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1.0 File formats

This document describes the format for the files. There are three types of files. The parameters file, the configuration file, and the topology file.

1.1 Common file features

Each file is line based.
Blank lines are ignored.
A '#' character starts a comment which is terminated by the end of the line.
Lines consist of fields separated with ':' characters.
All files must appear on each host involved. Often the files appear on each host automatically in a networked file system. The files can also be copied manually to each host.

2.1 Parameters file format

The parameters file is used to specify global information. Some of the information may be overriden by the configuration file or by the user through the user interface, in which case the values from this file will be used as defaults. Each of the parameters in the example are supported. The 'param' keyword is the only one supported for the parameters file and appears as the first field. The second field is the parameter name. The third field is the value for the parameter.

2.2 Parameters file example

This section lists an example parameters file.

```
param:inport:4000             # specify control subsystem input tcp/ip port
param:outport:4001            # specify control subsystem output tcp/ip port
param:userport:4002           # the tcpip port for the user interface program
param:gaport:4003             # the port that ga subsystems will listen on.
param:baseseed:1.23456        # the random number seed for the first subpopulatio
param:seedoffset: 0.352523    # the amount to increment the initial seed
param:popsize:64              # the default population size
param:migration:1000          # the number of fitness evaluations before migration
param:problem:go              # problem to run
```

3.1 Configuration file format

The configuration file assigns control subsystems to populations, and assigns control subsystems to various hosts. One of the primary features of this file is that it maps the ideal topology to the real world resources available. Only one control subsystem is allowed on a particular host.

The host line specifies the system name as the second field and the control subsystem name as the third parameter.

A line with the control keyword as the first field indicates a subsystem to subpopulation relationship. The control subsystem specified in field two will control the subpopulation specified in field 3.

3.2 Configuration file example

This section lists a sample toplogy configuration file.

```
# the first control subsystem will be called alpha and
# will have three subpopulations to manage
# all these will run on workstation idaho
host:idaho:alpha
control:alpha:pop1
control:alpha:pop2
control:alpha:pop3

# the second control subsystem is on workstation kansas
host:kansas:beta
control:beta:pop4
control:beta:pop5
control:beta:pop6

# the third control subsystem is on workstation illinois
host:illinois:gamma
control:gamma:pop7
control:gamma:pop8
control:gamma:pop9
```

4.1 Topology configuration file format

The topology configuration file is used to specify the ideal topology. This is done by specifying the population adjacency matrix. For any population, migration is possible to any other specified population. Migration is one-way, so if two-way migration is to take place, then each population must specify the other as a candidate destination. The control subsystem will send a migratory individual to the destinations in a round robin fashion.

The lines of the topology configuration file have the following format: The first field is the name of a GA subsystem as defined in the configuration file. The second field contains the keyword ’migrate’. The third field is a comma separated list of GA destination GA subsystems for individuals from the population in field 1.

1.2 Topology configuraton file example

This section lists a sample toplogy configuration file.

```
# population adjacency matrix for first row
pop1:migrate:pop2,pop3,pop4,pop7
pop2:migrate:pop1,pop3
pop2:migrate:pop5,pop8
pop3:migrate:pop1,pop2,pop6,pop9

# the second control subsystem for second row
pop4:migrate:pop1,pop7,pop6,pop5
pop5:migrate:pop2,pop8,pop4,pop6
pop6:migrate:pop3,pop9,pop5,pop4

# the third control subsystem for third row
pop7:migrate:pop4,pop1,pop9,pop8
pop8:migrate:pop5,pop2,pop7,pop9
pop9:migrate:pop6,pop3,pop8,pop7
```