SE 3F03 - Assignment 2

3 February 2015

Due date: February 12th

Problem 1 (14 points)

1. (2 points) Write a short shell script called `"cx"` that will execute the command `"chmod +x"` on every file given on its command line.

2. (2 points) Write a short shell script called `"nf"` to display the number of files in the current directory.

3. (5 points) Read about regular expressions. Write a shell script called `"valid"` that determines if its argument is a valid shell variable name, e.g.

```
$ valid foobar
yes
$ valid 12foobar
no
```

4. (5 points) Write a shell script called `"prargs"` that prints out a numbered list of its arguments in the following format:

```
$ prargs a 'b c'
0: "prargs"
1: "a"
2: "b c"
```

Remarks. Loops are inefficient and complicated. Use pipes whenever possible. Comment your scripts so one can understand how they work by reading them. Submit a hard copy of your scripts and your scripts to SVN. Submit them under directory

`https://websvn.mcmaster.ca/se3f03/username/A2/bash`

Ensure that they are executable files; if not, you will lose marks.

Problem 2 (10 points) Download the Linux code at
`http://www.drpaulcarter.com/pcasm/index.php`

Try to shorten the given `Makefile` as much as you can, without losing its functionality. Describe clearly how you have shortened this file. Submit a hard copy of your version.

Problem 3 (20 points) Write an assembly file `reverse.asm` that contains the functions `readstring`, `strlen`, and `reverse`. This file also reserves in the `.bss` segment 100 bytes; e.g. using

```
stringlabel resb 100
```

1. (5 points) `readstring` reads a null-terminated string and stores it at the address contained in the register `eax`. This function returns the address of the beginning of the string in `eax`.

2. (5 points) `strlen` takes the address of a null-terminated string in `eax` and returns its length in `eax`.

3. (5 points) `reverse` reads a string from the standard input and stores it at `stringlabel`, uses `strlen`, and reverses the string. Reversing must happen in place. That is, you should not use extra memory, and the reversed string must begin at `stringlabel`.

4. (5 points) Write a makefile such that when `make` is typed the executable `reverse` is created. Ensure that this executable is created on `mills.mcmaster.ca`

Comment your code. In addition to explaining lines of code, explain also what a block of instructions does. Submit your code to SVN under

`https://websvn.mcmaster.ca/se3f03/username/A2/assembly`

and also submit a hard copy.