IT 202: UNIX PROGRAMMING AND PRACTICE

Class: III SEM B.TECH (IT)   Time: 1.5 Hrs.
Date: 14-9-2017   Marks: 40

Register No. | 1 | 6 | I T | 2 | 0 | 2 |

NOTE: 1. Answer All Questions to the point only.
2. Justification is required for each assumption made.

1.a) List and Explain the editing and navigation commands (keys) required to convert the following text in vi editor. Consider as initial cursor is placed upon # character in a text

```
#!/bash/bin
printf "Unix is an OS"
printf "Unix Features:"
echo "Unix is a multiprogramming
and multiuser system"
exit(1);}
```

to this:

/++++++++++/

```
#!/bin/bash
echo "Unix is an OS"
echo " Unix Features:"
echo "Unix is a multiprogramming and multiuser system"
exit(exit_status);}
```

(5M)

1.b) Write a shell script program the creation of a menu using select loop, the menu has to display given details such as:
i) Machine Characteristics (version of Operating system) ii) A current Terminal Characteristics
iii) List the attributes of particular file (i.e a.txt) iv) Time in the format hh:mm:ss v) Exit to command prompt

(5M)

2.a) Consider a file i.e employee.lst

```
$ cat employee.lst
2233| anil aggarwal| g.m| sales| 12/12/50| 6000
9876| jai sharma| director| production| 10/03/50| 7000
5678| v.k.agarwal| d.g.m| marketing| 19/04/43| 6000
2365| barun sengupta| director| personal| 11/05/47| 7800
5423| n.k.gupta| chairman| admin| 30/08/56| 5400
```

Write a output for given command below using above details:
i) head -n 4 employee.lst| tee shortlist| cut -c 7-10, 12-13, 23-30, 38- shortlist   (2M)

ii) cut -d \| -f3,6 employee.lst | sort | uniq -c (2M)

iii) u [?] '-012' < employee.lst | head -n 3 (2M)

iv) sort -t "|" -u -r -k 4.1 employee.lst (2M)

v) sort -t "|" -r -k 4,4 -k 2,2 employee.lst (2M)

3.a) Consider a file i.e personaldetails

$ cat personaldetails

Male y

arvind .6

arvin k@a.com 13

5 ~ 2345890 7

n ~ Male.

2 ~ vinay.

~ vina_v@v.com

1 ~ 2456789

Write a output for given command below using above details:

i) paste -s -d "\n\t" personaldetails | tee p.txt (1M)

ii) tail -5 personaldetails | tee a.txt (1M)

iii) head -n 3 personaldetails > file.txt | wc -c file.txt (1M)

iv) lpr -#5 -m personaldetails (1M)

3.b) Create a directory dir1. How do you assign all permissions to the owner, only read permission to group and remove all permissions from others using (i) absolute Assignment and (ii) Relative Assignment? Do you need to make any assumptions about dir1 default permission? (4M)

4.a) Consider a two files i.e file1 and file2

$ cat file1 $ cat file2

1 a.k.shukla   1 n.k.gupta

2 jai sharma   2 praveen agrawal

3 n.k.gupta   3 shyam saksena

4 shyam saksena   4 v.k.agrawal

5 sudhir agarwal

6 v.k.agrawal

i) Write a output for given command: $ comm -3 file[21] (2M)

ii) Convert file 2 to file 1 using a command and explain the output in detail (5M)

4.b) Write a shell script program, we enter a name and check whether it is a file(either readable or executable), directory or something else using test command? (5M)

ALL THE BEST

1. a) Name the three modes of vi and explain how you can switch from one mode to another with a neat diagram? (5M)

b) Write a shell script program to convert decimal number to binary number and binary number to decimal number? (5M)

2. a) List the editing and navigation commands required to convert the following text in vi editor:

```
#include<errno.h>
#include<sdtio.h>
void quit(char *message)
{printf("Error encountered\n")
printf("error number %d, ", errno)
printf("quitting program\n")
exit(1)}
```

to this:

```
/**********/
#include<stdio.h>
#include<errno.h>
void quit (char *msg, int exit_status){
/*printf("Error encountered\n")*/
fprintf(stderr, "Error number %d, quitting program\n", errno);
exit(exit_status);
}
```
(6M)

b) What needs to be done before you can run a shell script from the command line prompt? (4M)

