Chapter 7

The ISODE Little Services

The *ISODE Little Services* are examples of a few simple applications written using *The ISO Development Environment*. The programs described herein should work on all systems on which the software runs. All of these programs have UNIX manual entries.

The little services are based on the protocols of the same name found in the DoD TCP/IP protocol suite. There are several services:

utcTime: the universal time

genTime: the generalized time

timeOfDay: the current date and time since the UNIX epoch

users: the users logged in on the system

charGen: a character generation pattern

qotd: a quote of the data

finger: "fingers" users logged in

pwdGen: six pseudo-randomly generated (allegedly mnemonic) passwords

tellUser: sends a message to a remote user

ping: ping test for performance measurement

sink: sink test for performance measurement

echo: echo test for performance measurement

Only the *finger* service takes any arguments, the individuals on whom to report.

7.1 Implementation

If you have access to the source tree for this release, the directory *imisc/* contains the code for the responder and initiator.

7.1.1 The Initiator

The *imisc*(1c) program is the initiator which requests the little services. If invoked with arguments, it executes that exact operation and terminates. Otherwise, it enters interactive mode, prompting for each operation and argument until end-of-file is found.

In addition, the pseudo-operations `help` and `quit` do the obvious things.

7.1.2 The Responder

The *imiscd*(8c) program is the responder which implements the little services.

As shown in Figure 7.1 on the following page, the ROS-based definition is very simple.

```
IMISC DEFINITIONS ::=

BEGIN

-- operations

utcTime OPERATION
        RESULT      UTCResult
        ERRORS      { congested, unableToDetermineTime }
        ::=         0                                          10

timeOfDay OPERATION
        RESULT      TimeResult
        ERRORS      { congested, unableToDetermineTime }
        ::=         1

users OPERATION
        RESULT      IA5List
        ERRORS      { congested, unableToOpenFile }
        ::=         2                                          20

charGen OPERATION
        RESULT      IA5List
        ERRORS      { congested }
        ::=         3

qotd    OPERATION
        RESULT      IA5List
        ERRORS      { congested, unableToAccessFile, unableToPipe,
                      unableToFork, errorReading }             30
        ::=         4

finger  OPERATION
        ARGUMENT    IA5List
        RESULT      IA5List
        ERRORS      { congested, unableToAccessFile, unableToPipe,
                      unableToFork, errorReading }
        ::=         5
```

```
pwdGen OPERATION                                                    40
        RESULT          IA5List
        ERRORS          { congested }
        ::=             6

genTime OPERATION
        RESULT          GenResult
        ERRORS          { congested, unableToDetermineTime }
        ::=             7

tellUser OPERATION                                                  50
        ARGUMENT        IA5List
        RESULT          NULL
        ERRORS          { congested, unableToOpenFile, userNotLoggedIn }
        ::=             8

ping OPERATION
        ARGUMENT        Empty
        RESULT          Empty
        ERRORS          { congested }
        ::=             9                                           60

sink OPERATION
        ARGUMENT        Data
        RESULT          Empty
        ERRORS          { congested }
        ::=             10

echo OPERATION
        ARGUMENT        Data
        RESULT          Data                                        70
        ERRORS          { congested }
        ::=             11

-- errors

congested
        ERROR
```

```
        ::=             0

unableToDetermineTime                                          80
        ERROR
        ::=             1

unableToOpenFile
        ERROR
        PARAMETER IA5List
        ::=             2

unableToAccessFile
        ERROR                                                  90
        PARAMETER IA5List
        ::=             3

unableToPipe
        ERROR
        PARAMETER IA5List
        ::=             4

unableToFork
        ERROR                                                 100
        PARAMETER IA5List
        ::=             5

errorReading
        ERROR
        PARAMETER IA5List
        ::=             6

userNotLoggedIn
        ERROR                                                 110
        ::=             7

-- types

IA5List ::=
        SEQUENCE OF IA5String
```

```
UTCResult ::=
        UniversalTime

                                                                    120
TimeResult ::=
        INTEGER

GenResult ::=
        GeneralizedTime

END
```

Figure 7.1: ROS definition of ISODE Little Services

Bibliography

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