DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER I [IT/CE/MECH]
SUBJECT: (CT-115) LINUX OPERATING SYSTEM AND PROGRAMMING

Examination : First Sessional
Date : 23/08/2013
Time : 3:45 to 5:00
Seat No. : _____
Day : Friday
Max. Marks : 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 **Answer the Following :** [12]

(A) What this command line will do **cd ~** ? [1]
(B) If the file 'maths.txt' contains this data 50/3 then **bc maths.txt** gives what? [1]
(C) Which are the fields of **'who'** command? [1]
(D) What is the difference between an argument and an option? [1]
(E) What will be the output for following command lines: [1]
(1) echo " Path is $PATH " [2]
(2) echo ' Path is $PATH '
(F) What you mean by an Open Source System? Give some example for open source software. [2]
(G) Define the terms 'Internal command' and 'External command'? [2]
(H) What is the use of '>' symbol? What the following command line indicates: [2]
man –k date > date

Q.2 **Answer the following.** [12]

(A) Explain cat command and all its functionality. [4]
(B) Discuss the File system of UNIX operating system. [4]
(C) (1) What GNU stands for? [4]
(2) Explain the working of **ls** command in detail with example.

OR

(C) (1) What is the difference between i-node and i-number?
(2) Explain the working of **wc** command in detail with example. [4]

Q.3 **Answer the following:** [12]

(A) Explain the UNIX architecture. [4]
(B) Give output for following command lines: [3]
(1) ls –ai
(2) more -3 data.txt (**Note:** data.txt contains data)
(3) printf "Hel\blo"
(C) Consider the data of following two files "Data1.txt" and "Data2.txt". [5]

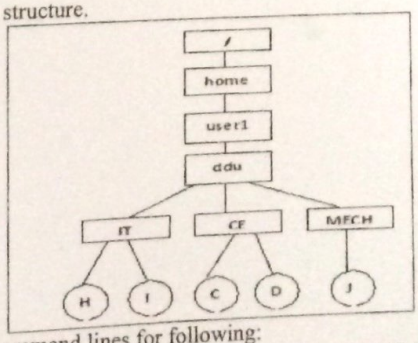
Data1.txt	**Data2.txt**
A D Patel Institute	Birla Vishvakarma Mahavidhyalaya
Birla Vishvakarma Mahavidhyalaya Dharmsinh	Dharmsinh Desai University
Desai University	M S University
G H Patel	Parul Institute of Technology
L J Institute	Sigma Institute
Parul Institute of Technology	

Give output for following command lines based on this data:
(1) cmp –c Data1.txt Data2.txt
(2) comm. -2 Data1.txt Data2.txt
(3) diff Data1.txt Data2.txt
(4) diff Data2.txt Data1.txt

OR

Q.3 **Answer the following:** [12]

(A) Explain the features of UNIX operating system. [4]
(B) Give output for following command lines: [3]
(1) cal -3 5 2010
(2) less +5 data.txt (**Note:**data.txt contains data)
(3) date +"%D %t %T"
(C) Consider the following tree structure. [5]



Based on this, provide the command lines for following:
(1) Assume that your working directory is home. Copy the file H to CE.(use absolute way)
(2) Assume that your working directory is IT. Remove the file C and D. (use relative way)
(3) You are at ddu, copy the structure MECH and save as MECH2.
(4) If your current directory is IT then what the [illegible] will provide as output.
mv H I File

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Examination	: Second Sessional	Seat No.	: _____
Date	: 25/09/2013	Day	: Wednesday
Time	: 9:30 to 10:45	Max. Marks	: 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Answer the Following : [12]

(A) Write command(s) to perform the following tasks: [3]

1) To list out attributes of directory along with inode number.
2) To change the default directory permission of any directory to **rwxr-----**
3) Assume that file a.txt contains 20 lines. Using VI editor commands, copy from current line up to line 17 in file b.txt

(B) State and explain output(s) of following: [5]

1) x=5;PS1="[\! \h $PWD $PS1 $x]"
2) After above command if unset x is executed then what will be the change in prompt? Why?
3) lp a[0-4][0-9]*.???
4) (i) ls . (ii) ls ..
5) (i) ls .* (ii) ls . *

(C) Differentiate the outputs of following commands: [4]

1) ls -lia | tee Device v/s ls -lia>Device
2) rm *.[!cpp] v/s rm *.[!c][!p][!p]

Q.2 Answer the following.

(A) Describe file descriptors 0,1 and 2 in detail [12]
(B) Describe hard link and soft link in detail. [3]
(C) Describe following commands [3]
1)chgrp 2)touch 3)tee 4)paste [4]
(D) Differentiate the local and environment variables. [2]

OR

Q.2 Answer the following.

(A) Explain different ways to change file with example. [12]
(B) Discuss the modes of Vi editor in detail. [3]
[3]

point with appropriate message. If user does not provide any positional parameter
only -h then show the help message as: Usage: mycalc [OPTION] operand1 operand2
[OPTION] operand1 operand2 ...

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(C) Consider following commands are executed in sequence and content of ddu is "Hello Students". Describe output of all command. [6]

```
ln ddu computer
ln  computer mech
ln -s ddu it
ln -s computer ec
ln -s ec ch
ln -s mech ic
cat ch
rm computer
cat it
cat mech
cat ec
cat ch
cat ic
```

[12]

Q.3 Answer the following: [3]

(A) Consider content of ddu.txt file as follows.

```
Roll_NO:Name:CPI:SUBJECT
1:ABC:9.1:LOSP
2:DEF:8.3:C_Prg
3:MNO:6.2:BEEE
4:HIJ:4.6:EG
5:XYZ:7.6:MATHS
6:GHI:6.9:EM
```

From this retrieve all the student's name and CPI in sorted order (as per name) and store that sorted output in file named as myfile.txt

(B) Consider above file (ddu.txt) and in that file using vi editor change name of subject C_Prg to C_PROGRAMMING [2]

(C) Explain use of following meta characters with example: [4]

(i) * (ii) { }

(iii) [ ] (iv) !

