but which day? By August, hot winds have sucked up all the green, and even the post oaks look dusty. "Will it ever rain again?" Crows feet crinkle in the leathery brown face; the old-timer grins through tobacco-stained teeth and spits out a long brown stream just like the grasshoppers when you squeeze them. "Always has before."

I was taught that just over the horizon of living memory, bold pioneers had wrestled with a nature red in tooth and claw to win this land as a refuge for their families, meaning of course me. Even then I don't think I believed Hoppy, Gene and Roy represented real pioneers; at least not the ones pointed out to me in great reverence. For one thing, their faces weren't cracked from the wind or burnt by the sun. Their foreheads weren't white from never going outside without a hat on. Their hands weren't callused and scarred, nor their boots. They talked too much and said too little.

Real cowboys were distinguished by their capacity for thriving on demanding physical labor under the most uncongenial conditions for pay that offered little hope of any other kind of life. Most told stories like my grandfather's. Having lost both parents to fevers and not wanting to be a burden to the various kinfolk who had taken him and his younger siblings in, Albert Volentine Livingston set out at fourteen to make his own way, and worked cows for one of the big spreads out west around Marfa. It was a life of considerable harshness and

deprivation, and therefore hardy camaraderie and vivid memories oft retold of flash floods and lullabies sung by the night riders while ball lightening danced on the horns of the steers. The life of a bygone era, never likely to return. The Old West.

In the Fifties, when jet planes were astonishing and spacemen were science fiction, nobody called it the New West, but society reached the consensus that movie cowboys should represent only the best facets of the pioneers. There were some bits that, however historical, would have to be left out because they really were not appropriate for kids. So Hollywood offered heroes of unswerving virtue; Lancelots holding outposts on the frontiers of civilization, defending people's rights against the unceasing villainy of an uncivilized world. Honesty and hard work were their own rewards. Everyone bathed regularly.

Quite unremarkably, my personal movie hero was John Wayne. The plot never turned on who would win, even in the rare cases where John went down in Pyrrhic glory. Just how bad were the bad guys was the question at issue, because that determined the extent of justifiable retribution, in other words the action. Petty larceny could expect to draw little more than a look of distaste, a deprecating epithet or at most a cuff on the head. Stealing livestock, however, evoked the full rigor of the law; gunplay was assured with especially gruesome wounds reserved for the arch villain.

By the time I was old enough to understand that for large parts of the world, mesquite trees were little more than unruly bushes, I began to wonder about an Old West populated by untarnished paladins. At any rate they had done their work well. The wilderness was settled, the prairie fenced, towns built, roads paved and the closest Indians confined to a reservation in New Mexico. There wasn't all that much left to be done now. My grandfather and his hounds had run the last wolves out of Runnels County before I was born. Were we fated to be decadent progeny, softened by the advantages our forefathers fought and died to obtain for us back when people knew how to work and what a dollar was worth?

By the Sixties I was in high school, movies were mostly in color and even some TVs! My sister's portable 45 rpm record player, having faithfully cranked out hours of Bill Haley and the Comets, had been replaced by a stereo in a large credenza that sat in the living room and played 33 rpm records. We kids got to choose one record each, but it was all grownup music I had never heard of. I chose Tchaikovsky's Fifth Symphony because I had heard my band director mention the name once. It was performed by Eugene Ormandy conducting the Philadelphia Philharmonic Orchestra, and I had never imagined music could be so majestic and achingly beautiful. That was when I decided to switch from saxophone to the French horn, now that my braces were off.

The AM radio was what played kid's music. Elvis was the heart-throb of most of the girls I knew, but their parents considered all that writhing around objectionable. I preferred folk music, which meant Joan Baez and Peter, Paul and Mary, but there was also these guys from England named the Beatles. Some of the older folks said they were just trash, but we had seen them on the Sullivan show, and my parents thought they were nice kids who really just needed a good haircut.

The summer after my sister's wedding, Dad decided it was time to give the boys some attention, so we took a vacation trip to Dallas. We rode there in a train and flew back in an airplane, my first time for each. It was only a prop plane, and the two hundred mile trip at night was over pretty quickly, but I spent the whole time glued to the window, entranced by the twinkling lights of the towns far below. We stayed at the Adolphus Hotel, which was nice, but the city was so strange, and there didn't seem to be much to do but shop. Mom could shop for hours without buying a thing, so Dad and I usually found a place to sit and watch the people go by.

