Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
300 level 2nd Semester Examination –Dec.2018/Jan. 2019
CST 365-3 Systems Level Programming

Uva Wellassa University

Instructions to candidates
Duration: Three (03) hours
Number of Questions: Five (05)
Mark Allocation: 100
Answer all questions.

1.

a.
i. What is shell? Name the commonly used shells on different UNIX/Linux variants.
ii. Name five (05) variation of Unix.
iii. Write the structure of a Unix command.
iv. Briefly describe the absolute and relative paths.

b.
i. Write five (05) Unix commands used to manipulate the file system.
ii. Create a file and insert a text into that file using one line of Unix command.
iii. Which shell variable holds the shell script file name?
iv. How can we get the execution status of the last executed command?

c.
i. How can we execute a shell script?
ii. Which command can be used to perform arithmetical computations?
iii. Which command can be used to stop the current executing process in the background?
iv. How are devices represented in UNIX/Linux?

d.
i. Which operator can be used to throw a process into background?
ii. Which command can be used to know the terminal type?
iii. Which programming language is used in the design of UNIX OS?
iv. Which Unix command can be used to display the process ID?

e.
i. How to open a file in Unix?
ii. Which Unix command can be used to delete a shell variable?
iii. What is the full use of *grep* command?
iv. What is the program or command used to connect to remote Unix computer?

(20 mark)

(48)

2.

a. Explain the following Unix command. (5 mark)
$chmod ugo+rx,go+w sort.c

b. Suppose that the security permission of a file needed to be assigned as follows.

User is given full permission of the file.
Group is given only view the content and run the file.
The others are given only view the content

Assign the above security permissions using the octal mode. (5 mark)

c. Default security permission is assigned as follows;
umask 022

What are the actual permissions of a file and a directory? (5 mark)

d. Explain linking a file Unix. What is the Unix command for linking a file? (5 mark)

3.

a. Write the syntax of five (05) control structures of Unix shell scripting language. (5 mark)

b. Write a shell script to carry out the following tasks; (5 mark)

i. Display the greeting message according to the time of the script executes.
ii. Display the date.
iii. Display the current directory.
iv. Find all the files, which are lager than 10K in the home directory.
v. List the content of the home directory.

c. Explain a *here* document using an example. (5 mark)

d. Write a Unix shell script to pass four integers as command line arguments. Then find the largest integer and display the result. (5 mark)

4.

a. What does the following program do? (5 mark)

```
#!/bin/csh
   set word = "anything"
   while ($word != "")
     echo -n "Enter a word to check (Return to exit): "
     set word = $<
     if ($word != "")
      grep $word /usr/share/dict/words
   end
```

b. Write a function in Unix Shell Scripting as follows; (6 mark)

The function accepts three (03) parameters the basic salary, number of overtime (OT) hours and the overtime hour rate. Calculate the total salary using the following equation and display the result. The basic salary and the number of OT hours are integers and OT rate is a floating point value.

Total Salary = Basic Salary + Number of OT hours * OT rate

c. Explain the scope of a variable in a function using an example. (3 mark)

d. Write a Unix shell script to read an integer from the keyboard and then calculate its square root. Before calculating the square root the necessary conditions has to be checked. (6 mark)

5.

a. Assume that a text file contains 100 integers. Write a Unix Shell Script to read the integers from that text file and determine whether the value is odd or even. (5 mark)

b. Write a function using Unix Shell script to display the position of the word *person* in the text *"The name of that person is Bandara".*
Hint: Convert the text into an array. (5 mark)

c. The following text is given;
"Sri Lanka is a beautiful island"

Write a program using Unix shell scripting language to implement the following task.

Create a substring from the 15th position of the above string. The length of the substring is 9. Read another sting from the keyboard. Compare the substring with the string input from the keyboard. If both are same display the message "keyword is found" else display the message "not found". (5 mark)

d. Write the command in Unix Shell Scripting to replace the word 'Sugath' of the following text with any name and display the new text. (5 mark)
Text= "My name is Sugath"