Diff, Patch, Grep

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Diff on Two Files

```
diff makefile makefile.circle
62c62
< ROMS_APPLICATION ?= UPWELLING
---
> ROMS_APPLICATION ?= CIRCLE_POLAR
67c67
< MY_HEADER_DIR ?=
---
> MY_HEADER_DIR ?= /Users/kate/ROMS/arango/Apps/Circle
77c77
< MY_ANALYTICAL_DIR ?=
---
> MY_ANALYTICAL_DIR ?=/Users/kate/ROMS/arango/Apps/Circle
```

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```
diff -u makefile makefile.circle
--- makefile      2010-12-31 13:40:52.000000000 -0900
+++ makefile.circle       2011-01-06 05:06:09.000000000 -0900
@@ -59,12 +59,12 @@
 #  the .h extension. For example, the upwelling application includes the
 #  "upwelling.h" header file.

-ROMS_APPLICATION ?= UPWELLING
+ROMS_APPLICATION ?= CIRCLE_POLAR

 #  If application header files is not located in "ROMS/Include",
 #  provide an alternate directory FULL PATH.

-MY_HEADER_DIR ?=
+MY_HEADER_DIR ?= /Users/kate/ROMS/arango/Apps/Circle

 #  If your application requires analytical expressions and they are
 #  not located in "ROMS/Functionals", provide an alternate directory.
@@ -74,7 +74,7 @@
```

Graphical diff

- **gvimdiff makefile makefile.circle**
  - – Optional part of vim
- **meld**
- **An emacs mode (ediff)**

Git diff

- **Git can show you the differences between versions and between branches**

- **Git sees master branch and Master directory and sometimes needs to be told which:**

```
% git diff master

fatal: ambiguous argument 'master': both revision
and filename

Use '--' to separate filenames from revisions

% git diff master --
```

Patch

- **Patch was written by Larry Wall as the inverse of diff**
- **If you have the diffs between two files (or versions) you can use them to get from one to the other:**

```
patch makefile < mf.diffs
```

More patch

- ## The –p# option is for directory trees

- ## Patch –p0 (zero) uses full path on filenames

- ## Git adds a/b as versions, so strip off one level of directory with patch –p1 (one)

Grep

- ## Useful for searching:

  ```
  % grep UPWELLING */*/*
  ```

- ## In ROMS, most things are in */*/*, matching say

  ```
  ROMS/Include/upwelling.h
  ```

- ## Biology files are one level below that:

  ```
  grep NEMURO */*/*/*
  ```