STAR PLOT

PURPOSE
Generates a star plot.

DESCRIPTION
A star plot is a graphical data analysis technique for examining the relative behavior of all variables in a multivariate data set. The star plot consists of a sequence of equi-angular spokes (radii). Each spoke represents a different variable in the multivariate data set. An individual star plot examines the behavior of all such variables but only for a specified subset of the data (e.g., looking at all the attributes of car performance, but only for a particular car, such as Chevrolet). The total length of a given spoke is uniformly set to unity for sake of reference. The "data length" of a given spoke is proportional to the magnitude of the variable for the subset relative to the maximum magnitude of the variable across all subsets. Thus we are looking at the ratio of the "local" value of the variable to the "global" maximum of the variable. An interconnecting line cutting across each spoke at the "data length" gives the star plot its unique appearance and name.

SYNTAX
STAR PLOT <y1> <y2> ... <yk>   <SUBSET/EXCEPT/FOR qualification>
where <y1> is the first response variable;

      <y2> is the second response variable;

      <yk> is the last response variable;

and where the <SUBSET/EXCEPT/FOR qualification> must be given. It is not optional for this command as it is for most other DATAPLOT commands.

EXAMPLES
STAR PLOT Y1 Y2 Y3 Y4 Y5 SUBSET AUTO 4
STAR PLOT Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 Y9 SUBSET STATE 25

NOTE 1
A few variations of the star plot exist, all of which DATAPLOT can easily handle by judicious use of the components in the LINES command. For example, suppose there are k variables in the star plot (and so k spokes), then

1. element 1 of LINES controls the appearance of the interconnecting line (this is usually SOLID);

2. the next k elements of LINES controls the appearance of the spokes from the origin out to the interconnecting line (some analysts prefer this to be SOLID, others prefer this to be DOTTED);

3. the following k elements of LINES controls the appearance of the spokes from the interconnecting line out to the uniform end of the spoke (some analysts prefer this to be SOLID, others prefer this to be DOTTED, others prefer this to be BLANKed out).

When using the LINES command in this context, note the convenient abbreviations SO for SOLID, DO for DOTTED, DA for DASHED, BL for BLANK, etc., as in LINES SO DO DO DO DO DO BL BL BL BL BL which for a 5-variable star plot, would set the interconnecting line to SOLID, the inner part of the spokes to DOTTED, and BLANK out the outer part of the spokes.

NOTE 2
The generation of multiple star plots per page is typical (one star plot for each subset of interest). This is easily done in DATAPLOT by using the STAR PLOT command in conjunction with the MULTIPLOT and LOOP commands. This is demonstrated in the program example below.

DEFAULT
None

SYNONYMS
None

RELATED COMMANDS
PROFILE PLOT	=	Generates a (multivariate) profile plot.
ANDREWS PLOT	=	Generates an Andrews plot.
SYMBOL PLOT	=	Generates a symbol plot.
LINES	=	Sets the type for plot lines.
MULTIPLOT	=	Allows multiple plots per page.
LOOP	=	Starts a loop (iteration).

      ^   =   Allows string and value substitution.

REFERENCE

"Graphical Methods for Data Analysis," Chambers, Cleveland, Kleiner, and Tukey, Wadsworth, 1983 (pp. 160-161).

APPLICATIONS

Multivariate Analysis

IMPLEMENTATION DATE

88/3

PROGRAM

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DIMENSION 100 COLUMNS
SKIP 25; COLUMN LIMITS 20 132
READ AUTO79.DAT Y1 TO Y9
LET N = SIZE Y1; LET CAR = SEQUENCE 1 1 N
COLUMN LIMITS 1 19; SKIP 0
LOOP FOR K = 1 1 25
    LET K1 = 25+K
    ROW LIMITS K1 K1
    READ STRING AUTO79.DAT S^K
END OF LOOP
.
MULTIPLOT 5 5; MULTIPLOT CORNER COORDINATES 0 0 100 100
FRAME CORNER COORDINATES 15 10 95 95
LEGEND 1 COORDINATES 55 5; LEGEND JUSTIFICATION CENTER; LEGEND SIZE 4
LOOP FOR K = 1 1 25
    LEGEND 1 ^S^K
    STAR PLOT Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8 Y9 SUBSET CAR K
END OF LOOP
END OF MULTIPLOT
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