3. a) Write the shell script program to print following pattern: (8M)

```
___1___
__232__
_34543_
4567654
```

b) For a given shell script using vi editor below: i) change the given date into current (2M)
date ii) replace printf with echo in all occurrences in a script using edit-repeat
commands

```
#!/bin/bash
DDAY="15-07-2015"
printf "D-Day is on SDDAY"
printf "Today is $(date)"
printf "Linux version : $(uname -r)"
```

4 a) Consider a file given below:

$cat testfile
This line occurs only once.
This line occurs twice.
This line occurs twice.
This line occurs three times.
This line occurs three times.
This line occurs three times.

Write the command for the following :
i)To prefix each line of input file with its number of occurrences and save it in file
(f1)
ii)Sort the f1 in descending order (6M)
iii)Remove duplicate lines from sorted file

b) Explain what the following commands do: (4M)
(i)   : ., 10w foo
(ii)   : 2, 4w foo
In which mode are the commands executed and what difference does it make if foo
exists?

1. a) Explain the UNIX architecture with suitable example. (3)

   b) You have a tab-separated file, which contains Name, Address and Phone Number, list down all Phone Number without there name and Addresses? (1)

   c) How do you find whether your system is 32 bit or 64 bit ? (1) *uname -a*
   -p.

2. a) What are inodes in UNIX system? Differentiate between hard link and symbolic link. (3)

   b) How do you find which process is using a particular file? (1) *ls -ok*

   c) How can you remove the 7th line from a file and the changes should be reflected in the original file? (1)

3. a) What is "chmod" command? What do you understand by this line "r-- -w- --x? (2)

   b) How will you run a process in background? How will you bring that into foreground and how will you kill that process? (2)

   c) Write a command to print the lines that has the word "july" in all the files in a directory and also suppress the filename in the output. (1)

4. a) What are the different file types available in UNIX? Write the command to create all the files (4)

   b) Remove all tags from a html with a bash script using the sed command (1)
   's/<[^>]>//g*

_____All the best_____

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DEPARTMENT OF INFORMATION TECHNOLOGY, NITK SURATHKAL

III Semester B. Tech (IT) END SEM EXAMINATION, November 2013

IT 202: UNIX PROGRAMMING AND PRACTICE

DATE: 18/11/2013

B

date command.

1. Use an appropriate Command to print the following
   "Today is 21-Nov-13. It is 325 day of the year. The Time now is 01:04".   2

2. Write a command to replace the character ',' with '/' in a file using only "sed" command?   2

3. You have an html file. You have to strip all html tags from it and display the rest of the contents using only "sed" command.
   ```
   <html>
   <body>
   <b>
           Hi, Welcome to the portal.
    </b>
    </body>
    </html>
   ```
           Output: Hi, Welcome to the portal.   2

4. Write a shell program to find the sum of square of individual digits of a number.   5

5. Write a script to create a right angled triangle using symbol "*".   6

   Ex.:   *****   5, 1

          ****.   5, 2

          ***   5, 3

          **,   5, 4

          *

6. Write a script to check whether a given number is an Armstrong number or not.

   Example: 370=3^3+7^3+0^3=370.   8

$3^3 + 7^3 + 0^3$

$27 + 343 + 0$

370

$\Rightarrow$ 7×7 6
        49
      × 7

Class: III SEM B.TECH (IT)

Date: 27 /11/2014

Time: 3 Hrs.

Marks: 100

NOTE: 1. Answer all questions

Register No. | 1 | 3 | 1 | T | 1 | 1 | 8 |

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1. a) Describe how UNIX is more secured than other operating systems.   5
   b) "Various terminals can be connected to a single Unix based host machine". What does "terminal" mean in this statement? Discuss different types of terminals? ?   5 – 5

2. a) What is the difference between scheduling processes using batch command and using at command?   3
   b) Write a command for each of the following   7
      1. To print first 3 columns & first 2 rows of file f1.
      2. To print line number of all lines which begin with 'T' in file f1?
      3. To delete all lines begins with 'T' in file f1.
      4. To display all lines except the last line of file f1.
      5. To extract first word of each line of file f1.
      6. To select line(s) having exactly 10 alphabets of file f1.
      7. To replace multiple spaces with a space in file f1.

