Diff and Patch
Announcements

- **Thursday**
  - Midterm exam / No Tutorials
- **Marks for HW2 on their way**
- **Next week**
  - Kernel compilation
  - Please, bring your laptop
  - Do you have VM installed?
  - What kernel you're using? (Please, send me kernel version)
  - `uname -a`
Linux Kernel

- Version 2.6.1
  - 204 MB (uncompressed)
  - 15065 Files
  - 5919671 Lines

- Version 2.6.2
  - 208 MB (uncompressed)
  - 15150 Files
  - 6,008,957 Lines

- What about your modifications?
  - Would you send us the whole kernel for marking?
Agenda

- Comparing files/creating patches
- Applying patches
- Practice
Comparing files

- `diff ORIGINAL_FILE NEW_FILE`
- `diff -prauN ORIGDIR/ NEWDIR/`
  - `p`: shows C functions
  - `r`: recursive
  - `a`: text (ascii) files
  - `u`: unified format
  - `N`: new files (consider non-existents as empty files)
Unified Format

--- a.c 2012-02-28 01:31:10.927107120 -0700
+++ b.c 2012-02-28 01:30:40.499107898 -0700
@@ -1,2 +1,2 @@
-#include <stdlib.h>
+#include <stdio.h>

{  
-    return 2 * 0x15;
+    return 0x2 * 0x15;
}
Applying patches

- patch < foo.patch
- patch -pn < bar.patch
  - ignore some differences in path
    - e.g.: /home/grads/dmncastr/src/cpsc457/file.c vs. /home/daniel/cpsc457/file.c => patch -p5
- Removing a patch
  - patch -R < foobar.patch
Practice (preliminaries)

- Create a temporary directory
- Copy and uncompress the following file into this directory:
  - `/home/dmncastr/457/457shell.tar.gz`
- You should have two subdirectories:
  - `457shell-20120124`
  - `457shell-20120126`
- Copy `457shell-20120124` to `457shell-original`
- Copy `457shell-20120126` to `457shell-new`
Practice (diff)

• Compare directories:
  - 457shell-20120124 and 457shell-20120126

• Save the differences to a file: 457shell.patch
  - Use different formats (default, -u, -c) and compare how each format represents differences between files.

• Compare each format (e.g., size, how they represent differences)
Practice (patch)

- Change directory to 457shell-original
  - Apply patch to current directory
- Back to the temporary directory, compare 457shell-original to 457shell-new
  - Are there any differences?
- Recover the files in 457shell-original by reverting the patch
- Access and patch the directory 457shell-new.
  - What happens?
Summary

- **Diff**
  - Find differences between files
  - Generate patch

- **Patch**
  - Apply patches

- **Please, bring your laptop next week**