Lecture 6 – Shell programming cont.

Learning Objectives:

2. **Become familiar with the use of Bash, shell programming, and console editors**

   2.7 Understand the use of environment-setting shell files.

   2.8 Understand the syntax of flow control elements.

   2.9 Learn the variable naming conventions of Bash.

   2.10 Produce shell scripts.

4. **Produce code that is reproducible and produces results that are replicable.**

   4.5 Use scripts to make command-line functions reproducible.

Announcement: Pick an *R* package to present during class 9/23 & 9/28!

Flow Control in Bash: conditionals

If/then/else statement:

```
#!/bin/bash

#Prints 'Hello world'
echo Hello world

File=${1:?No parameter provided}
if [ $File = "example.txt" ]; then
    echo "Here is the text…"
    cat $File
else
    echo "You must use example.txt"
fi
```

These spaces are important!!

statement to evaluate

what to do if true

what to do if false

Run the script:

```
$ sh helloworld.sh example.txt
```

Add additional conditions with else if:

```
elif [ $File = "hesam.txt" ]; then
    echo "This is a good file."
    cat $File
```

put between if and else

Flow Control in Bash: conditionals

In-line conditionals:

`statement 1 && statement 2`	runs statement 2 if statement 1 **succeeds**
`statement 1 || statement 2`	runs statement 2 if statement 1 **fails**

Flow Control in Bash: conditionals

Group work: Make a short script named “noises.sh”. The input should be from the command line as a positional parameter and should take animal names. Make the output follow these rules:

Horses go “neigh”, ducks go “quack”, dogs go “woof”, cats go “meow”

What if I give the argument “Fox”?

https://www.youtube.com/watch?v=jofNR_WkoCE

Flow Control in Bash: for loops

For loops (sequence of numbers):

```
#!/bin/bash

#Prints ‘Hello world’
echo Hello world

File=${1:?No parameter provided}
for i in `seq 1 $File`; do
    echo “This is number: ${i}.”
done
```

Run the script:

```
$ sh helloworld.sh 10
```

For loops (list of items):

```
#!/bin/bash

#Prints ‘Hello world’
echo Hello world

File=${1:?No parameter provided}
for i in $File; do
    cat ${i}
done
```

Run the script:

```
$ sh helloworld.sh \
  “test.txt h_file2.txt”
```

Flow Control in Bash: while loops

Run while a condition is true:

```
#!/bin/bash

#Prints ‘Hello world’
echo Hello world

File=${1:?No parameter provided}
cat $File | while read -r LINE;
do
   cat $LINE
done
```

Run the script:

```
$ ls *.txt > filelist
$ sh helloworld.sh filelist
```

Concept check: Rewrite the first for-loop example using a while loop instead.

More Information

Bash Programming Tutorial:
https://tldp.org/HOWTO/Bash-Prog-Intro-HOWTO.html