Some of our neighbors were putting in underground bomb shelters about this time because Abilene had a Strategic Air Command base which, we were told, was known to be marked on the bombing maps in Russia. My Dad, still in the Air Force reserve, was assigned the duty of giving technical presentations to local groups concerning our options in case of a nuclear attack. While the base was several miles away, he was pretty sure our house was close enough to the "sure-kill zone" that a bomb shelter was just wishful thinking. We had all seen the Russian Premier bang his shoe on the table at the UN, and scream they would bury us. At school they showed us films about how to get under our desks in case of an attack, but of course I knew that wouldn't really help. I was confused to learn that Tchaikovsky was a Russian, and that they had been our allies against the Germans in World War II. Seems everybody had switched sides since then. We all doodled mushroom clouds with our new ballpoint pens.

People got all excited when the Russians put sputnik in space. It was just a little silver ball with antennae sticking out all over, but evidently it was up higher and flying faster even than jet planes. The President decided we should have a race with the Russians to see who could put a man in space first, and overnight jet planes gave way to rocket ships, and we all dreamed of being astronauts. Maybe we would finally get our chance to be pioneers too, and in a frontier even more untamed than the Old West.

My high school choir group had just finished a lunch concert for the local Rotarians when we received the news that the President of these United States had been assassinated in Dallas. The shock was palpable, and school let out for the rest of the day. We found TVs in our classrooms when we returned so we could watch the funeral procession, but most of us just put our heads down on our desks. We didn't know what to think. Events from far away kept intruding into our lives about things that were hard to understand. On TV you might see parts of Los Angeles or Detroit being burned by looters, or black people marching to demand their civil rights through streets lined with whites screaming hatred. Even the governor of Alabama being arrested by state troopers for blocking the way of a black boy who was just trying to go to college. I was going to college too; ready to go ahead, but it was getting a lot harder to be sure I was right.

For more information on terms or events discussed in this article (or maybe a trip down memory lane), follow these links:

- [Baby Boomer](#)

- [Bikini Atoll](#)

- [Ozona, Texas](#)

- [San Angelo](#)

- [Zane Grey](#)

- [Davy Crockett](#)

- [The Alamo](#)

- [Korean conflict](#)

- [Ballinger](#)

- [Craig Air Force base](#)

- ["Name That Tune"](#)

- ["Inner Sanctum"](#)

- [Butch wax](#)

- [Abilene, Texas](#)

- [Buffalo Gap](#)

- [Norther](#)

- [Hoppy](#), [Gene](#) and [Roy](#)

- [Marfa](#)

- [John Wayne](#)

- [Runnels County](#)

- [Bill Haley and the Comets](#)

- [Eugene Ormandy](#)

- [Elvis](#)

- [Joan Baez](#)

- [Peter, Paul and Mary](#)

- The [Beatles](#)

- The [Sullivan](#) show

- The [Adolphus Hotel](#)

- [They would bury us](#)

- [Tchaikovsky](#)

- [Sputnik](#)

- The President of these United States had been [assassinated](#)

- [Los Angeles](#) or [Detroit](#) being burned by looters

- The [governor](#) of Alabama

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New Computer Based Training Courses

By Dr. Elizabeth Hinkle-Turner, Student Computing Services Manager

Several new courses for Oracle9i and Linux have been added to the SmartForce/SkillSoft server. Unfortunately these courses are not available on CD-ROM as of yet; I am still waiting for the company to send me the software application I need to make the new CDs. I hope to have the CD option available in the next few weeks.

These new courses appear in the Table of Contents menu which loads up after a successful login to the server. SkillSoft appears to be upholding the fine SmartForce tradition of giving their courses names which in no way give one a clue as to what the courses are actually about! These courses appear in alphabetical order and the following list gives the new titles in the Linux and Oracle9i curriculum. (and yes, one still must use a machine running Microsoft Windows in order to do the Linux training…apparently the SkillSoft folks also believe in irony just like the SmartForce folks did!).

