Midterm I

Graded

Student

Jae Hong Lee

Total Points

31 / 34 pts

Question 1

Q1 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is second choice

Question 2

Q2 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is false

Question 3

Q3 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is false

Question 4

Q4 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is all of the above

Question 5

Q5 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is false

Question 6

Q6 **0** / 1 pt

+ 1 pt Correct

✔ **+ 0 pts** Incorrect: correct answer is none of the above

Question 7

Q7 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is fourth choice

Question 8

Q8 **0** / 1 pt

+ 1 pt Correct

✔ **+ 0 pts** Incorrect: correct answer is all of the above

Question 9

Q9 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is first choice

Question 10

Q10 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is true

Question 11

Q11 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is false

Question 12

Q12 **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is third choice

Question 13

Q13 **5** / 5 pts

13.1 **Q13a** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 3924

13.2 **Q13b** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is IACA

13.3 **Q13c** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 6AA0

13.4 **Q13d** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 4132

13.5 **Q13e** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 4BFF

Question 14

Q14 **5** / 5 pts

14.1 **Q14a** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 0101101001001011

14.2 **Q14b** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 0110011100110000

14.3 **Q14c** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 0100110001011110

14.4 **Q14d** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 0100100000111110

14.5 **Q14e** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 0111011001011110

Question 15

Q15 **5** / 6 pts

15.1 **Q15a** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is /home/jovyan

15.2 **Q15b** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is fourth choice

15.3 **Q15c** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is /home/jovyan/foobar

15.4 **Q15d** **0** / 1 pt

+ 1 pt Correct

✔ **+ 0 pts** Incorrect: correct answer is second choice

15.5 **Q15e** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is goodbye

15.6 **Q15f** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is false

Question 16

Q16 **6** / 6 pts

16.1 **Q16a** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is no

16.2 **Q16b** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 3

16.3 **Q16c** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 1

16.4 **Q16d** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 1

16.5 **Q16e** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is 0

16.6 **Q16f** **1** / 1 pt

✔ **+ 1 pt** Correct

+ 0 pts Incorrect: correct answer is false

CS210 Computer Systems, Fall-2023
Midterm-I A

Instructions

This is a closed book and closed notes exam. NO ELECTRONIC DEVICES. For all multiple choice questions fill in ONE and ONLY ONE circle. Fill the circle in completely.

If you use check marks or other symbols, the auto-grader may not be able to process your answer and will assign you a grade of zero and there will be no regrading.

All pages must have your name and id written on it. Unidentified pages will not be graded

This exam has 16 questions, for a total of 34 points.

First Name: Jue Hong Last Name: Lee

BU ID: U27565203

First Name: Jae Hong Last Name: Lee BLID: U27565203

PART A

1. (1 point) An ASCII teriminal or terminal emulator:
   - ⊙ processes shell command lines X
   - ● sends and receives text data O
   - ○ ensures all data is printable X
   - ○ ensures we are in the correct working directory X
   - ○ all of the above X
   - ○ none of the above

2. (1 point) The UNIX Shell provides system calls that other processes can request.
   - ○ True
   - ● False

3. (1 point) An new OS kernel is started for each application we start.
   - ○ True
   - ● False

4. (1 point) Bash is a UNIX shell program that
   - ○ lets a user run other programs
   - ○ goes through several steps to process a command line
   - ○ uses Kernel system calls to start processes
   - ○ allows one to run commands that are stored in a file
   - ● all of the above
   - ○ none of the above

5. (1 point) On UNIX if the **standard output** of a process is going to a terminal/tty, then **standard error** must go there too.
   - ○ True
   - ● False

6. (1 point) We can indicate to bash that the **standard output** for a command should be redirect to a file using the following syntax.
   - ● `| file`
   - ○ `< file`
   - ○ `3> file` X
   - ○ `2> file` X
   - ○ all of the above
   - ○ none of the above

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7. (1 point) Assume the following is sent to bash from a terminal

```
date > mydate1 2> mydate2; sleep 2; date | wc -l > out; sleep 1; date
```

This:

- ○ is not a valid bash command line X
- ○ runs the date command twice X
- ○ sleeps for three minutes X
- ● sends one line of output to the terminal, assuming no errors occur
- ○ none of the above

8. (1 point) Which of the following command lines create one or more pipe lines?

- ○ `cat stdoutwaldos || grep -i waldo stdoutwaldos | sort`
- ○ `x=$(./puzzle1 42 >2 err | wc -l)`
- ● `scnt=$(./puzzle1 42 2> err | grep -i waldo | wc -l)` O
- ○ all of the above
- ○ none of the above X

if cat stdoutwaldo works then left pipe would go through

9. (1 point) Git is

- ● a version control system
- ○ the only way to publish code
- ○ a required tool for working on content
- ○ all of the above
- ○ none of the above

10. (1 point) In general main memory cannot be relied on to hold its values when there is a loss of electricity to the system.

- ● True
- ○ False

11. (1 point) ASCII is used to encode the contents of a binary executable file.