3. a) What does the following commands do?   4
      1. $grep "^[^]" file1
      2. If x has value 10. What are the values of xx and xx?
      3. What does $$$*$ pattern match?
      4. a=b
         b=c=d=c
         echo $$b
         echo $$$d
   b) What are shell metacharacters? Give at least two use of the single quote (') notation?
   c) Explain command mv * ../bin? Interpret grep f1 f2 f3?   2
   d) Define daemon process? Is init a daemon process? How will you kill a deamon? 2   2

4. a) Explain in brief: i-node block. What does it contain?   2
   b) Give two functions of dot (.) in vi editor?   2
   c) When do wild cards loose their meaning?   2
   d) Which file attributes change when you copy a file from another user account? 2
   e) What is difference between a built-in command and utility?   2

5. a) Define 'sort' command. What are its general applications? Can the input from sort command come from a file? If yes then show the same with an example.   5

b) Which of these files or directories you can/cannot create? Explain with reasons   2

    i) .   ii) .. iii) ... iv) ....

c) Give any 3 operations we can use uniquely with directories.   3

6. a) Explain in brief a)ping b)telnet   5

 b) What is a hidden file in Unix? How do you remove only the hidden files from your current directory?   5

7. a) Do as directed   6

   1. Frame a command to locate all the .doc and .txt files in the system.

   2. To append blank line after each line in a file except the last line.

   3. Frame a command to run the shell script hello.sh every 30 minutes every Tuesday, Thursday, Saturday between 9am to 5pm.

 b) What does the following command do?   4

   1. expr "red hat linux" : '.*'

   2. nohup cat * | sort –d &

   3. grep 'shell' file1 > f1 && cat f1 || echo "pattern not found"

   4. (cd mydir1;pwd) #assume that working directory is home/itdept and mydir1

          #exists in this directory

8. a) Write a shell script to print all prime numbers between 1 to n(n is input taken from the user)   8

 b) Name the two special files in Unix? Which command is used to create a tape archive as well as to compress the files?   2

9. Write a shell script to create a right angled triangle using symbol "*"   10

     Ex.: *
       **
       ***
       ****

10. Consider following text file having fields given below separated by ':'   10

     emp.txt(empid:empname:deptname:basicsalary).

Write a shell script to accept the department name and display the given salary report for the department:

    Ex: Dept name:xxxxxxxxxxx

      empid emp name net salary
      99 xxxxxxxx 99999
      99 xxxxxxxx 99999
      99 xxxxxxxx 99999

      Total department salary : 99999

Net salary=basicsalary + DA (40%of basic salary) + HRA (10% of basic salary)

@@@@@@@@@@@@@@@@@ALL THE BEST@@@@@@@@@@@@@@@@@

Class : III Semester IT

Time: 3 Hours

Date : 27-11-2015

Maximum Marks: 40

Register No | 1 | 4 | I | T | 2 | 3 | 0 |

Answer all the questions and answer to the point.

Write steps, programs or diagrams wherever necessary.

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1 a) Explain the following commands 4M
   umask 022
   grep -n '[dD]on\'t' tasks
   pr –t emp.txt
   touch –m 0303 10 30 vtu.txt

b) Explain the list of insert commands in VI editor? Explain the commands to move the cursor along a line in VI editor 3M

c) Write a program in awk *shell* to store the totals of the basic pay, DA, HRA, and gross pay of the sales and marketing people. 3M

2 a) What is shell script? Explain the following statements with syntax and examples? 4M

   1. if
   2. case
   3. while

b) Explain what these wild card patterns match 4M

   i). [A-Z]????*

   ii). *[0-9]*

   iii). *[!0-9]

   iv). *.[!s][!h].

c) How would you write a shell script that prints all the arguments passed to it in reverse order? 2M

3 a) What are special characters that can be used in shell script 4M

b) Write a command that will do the following:

Look for all files in the current and subsequent directories with an extension c,v

Strip the,v from the result (you can use sed command)

Use the result and use a grep command to search for all occurrences of the word ORANGE in the files. 3M

c) How would you count every occurrence of the term "potato" in all the files appearing under the current directory, and its subdirectories, recursively? 3M

4 a) What is a process? Explain the mechanism of process creation? 3M

b) What is the output of the below code? 3M

```
void exit_handler1();

void exit_handler2();

int main() {

int pid;

atexit(exit_handler1);

atexit(exit_handler2);

pid = fork();

if(pid == 0) {

    exit(0);

} else {

sleep(2);

exit(0);

}return 0;

}
```

c) Explain different file tests, character string test and arithmetic test that can be performed in shell scripting 4M

Class: I11 SEM B.TECH (IT)
Date: 23/11/2016

diff file1 file 2

Time: 3hour
Marks: 100

Register No. | i | 5 | 1 | T | 2 | 4 | 1 |

NOTE: Answer all the Questions to the Point only.