*New Linux Administration Course Titles:

- Editing and Printing
- Hardware
- Installation and Package Management
- Networking Fundamentals
- Networking Services
- Security
- Shell Scripting
- Updating the Kernel

*New Oracle9i Course Titles:

- Backup and Recovery Overview and Configuration
- Data Integrity
- Data Storage

- Globalization and Auditing
- Networking Overview
- Oracle Network Configuration
- Privileges and Roles
- Recovery Manager Maintenance
- Tables and Indexes
- Transporting and Loading Data
- User-Managed and RMAN Backup and Recovery
- Users and Profiles

On another note: several of you have asked about how to view the Table of Contents within one of the new-style "e-learning courses" - it is not as obvious as it was in the older courses. At the bottom of the screen in the new courses there is a small icon

that can be clicked upon to view the entire outline. A user can then click on any portion of the course he or she wishes to explore and will link immediately to that section. If you have any questions about the new curriculum or about how to navigate the newer "e-learning" courses, please feel free to email ehinkle@unt.edu

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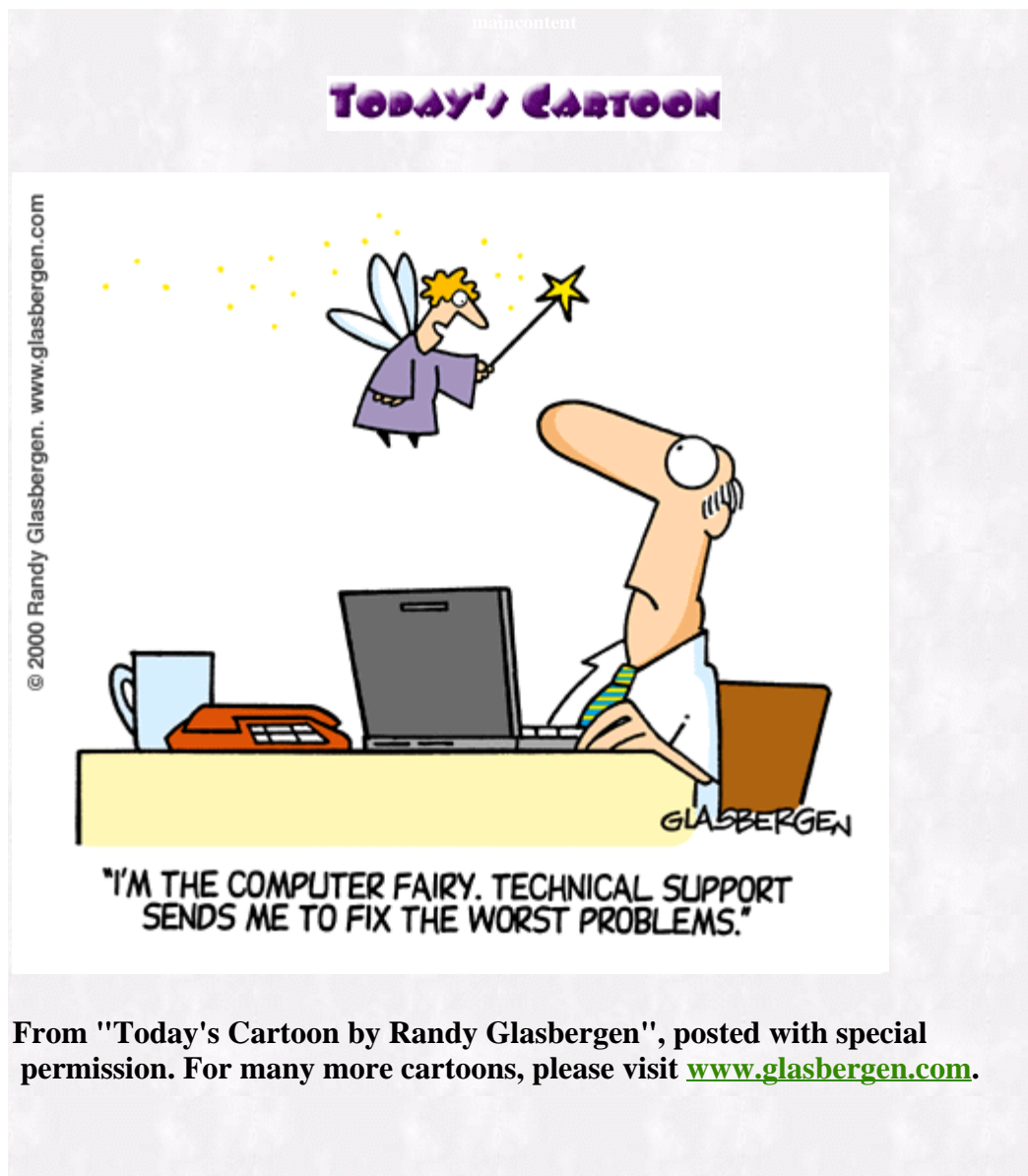
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