Code No: R1631052

R16

SET - 1

III B. Tech I Semester Regular/Supplementary Examinations, March - 2021
UNIX PROGRAMMING
(Common to Computer Science and Engineering, Information Technology)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART –A   **(14 Marks)**

1. a) Name three standard Unix shells.   [2M]
    b) What is an i-node? What is the relationship between an i-node and a file name?   [2M]
    c) What are shell variables? Give at least three examples of shell variables.   [2M]
    d) Write a grep (e grep) command that selects the non-blank lines from a file.   [3M]
    e) List out the important uses of exec command in shell script.   [3M]
    f) What is an init process and what is its pid?   [2M]

PART –B   **(56 Marks)**

2. a) With a neat diagram, explain UNIX architecture.   [7M]
    b) What is command substitution? What are the general rules (requirements) for   [7M]
       command substitution? Can every command be used for command substitution, if not
       give an example?

3. a) What are the different types of files used in Unix, and explain about each briefly?   [7M]
    b) Discuss briefly the commands used for the following: [7M]
       i) List the contents of a directory, which also gives the nature of the file, size, and
       owner of the file;   ii) Link to another file; iii) Copy a file; iv) Display the absolute
       path name of the current directory.

4. a) Distinguish between a group of commands, sequence of commands and a chain of   [7M]
       commands.
    b) Explain special parameters and variables in c shell.   [7M]

5. a) What is awk utility? Explain various options of awk utility.   [7M]
    b) Explain any three string functions with examples using grep command.   [7M]

6. a) Write about built-in variables of shell and positional arguments of shell in detail.   [7M]
    b) Write a shell script named ddir that deletes all files specified by variable2 from the   [7M]
       given directory (variable1).
       The syntax should be as follows: ddir variable1 variable2
       variable2: – specifies the type of files
       variable1: specifies the directory of interest
       The script should delete for example: ddir dir1 '*.txt' removes all .txt files from dir1.

7. a) Explain the fork system call.   [7M]
    b) Discuss the command used in UNIX to change and print terminal line settings with at   [7M]
       least three possible options.
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R16

SET - 2

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PART –A   (14 Marks)

1. a) Which command displays all the users currently logged into the system along with the possible options and give a sample output if the command is executed?   [2M]
   b) How do we recursively list the contents of a directory? Explain with an example and draw the directory tree for the example you have chosen.   [2M]
   c) Explain why we cannot use input redirection operator with cal, date and who command.   [2M]
   d) Write a grep(e grep) command that selects the lines from file that start with a string "UNIX"   [3M]
   e) How can you create a child shell, and how can you move to a parent shell after creating a child shell.   [3M]
   f) Distinguish between foreground and background jobs. How can we move a foreground job to a background?   [2M]

PART –B   (56 Marks)

2. a) Discuss the general Unix Structure.   [7M]
   b) Explain the following UNIX commands: i) date, ii) echo, iii) passwd, iv) man.   [7M]

3. a) Differentiate between hard and soft links.   [7M]
   b) Discuss at least 3 Unix Operations unique to only directory.   [7M]

4. a) What is a shell? What are the responsibilities of a shell?   [7M]
   b) What is a loop? Compare and contrast while and until loops in shell programming.   [7M]

5. a) Explain the commands grep, egrep, fgrep with suitable examples.   [7M]
   b) What are wild cards, explain about each of them in detail with examples.   [7M]

6. a) What are positional parameters in C shell scripting? Explain the meaning of the $0, $1, $2, ${9}, $*, and $#.   [7M]
   b) Write a shell script, to perform the following function. It should read a name (with more than two words) into variable x from the command line, and then print the following:
   First Name : (last word of x)
   Last name : (first word of x).   [7M]

7. a) What are the different properties that are inherited by the child from its parent? Explain them.   [7M]
   b) What is init process? Explain the role of fork() in process creation.   [7M]

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R16

SET - 3

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PART –A   (14 Marks)

1. a) Write a command to print the calendar for the month April in the year 2005.   [2M]
    b) Illustrate through examples, how the ownership and the group can be changed for a given Unix file?   [2M]
    c) What file descriptors are associated with standard input stream, output stream and error stream?   [2M]
    d) Write a grep(e grep) command that selects the lines from file1 that have exactly three characters.   [3M]
    e) What is the difference between a back slash, a pair of single of quotes, and a pair of double quotes?   [3M]
    f) What does a fork system call do, and what values does it return?   [2M]

PART –B   (56 Marks)

2. a) Explain the various duties of a shell.   [7M]
    b) Determine and explain the results of the following commands: [7M]
        i) cal 2000   ii) date "+%D"   iii) man password   iv) echo date is `date.

3. a) What are the different types of files used in Unix? Explain each one in detail.   [7M]
    b) Explain various file handling utilities   [7M]

4. a) Explain about different conditional expressions available in Bourne shell.   [7M]
    b) What is metacharacter? List and explain about any 7 metacharacters available in Unix.   [7M]

5. a)   Explain any three string functions with examples using grep command.   [7M]
    b) What is a filter in UNIX? Explain various filters in UNIX.   [7M]

6. a) What is the exit status of a command in C shell? Explain with example.   [7M]
    b) Write a shell script that will count the number of words in each line for a given file. Input file to be given as argument to the script.   [7M]

7. a)   Define a process and write in detail about UNIX process structure.   [7M]
    b) Write short notes on zombie processes.   [7M]

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R16

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PART –A   (14 Marks)

1. a) Write a command which displays system date and time in mm/dd/yy format.   [2M]
    b) Should we use hard links or soft links to link files in different file systems? Which   [2M]
        form of link can be used to link files in the same file system?
    c) Use the date command and ls -l commands in sequence (in one line), such that the   [2M]
        output of date is displayed on the screen and the output of ls- l is stored in a file
        called exam.
    d) Write a grep(e grep) command that selects the lines from file1 that have at least   [3M]
        three characters.
    e) What are positional parameters, and which shell command is used in manipulating   [3M]
        positional parameters?
    f) Which command helps the parent process know the exit status of the child process?   [2M]

PART –B   (56 Marks)

2. a) What is command substitution? Explain command substitution with an example.   [7M]
    b) Explain the difference between utilities and applications in Unix environment.   [7M]

3. a) Discuss the different types of permissions for a Unix file.   [7M]
    b) Explain the following Unix commands along with the different options available for   [7M]
        each: i) cp;   ii) mv;   iii) ln;   iv) rm.

4. a) Explain the two different duties of a Shell. How can you create a sub shell? How can   [7M]
        you move to the parent shell after creating a sub shell?
    b) How will you pass and access arguments to a shell script in UNIX? Explain with an   [7M]
        example.

5. a) What is a regular expression? Explain various types of grep.   [7M]
    b) Write an AWK program to convert the following input to the following output   [7M]
        (vertical read):
        Input: a b c   Output: a d g
                d e f   b e h
                g h I   c f i

1 of 2

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6. a) Distinguish between shell variables and environment variables. [7M]
   b) What are the different redirection operators, and why are they used? Illustrate how [7M]
      you can redirect the standard output stream to a file?

7. a) Illustrate the syntax of trap command. [7M]
   b) What is a Child process? How it is created? Explain the relationship between parent [7M]
      process and child process.

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2 of 2

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