

CITS2003/CITS4407 In Semester Test 2022

Q1. Given the file name pattern `a?b[0-9]*` which of the following file names match that pattern **(2 marks each)**:

<code>abb3</code>	Match	Does Not Match
<code>ab3</code>	Match	Does Not Match
<code>abb3.txt</code>	Match	Does Not Match
<code>abc3</code>	Match	Does Not Match

Q2. I executed the command: `file_count = $(ls $1 | wc -l)` but got back the unexpected response: `file_count: not found`

Write the fixed command **(2 marks)**

Q3. At the top of a Bash script, you will typically find:

```
#!/usr/bin/env bash
```

You might alternatively see

```
#!/bin/bash
```

Whichever of these you choose, why is that command placed there? **(2 marks)**

Q4. This question has several parts, but together they are the text of a Bash script, which is called `extract_lines`. As input `extract_lines` is given two integers, L1 and L2 (representing line numbers) and the name of a text file. It then reports on standard output the lines from L1 to L2, inclusive, e.g. `extract_lines 100 200 Alice_in_Wonderland.txt`.

The `extract_lines` script begins with:

```
#!/usr/bin/env bash
```

You then need to start with some anti-bugging tests.

Q4.1. Write a shell command which tests whether the command entered by the user has 3 arguments **(3 marks)**

Q4.2. Write a Shell command which tests whether the third argument is an ordinary file with length greater than zero. **(3 marks)**

Q4.3. Describe one further antibugging test that should be done. **(2 marks)**

Q4.4. Now that processing the call to `extract_lines` has survived the anti-bugging, write the shell commands which implement reporting the range of lines. There are lots of ways of doing this; one way is to loop over the lines of the file using a `for` loop that looks like:

```
IFS=""      # Set the end of word marker to get whole text lines
"
for line in $(< file)
do

done
```

What are the missing Shell commands? (Hint: you will likely need a line counter) **(10 marks)**

Q4.5. Another way of doing the Q4.4 computation (after antibugging) can make use of built-in Unix programs plus, perhaps, one or two other shell commands, but not Shell loops. What is the code for that that? **(6 marks)**

Q5. I want to create the shell script `nth`, which given an integer `N` and a file of numbers, returns the `N`th largest number, so `nth 1 F` should return the largest value in `F`, `nth 2 F` the second largest value, etc. Don't worry if there are more than one equally large values, just return one of them. If you wish you can refer to the `extract_lines` program that you defined in Q4. **(4 marks)**