1. Consider two files i.e file1 and file2
   $ cat file1

   File 1   *Ab 2.*

   I need to buy apples.
   I need to run the laundry.
   I need to wash the dog.
   I need to get the car detailed.
   I need to go to the store.

   $ cat file2

   I need to buy apples.
   I need to wash the car.
   I need to get the dog detailed.
   When I get home, I'll wash the dog.

   a) Explain, how to convert file1 to file2 and vice versa in detail?   (6M)
   b) How to locate lines longer than 100 and smaller than 170 characters using commands
      i) sed ii) grep   (4M)

2. a) How do you use tar and zip command to add three files, fool.html, lib.ps and ns1.tcl, to an
      archive, compress and then view the archive? How will you reverse the entire process and
      extract the files in their uncompressed form?   (8M)

   b) Consider the file i.e file.txt
      $ cat file.txt
      12345

      678910

      abcde

   (i) Write a command to delete empty lines in a file.txt?   (2M)

3. Consider a sample database i.e emp.lst given below

   $ cat emp.lst
   2233|a.k. shukla |g.m. |sales |12/12/52 |6700
   9876|jai sharma |director | production|12/03/50|7000
   5678|sumit chakrobarty |d.g.m | marketing |19/04/43| 6400
   2365|barun sengupta |director |personnel |11/05/47| 7800
   5423|j.k. gupta |chairman| admin |30/08/56|5400

Write a output for given commands:
(i) cut -d "|" -f 1,4 emp.lst   (ii) sort -t "|" -k 2r emp.lst
(iii) sort -t "|" -k 6.1,6.2 emp.lst   (iv) tr "|" '\012' < emp.lst | head -n 4
(v) tr -d '|/' < emp.lst | tail -n 2

(10M)

4. a) Convert the decimal number 192 to hexadecimal using (a) bc and (b) printf   (2M)

   b) Examine the output of two commands on a BSD-based system. Explain whether kumar can
     (i) edit (ii) delete (iii) change permissions (iv) change ownership of file (foo)

     $ who am i ; ls -l foo
     kumar
     - r - - rw - - - - 1 lenovo kumar 78 Nov 12 16:57 foo   (4M)

   c) For the string 'abcdefghijkl', using 'expr' command, find the following:
     (i) Length of a given string   ~expr length $
     (ii) Locate the position of the character 'h'
     (iii) Extract the substring 'jkl'   (3M)

5. a) Explain shell's interpretive cycle.   (6M)
   b) Differentiate Daemon and Zombie process. Is init a daemon process?   (5M)

6. Explain wild card patterns match for following.   (8M)
   a) [!a-zA-Z]*
   b) Data[0-1][0-9]
   c) *.[!l][!o][!g]
   d) a???[ly]

7. Explain the following commands: (6M)
   a) $ who | tee /dev/tty | wc -l
   b) $ ls /root 2>testfile
   c) $ sed '2,5p' emp.lst

                        $* all argument
                        $# no of args

8. a) How would you write a shell that prints all the arguments passed to it in reverse order? Also
     check that the argument count is greater than 2.   (5M)
   b) Create a shell script, use a pipeline and command substitution to set the length of a line in file
     to a variable.   a=`wc -l $`   (5M)

9. a) Explain advantages of pipes over redirecting files.   (5M)
   b) Illustrate and explain the use of kill command with signal SIGTERM and SIGKILL   (6M)
                                            15   9

10. a) What is the difference between compiler and interpreter?   (5M)
   b) What are the basic operations supported by a debugger?   (5M)
   c) Explain the mechanism of process creation. Write a simple program to create a child process
     and check whether child process is created. Also check the running process is parent or child.
                                                          (5M)

****ALL THE BEST****