Geodise Compute Toolbox for Matlab Tutorial
Version 0.2

M. H. Eres, G. E. Pound, and S. J. Cox
{eres, gep, sjc}@soton.ac.uk
Southampton Regional e-Science Centre
School of Engineering Sciences
University of Southampton
Highfield, Southampton SO17 1BJ
United Kingdom

1. Follow the instructions from "Globus Basics Tutorial" to setup your certificates.
2. Login to utp-10
3. First you need to setup the Java CoG. Run Java CoG's setup program
   a. For /bin/bash

   ```
   # export COG_INSTALL_PATH=/usr/local/cog-1.1
   # $COG_INSTALL_PATH/bin/setup
   ```

   b. For /bin/csh and /bin/tcsh

   ```
   % setenv COG_INSTALL_PATH /usr/local/cog-1.1
   % $COG_INSTALL_PATH/bin/setup
   ```

   You need to follow the instructions of the configuration wizard. Here are some tips:

   a. Welcome screen: Simply press 'Next' button.
   b. User credentials screen: Choose the location of your `usercert.pem` and `userkey.pem` files by clicking the browse button (marked as '...').
   c. CA screen: Click 'Add', go to `/<Your home>/.globus/certificates` directory, and choose '`01621954.0`'.
   d. Proxy screen: Choose the location of your proxy file. Usually, under Linux it is named as '`/<Your home>/.globus/x509up_u<Your user ID>`', e. g. `/home/eres/.globus/x509up_u501`.
   e. When you are done, simply click 'Finish'.

This program creates a Java CoG properties file, `~/.globus/cog.properties`. It contains the following:

```
#Java CoG Kit Configuration File
#Tue Nov 25 11:00:47 GMT 2003
usercert=/home/eres/.globus/usercert.pem
userkey=/home/eres/.globus/userkey.pem
proxy=/home/eres/.globus/x509up_u501
cacert=/home/eres/.globus/certificates/01621954.0
```

4. Matlab on utp-10 has been configured, so you do not need to make any configuration changes.

5. Start Matlab.

```
% matlab &
```

6. If you type `gd_` and press the 'Tab' key twice at the Matlab prompt you see a list of all Geodise Computational Toolkit commands:

```
>> gd_{Press Tab twice}
gd_certinfo      gd_jobkill       gd_listjobs      gd_putfile
gd_createproxy   gd_jobpoll       gd_makedir       gd_rmdir
gd_destroyproxy  gd_jobstatus     gd_proxyinfo     gd_rmfile
gd_getfile       gd_jobsubmit     gd_proxyquery
```

7. Generate your proxy certificate

```
>> gd_createproxy
```

A new window pops up, and you need to enter your certificate passphrase and click 'Create' button. After the proxy has been generated, you click 'Cancel' and press 'Enter' at the Matlab prompt.

8. Query your proxy certificate

```
>> gd_proxyinfo
subject  : C=UK,O=eScience,OU=Southampton,L=SeSC,CN=hakki eres,CN=proxy
issuer   : C=UK,O=eScience,OU=Southampton,L=SeSC,CN=hakki eres
type     : full legacy globus proxy
strength : 512 bits
timeleft : 11 h, 58 min, 30 sec
ans =
     1

>> gd_proxyquery
ans =
     1
```

9. Query your certificate

```
>> gd_certinfo
subject     : C=UK,O=eScience,OU=Southampton,L=SeSC,CN=hakki eres
issuer      : C=UK,O=eScience,OU=Authority,CN=CA,E=ca-operator@grid-support.ac.uk
start date  : Wed Oct 01 16:09:44 BST 2003
end date    : Thu Sep 30 16:09:44 BST 2004
ans =
/C=UK/O=eScience/OU=Southampton/L=SeSC/CN=hakki eres
```

10. Create a project directory on `pacifica.iridis.soton.ac.uk`

```
>> gd_makedir('pacifica.iridis.soton.ac.uk','/home/eres/Project')
```

11. Do a simple Globus job run and check its status

```
>> handle = gd_jobsubmit('&(executable=/bin/sleep)(arguments=1m)',...
            'pacifica.iridis.soton.ac.uk')
handle =
https://pacifica.iridis.soton.ac.uk:3001/30221/1070293059/
>> gd_jobstatus(handle)
ans =
     2
>> gd_jobstatus(handle)
 ans =
      3
```

Note: `gd_jobstatus` returns '2' for running jobs, and '3' for completed jobs.

12. Do a more complex Globus job run and transfer the output file to your local filesystem

```
>> rsl = '&(executable=/bin/date)(arguments=-u)
(directory=/home/eres/Project)(stdout=date.out)';
>> handle = gd_jobsubmit(rsl, 'pacifica.iridis.soton.ac.uk')
handle =
https://pacifica.iridis.soton.ac.uk:3001/30940/1070293694/
>> gd_getfile('pacifica.iridis.soton.ac.uk',...
              '/home/eres/Project/date.out','date.out')
```

13. All of the `gd_` commands have help information. You need to use `help` command in Matlab

```
>> help gd_createproxy

 gd_createproxy Creates a Globus proxy certificate for the user's credentials
```

```
This command creates a Globus proxy certificate for the user's
credentials at the location specified by the cog.properties file.
The user is queried for the passphrase to their private key by a
pop-up window.

See also: gd_proxyinfo, dg_proxyquery, gd_certinfo, gd_destroyproxy
```

14. Related Web sites:

    a. Geodise Project
    `http://www.geodise.org/`

    b. Matlab
    `http://www.mathworks.com/`

    c. Globus Project
    `http://www.globus.org/`

    d. RSL information
    `http://www-fp.globus.org/gram/rsl_spec1.html`

    e. CoG Kits
    `http://www-unix.globus.org/cog/`

    f. UK Grid Support Centre
    `http://www.grid-support.ac.uk/`

    g. UK E-Science Certification Authority
    `http://www.grid-support.ac.uk/ca/ca.htm`