



STONESOUP Proposers Day Conference

- Name of Organization
 - Telcordia Technologies
- Lead Investigator(s)
 - Dr. Hira Agrawal and Dr. Balakrishnan Dasarathy
- Current Team Members
 - Dr. Hira Agrawal
 - Dr. Jim Alberi
 - Dr. Cliff Behrens
 - Dr. Balakrishnan Dasarathy
 - Dr. Sanjai Narain



Research Areas of Interest

- **Software Quality Assurance**
 - Program testing, debugging, comprehension, and maintenance
 - Malicious code detection
 - Worm detection, containment, and eradication
 - Security vulnerability detection
- **Program, Virtualization, OS, and Network Analysis Techniques**
 - Static and dynamic program analysis
 - Control and data flow analysis
 - Security policy verification for virtualization, OS, and networks
- **Runtime Integrity Assurance**
 - Specification and SAT-solver-based techniques
 - Machine learning based techniques
 - Multi level approach—application, middleware, host, and network
 - Statistical techniques for ascertaining the fitness of training Data



Unique Qualifications & Capabilities

- History of strong government programs in information assurance, host and network security, and policy based security management, as well as current, ongoing support for such work
- Telcordia Software Visualization and Analysis Toolsuite
 - A commercial grade tool for:
 - Fault and feature localization
 - Visual, economic test creation
 - Incremental regression testing
- Successful technology transfer to internal and external clients such as IBM, NASA, and UNIPRESS
- Large, internal commercial software development organization that influences, validates, and benefits from and our research

```
File Tool Options Summary TestCases Update GoBack Help
0 1 2 3 4 5 6 7 8
do +p; while (isalpha(*p));
break;
case'o':
    month = 11;
    do +p; while (isalpha(*p));
    break;
default:
    return -1;
}

value = 0; ndigits = 0;
while (isdigit(*p)) {
    ++ndigits;
    value = value * 10 + *p++ - '0';
}

if (delim == '-') {
    if (value < 1 || value > 31 || ndigits > 2)
        return -1;
    day = value;
} else {
    if (ndigits == 2)
        year = 1900 + value;
    else if (ndigits == 4)
        year = value;
    else return -1;
}

return year * 10000 + month * 100 + day;
```

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Specific Capabilities We are Seeking

- Program diversification
- Binary code analysis
- Security for cyber-physical systems
- Formal statistical techniques for ascertaining fitness of the training data
- Laboratories for generating attacks and evaluating and experimenting with the proposed techniques



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