# UNIX and Shell Programming

Assignment 11: Control Flow II

17 September 2019

## 1 Exercise 1

1. Write a script to dispplay all the users of the system in the format:

```
USER #1 = root
USER #2 = bin
USER #3 = daemon
...
USER #33 = bozo
```

## 2 Exercise 2

1. The shell searches for commands in a list of directories specified by PATH. Implement a command that reports the full pathname of a program that will be executed. One implementation is to loop over the directories named in PATH, searching each for an executable file of the given name.
2. Add a test to check if a directory exists before testing for the existence of the program file.
3. Test if the program file exists and is executable.
4. An empty item in `PATH` such as `:` at the start or at the end or a substring `::` of `PATH` means the current directory is also in the search path. Modify your script to handle it.
5. Add a check if the script is executed with one argument. Otherwise, print a useful message and exit with appropriate code. Use `case` construct.

## 3 Exercise 3

1. Write a script `pick`. When called

```
pick arguments
```

presents the arguments one at a time and waits after each for a response. The output of pick is those arguments selected by `y` (for "yes") responses; any other response causes the argument to be discarded.

2. We want to `zip` a set of files. Use `pick` to select files in a directory that need to be zipped in command substitution.

3. File `safe` has a list of filenames. Use `pick` to select files from `safe` and `zip` them.

## 4 Exercise 4

1. Develop a script `bundle` which will collect the given files into a single file.

   ```
   bundle f1 f2 f3 > archive
   ```

   collects files `f1, f2, f3` into a single file `archive` such that

   ```
   bash archive
   ```

   unbundle the individual files `f1, f2, f3` from `archive` and saves them. `archive` should be shell script that contains the contents of the member files and the necessary command to extract the contents.

2. Note: `here` document is useful to combine a command invocation and the data for the command.

3. Modify `bundle` so it includes with each file the information garnered from `ls -`, particularly permissions and date of last change.

4. How would you use `bundle` to send all the files in a directory and its subdirectories?

## 5 Exercise 5

Develop an interactive script to maintain a database of employees. The databse is in the format

```
employee_name rate_per_hour hours_worked
```

as illustrated below

```
Beth  4.00 0
Dan   3.75 0
Kathy 4.00 10
Mark  5.00 20
Mary  5.50 22
Susie 4.25 18
```

The script should allow users to

1. List the records
2. Search for an employee
3. Modify the `rate_per_hour` or `hours_worked` of an employee
4. Delete an employee
5. Quit