

Computer Engineering 176: Lab Assignment 5

Assignment

SED is an extremely powerful and flexible tool. Most of its power and flexibility comes from its programmability. In fact, SED is so programmable that it can easily be used to implement many common UNIX utilities such as `basename`, `dirname`, `head`, and even `grep`. In this assignment you will write shell scripts that use SED to implement any two of these four utilities. Your scripts must work correctly on the HP-UX platforms used in the lab.

Your scripts do not have to mimic all of the capabilities of the standard UNIX commands. However, they should produce the same output as the basic commands when used without any options on simple inputs. The following examples with programming guidelines will illustrate the basic capabilities required:

dirname: Little sh programming required; difficult SED script

```
dirname /tmp
dirname /var/tmp
dirname /
dirname fred.c
dirname ../fred.c
```

basename: Some sh programming required; moderately difficult SED script

```
basename /tmp
basename /var/tmp
basename /
basename fred.c
basename ../filename name
```

head: Moderately difficult sh programming (case and shift) required; simple SED script

```
head file
head -5 file
head
head -5
```

grep: Difficult sh programming required (case and shift); simple SED script

```
grep fred file
grep fred
grep -v fred file
grep -i fred file
```

Grading

Your scripts will be graded based on the following criteria:

- correctness
- comments
- robustness

When you are finished, demonstrate their use to the Teaching Assistant, provide hardcopies of each script, answer the questions provided, and give your answers to the Teaching Assistant.

Computer Engineering 176: Assignment 5

Name: _____

1. SED is so powerful and flexible that the GNU `autoconf` program uses it almost exclusively in the configuration scripts it creates instead of using utilities such as `dirname`, `basename`, `head`, and `tr`. Yet, neither the power nor the flexibility is the real reason why SED is used. Why do you think `autoconf` would choose to use only SED?

2. Explain both in detail (line by line) and in general what the following shell script does (␣ indicates a space):

```
#!/bin/sh

sed␣-n␣'
s/\\t/␣/g
p
s/$/,/
:␣test
s/\\([␣]*\\)␣\\(.*\\)/\\2\\t\\1/p
t␣test
'␣"$@"␣|␣sed␣'
s/\\t/␣/g
'␣|␣sort
```