Bash shell

The shell is the program that prints a prompt in a terminal window, reads what you type in, executes commands. 

bash is one commonly used shell.

Each time a new shell is started (e.g. by opening a new terminal), the commands in $HOME/.bashrc are executed.

HOME is an environment variable that is set automatically for you.

```
[~] aspen% printenv HOME
/Users/rjl

[~] aspen% echo $HOME
/Users/rjl
```

Setting your prompt

```
[~] aspen% PS1='$'
$

$ PS1='[\W] \h%'
[~] aspen%
```

Note \W means last part of working directory, \h is machine name.

```
[~] aspen% cd hg/uwamath583s11
[uwamath583s11] aspen% pwd
/Users/rjl/hg/uwamath583s11
[uwamath583s11] aspen%
```
Environment variables

$ export CLASSHG=$HOME/hg/uwamath583s11
$ cd
$ pwd
/Users/rjl
$ cd $CLASSHG
$ pwd
/Users/rjl/hg/uwamath583s11

Exporting an environment variable makes it available to certain jobs you start from the shell.

To list all your environment variables:

$ printenv
TERM=xterm-color
SHELL=/bin/bash
CDPATH=.:~
USER=rjl
CLASSHG=/Users/rjl/hg/uwamath583s11
HOME=/Users/rjl
FC=gfortran
MATLABPATH=.:/Users/rjl/matlab
PYTHONPATH=.:/Users/rjl/python
etc...

hg demo — creating a new project

$ cd
$ mkdir newproject
$ cd newproject
/Users/rjl/newproject
$ hg init
$ ls
$ ls -a  # show hidden files
./  ../ .hg/

$ cat > file1.txt
First line
Second line
^D
$

Notes:

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$ hg add file1.txt
adding file1.txt

$ hg status
A file1.txt

$ hg commit -m "First commit to this repository"
file1.txt
committed changeset 0:eb3222dd0b4f

$ hg status # show only files that have changed
$

$ hg status -A # show status of all files
C file1.txt

$ vi file1.txt # change the file

$ cat file1.txt # print out the file
First line
New Second line
Added Third line

$ hg status
M file1.txt

$ hg diff
diff -r eb3222dd0b4f file1.txt
--- a/file1.txt Thu Mar 31 20:48:55 2011 -0700
+++ b/file1.txt Thu Mar 31 20:53:00 2011 -0700
@@ -1,2 +1,3 @@
  First line
-Second line
+New Second line
+Added Third line
hg demo

$ hg commit file1.txt
   -m "changed 2nd line, added 3rd"
file1.txt
committed changeset 1:ff67e66ed5b0

$ hg log file1.txt
changeset: 1:ff67e66ed5b0
tag:   tip
user: Randy LeVeque <rjl@uw.edu>
date: Thu Mar 31 20:54:57 2011 -0700
files:  file1.txt
description:
changed 2nd line, added 3rd

changeset: 0:eb3222dd0b4f
user: Randy LeVeque <rjl@uw.edu>
date: Thu Mar 31 20:48:55 2011 -0700
files:  file1.txt
description:
First commit to this repository

hg demo

$ pwd
/Users/rjl/newproject
$ cd

$ hg clone newproject newbranch
updating to branch default
resolving manifests
getting file1.txt
1 files updated, 0 files merged, 0 files removed, 0 files unresolved
$ cd newbranch
/Users/rjl/newbranch

$ ls
file1.txt

hg demo

$ pwd
/Users/rjl/newproject
$ vi file1.txt
$ cat file1.txt
First line
New Second line
Changed Third line

$ hg commit -m "changed a file in the branch"
file1.txt
committed changeset 2:ddde02c30d03

$ cd ../newproject

Notes:
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| $ cd -  
/Users/rjl/newbranch |

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| $ hg push  
pushing to /Users/rjl/newproject  
searching for changes  
1 changesets found  
adding changesets  
adding manifests  
adding file changes  
added 1 changesets with 1 changes to 1 files  
$ cd -  
/Users/rjl/newproject  
$ hg update  
resolving manifests  
getting file1.txt  
1 files updated, 0 files merged, 0 files removed, 0 file |

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| $ vi file1.txt  
$ cat file1.txt  
First line  
Changed Second line and got rid of third  
$ hg status  
M file1.txt  
$ hg revert file1.txt  
saving current version of file1.txt as file1.txt.orig  
reverting file1.txt  
$ cat file1.txt  
First line  
New Second line  
Changed Third line |

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</table>
| $ hg status  
? file1.txt.orig  
$ hg revert -r0 file1.txt  
reverting file1.txt  
$ cat file1.txt  
First line  
Second line  
$ hg status  
M file1.txt  
? file1.txt.orig  
$ hg commit -m "After reverting to revision 0"  
file1.txt  
committed changeset 3:5de4f8a71915 |

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hg demo

To remove a directory and all subdirectories:

```bash
$ cd
$ rm -rf newbranch
$ ls newbranch
ls: newbranch: No such file or directory
```

-`-rf` means recursively, force (without asking)

hg demo

```bash
$ cd newproject
/Users/rjl/newproject
$ du -h . # show disk usage
4.0K ./.hg/store/data
20K ./.hg/store
52K ./.hg
60K .
```

Could eliminate all history by...

```bash
$ rm -rf .hg
```

Warning: It's gone, unless you have a clone somewhere.

hg diff command

Now try:

```bash
$ cd $CLASSHG/codes/fortran
$ hg log demo1.f90 | more
```

Lists all the hg changesets in which file `demo1.f90` was changed.

Note changeset 10:54971910d50a has the log message “Fixed a bug: forgot to change n to m in declaration”.  
(Number 10: is clone-dependent!)

To see the changes from previous version:

```bash
$ hg diff -r9 -r10 demo1.f90 | more
```

To see if any changes were made since then:

```bash
$ hg diff -r10 tip demo1.f90 | more
```

`tip` means most recent committed version.
**hg diff command**

To see if any changes were made in working copy compared to tip:

$ hg diff demol.f90 | more

$ hg diff | more  # shows diffs in all files

To check status of files in working version:

$ hg status   # for entire clone
$ hg status .  # for this directory
$ hg status -amr  # added, modified, removed
$ hg status *.f90  # only for .f90 files
$ hg help status # for more options

**Using xxdiff in hg**

Modify the file .hg/hgrc, to add:

```
[extensions]
hgext.extdiff =
```

(Put in $HOME/.hgrc to apply in all directories.)

Then you can do:

$ hg extdiff -p xxdiff -r9 -r10 demol.f90

Might want to add to .bashrc:

```
alias hgd = "hg extdiff -p xxdiff"
```

Then you can do:

$ hgd -r9 -r10 demol.f90