(D) Explain use of pipe (|) in Linux. [3]

OR

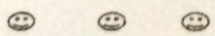
Q.3 Answer the following: [12]

(A) find $HOME \(\(-type -f -o -name *.?\) ! -perm 744\) -exec mv {} ./MyFolder \ [3]
Is this command line valid? If yes, what will be the output?

(B) Explain following commands in detail. [2]
1)history 2) alias

(C) Explain directory permissions in detail. [4]

(D) Explain head and tail command in detail. [3]



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SUBJECT: (CT-115) LINUX OPERATING SYSTEM AND PROGRAMMING

Examination : Third Sessional Time : 12.00 noon to 1.15 pm Seat No. : _____
Date : 21/11/2013 Day : Thursday Max. Marks : 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 **Answer the Following :** [12]

(A) Write significance of options '-i' and '-v' supported by command grep. [1]

(B) File students.txt contains student records sorted line by line 1 to 100. Using sed, update the file and remove student records numbered 3 to 17. [1]

(C) How to comment in shell scripts, what are the purposes of the comments? [1]

(D) List out all available/known control loop structures. Why do we need control loop structures? [1]

(E) Discuss the usage syntax and the command output in different scenarios: grep a b c [2]

(F) For the file emp.lst containing employee data with their title, using sed create different files for each employee having title director, manager, executive. Name the output files as per employees' title. [2]

(G) What is "Here Document"? Give example of usage. [2]

(H) Trace and write output of following shell script. Explain the logic in brief.: [2]

```
#!/bin/bash
echo "Enter input"
read input
while [ ! -z "$input" ]
do
   echo -e `expr "$input" : '.*\(.\)'`"\c"
   input=`expr "$input" : '\(.*\).'`
done
```

Input:
Rise to vote, sir.

Q.2 **Answer the Following (Attempt any three) :** [12]

(A) Discuss different forms of if conditional in shell script. [4]

(B) Consider fullnames.txt file contains data in "firstname middlename surname" format. Develop and explain logic to store output to sfm.txt in "surname, firstname middlename" format. [4]

(C) What is shell script? Mention different ways with example on how to execute any shell scripts. What is the purpose of interpreter line? [4]

(D) Consider phones.txt file contains phone numbers. Develop and explain logic to display only valid telephone numbers from the file. Valid input examples are: 1234567890, 123-456-7890, (123) 456-7890. [4]

Q.3 **Answer the Following :** [12]

(A) Develop a shell script to generate following pattern for number of lines entered by user as input. For example, if input entered is 5 for number of lines then output shall be as below, [4]

```
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25
```

(B) Develop shell script which provides a menu for user to execute below mentioned customized features. Provide exist status for 1 to 4 choices as success. And if any other key pressed exit with failure. Press 1 for displaying every component of $PATH on new line. [8]
Press 2 for finding how many lines of data.txt has matching pattern. Obtain patterns from pattern file patterns.txt, one per line.
Press 3 for checking whether the input file exist and is having execute permission.
Press 4 for finding whether the input number is odd or even.

OR

Q.3 **Answer the Following :** [12]

(A) Develop a shell script to generate **series** 1 0 1 0 1 0 1 0 1 ... for number of terms entered by user as input. Here, each digit is a term of series. [4]
For example if user enters 8 then output shall be 1 0 1 0 1 0 1 0

(B) Develop a shell script which takes command line arguments and performs calculations. Options -a for addition, -s for subtraction, -m for multiplication and -d for division. User may enter one or more operations, each followed by two operands. Show results upto two decimal point with appropriate message. If user does not provide any positional parameters or provides only -h then show the help message as: Usage: mycalc [OPTION] operand1 operand2 [OPTION] operand1 operand2 ... [8]

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SUBJECT: (CT-115) LINUX OPERATING SYSTEM AND PROGRAMMING

Examination : Block Exam
Date : 29/11/2013
Time : 11:30: to 12:45
Seat No. : _____
Day : Friday
Max. Marks : 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
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4. Draw neat sketches wherever necessary.

Q.1 Answer the Following :

(A) Give the figure of a sample directory structure in Linux. [12]
(B) Explain Inode & Inode Number. [2]
(C) Explain the meaning of the instruction: 4c4,5 with respect to diff command. [2]
(D) What is the difference between an argument and an option? [2]
(E) Give Examples of the following BRE Expression: [1]
(1) "**.*" [2]
(2) "^*.." [2]
(F) If I change the permissions of a file, which file time would be affected? [1]
(a) Last Modification Time (b) Last Access Time (c) Both (d) None
(G) Is it possible to create a hard link of a directory? Explain with proper reason. [2]

Q.2 Answer the following.

(A) Explain file permission with respect to a directory and a File. [12]
(B) (1) Explain uniq command with example. [4]
(2) What is the difference between while and until loop? [4]
(C) Write a shell script to design the following pattern: [4]

```
A
B B
C C C
D D D D
E E E E E
```

Q.3 Answer the following:

(A) Explain "grep." Command with all its options and proper examples. [12]
(B) Explain TRE in detail with example. [4]
(C) Write a shell script to find the following: [4]
Sum= 1! + 2! + 3! + 4! +.....+ n!, where value of n is entered by user. [4]