- ○ True
- ● False

12. (1 point) gdb

- ○ is a built-in command of bash X
- ○ is a powerful text editor X
- ● allows stepping through the execution of a process O
- ○ allows us to read register values of a process but not write them X
- ○ all of the above
- ○ none of the above

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PART B

13. Convert the following binary values to hexadecimal. **Please ensure all answers are 4 hex digits in length. Add leading zeros as needed. No prefix needed (e.g. ABCD).**

(a) (1 point) 0011/1001/0010/0100

3924

(b) (1 point) 0001/1010/1100/1010

1ACA

(c) (1 point) 0110/1010/1010/0000

6AA0

(d) (1 point) 0100/0001/0011/0010

4132

(e) (1 point) 0100/1011/1111/1111

4BFF

0000 0 1000 8
0001 1 1001 9
0010 2 1010 A
0011 3 1011 B
0100 4 1100 C
0101 5 1101 D
0110 6 1110 E
0111 7 1111 F

14. Convert the following hexadecimal values to binary. **Please ensure all answers are 16 bits in length. Add leading zeros as needed. No prefix needed (e.g. 0101010101010101).**

(a) (1 point) 5A4B

0101 1010 0100 1011

(b) (1 point) 6730

0110 0111 0011 0000

(c) (1 point) 4C5E

0100 1100 0101 1110

(d) (1 point) 483E

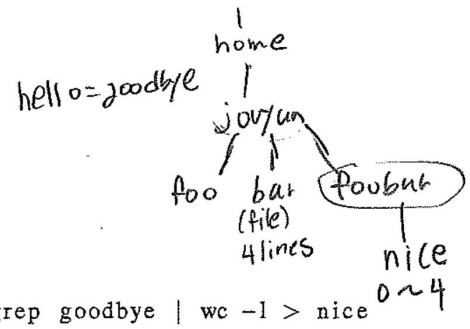
0100 1000 0011 1110

(e) (1 point) 765E

0111 0110 0101 1110

First Name: Jae Hong Last Name: Lee BU ID: U27565203

```
1  $ pwd
2  /home/jovyan
3  $ ls
4  foo bar foobar
5  $ echo $hello
6  goodbye
7  $ cat bar | wc -l
8  4
9  $ cd foobar
10 $ cat /home/jovyan/bar | grep goodbye | wc -l > nice
```



15. Given the above bash commands and output answer the following questions/fill in the blanks.

(a) (1 point) On line 3 the current working directory is:

/home/jovyan

(b) (1 point) The file `/home/jovyan/foobar/nice`, after all commands have run, contains?

- ○ nothing – the file is empty X
- ○ a single line with the string: 0 X
- ○ a single line with the string: "goodbye"
- ◉ a single line with the a string which is a number between 0 and 4 inclusively

(c) (1 point) On line 10 the current working directory is:

/home/jovyan/foobar

(d) (1 point) After all the commands are done, how many items are in directory `/home/jovyan/foobar`?

- ○ nothing – this is not a directory
- ○ at least one file
- ○ two files and a directory
- ◉ not possible to know with the given information

(e) (1 point) What would be the output of the following command

X

```
if [[ $hello = 1 ]]; then echo no; else echo $hello; fi
```

if run after line 10?

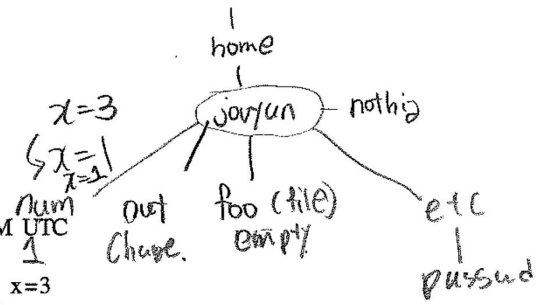
goodbye

(f) (1 point) We know that '/home/jovyan/foo' is NOT a directory.

- ○ True
- ◉ False

First Name: Jae Hong Last Name: Lee BU ID: U27565203

```
1  $ pwd
2  /home/jovyan
3  $ ls
4  $ echo $x
5
6  $ date 2> foo
7  Wed 7 Sep 2040 11:57:54 AM UTC
8  $ cat foo
9  $ ls /etc/passwd > out && x=3
10 $ cat /etc/passwd | grep jovyan
11 jovyan:x:1000960000:0::/home/jovyan:/bin/bash
12 $ [[ x != 3 ]] &&  x=1
13 $ cat /etc/passwd | grep -i jovyan | wc -l > ./num
14 $ cat < ./num
15 1
16 $ [[ $(cat num) = $(cat < ./num) ]] && x=$(cat /etc/passwd | grep jovyan |
       wc -l 2> out)
17 $ ls
18 out foo num
```



16. Given the above bash commands and output answer the following questions/fill in the blanks.

(a) (1 point) At line 8 does the file `/home/jovyan/out` exist?

- ○ yes
- ● no

(b) (1 point) At line 10 what is the value of the variable x?

3

(c) (1 point) At line 13 what is the value of the variable x?

1

(d) (1 point) At line 15 what is the value of the variable x?

1

(e) (1 point) After all the commands have run how many bytes of data are in `/home/jovyan/foo`?

- ● 0
- ○ 1
- ○ 4
- ○ not possible to know with the given information

(f) (1 point) After all the commands have run, the command `cd ./PuzzleDir` will succeed

- ○ true
- ● false