**

**Operating systems**

LAB 1

**AIM: To script and automate various tasks using BASH programming.**

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# DESCRIPTION:

**BASH stands for Bourne Again Shell. It is the default shell of UNIX and UNIX like systems i.e. MacOS and Linux.**

**Bash is also a very useful programming language.**

**We can use the bash programming language and script and automate tasks that require repetitive iterations and human interventions.**

# TASK1:

**1.      Write a shell program for the following operations:**

**a.       Given an input file which contains 15 student names, create separate directories for each student (Directory name is same as the student’s name).**

**b.      Create a shell file inside each directory with the student’s name.**

**c.       Each shell file should contain the hashbang statement and also include a statement for printing the corresponding student name.**

**d.      Assign file permissions(executable) to each of these shell files and execute all of them in sequence to get the final output.**

**e.       Display the files and directories inside the parent working directory.**

## CODE:

#! /bin/bash

cat Names.txt | while read reg\_no #read the file and store each line in a variable

do

mkdir $reg\_no #make a folder for every registration number.

cd $reg\_no #move into that folder.

touch $reg\_no.sh #make a new bash file inside that folder named corresponding Reg. No.

echo "#!/bin/bash" >> $reg\_no.sh #Append shebang line in the bash file.

echo "echo $reg\_no" >> $reg\_no.sh #Append a echo line to print reg no in that bash file.

chmod 777 $reg\_no.sh #make the bash file executable

./$reg\_no.sh #execute that bash file

cd .. #move out of that folder

done

echo "================================================"

echo "Files and folders list for verification:"

ls \* #display all directories and its files.

# TASK2:

**A directory consists of different types of files ( .c, .txt and .sh ). Write a shell script to segregate and store the name of the files according to their types, into separate files. [You have to create three separate files, for  the files with .c , .txt  and .sh extension].**

## CODE:

touch c\_files.txt #Creating three new files in working directory

touch txt\_files.txt

touch sh\_files.txt

# Writing initial line of each files

echo " ---Files having extension .c---" > c\_files.txt

echo " ---Files having extension .txt ---" > txt\_files.txt

echo " ---Files having extension .sh ---" > sh\_files.txt

for filename in `ls $search`; #Looping through all the filenames in working directory and saving their names in a variable.

do

if [[ $filename == \*.txt ]] #if it is .txt file, redirect it to txt\_files.txt

then

echo $filename >> txt\_files.txt

elif [[ $filename == \*.c ]] #if it is .c file, redirect it to c\_files.txt

then

echo $filename >> c\_files.txt

elif [[ $filename == \*.sh ]] #if it is .sh file, redirect it to sh\_files.txt

then

echo $filename >> sh\_files.txt

fi

done

ls -l \* #List all the files, directories and subdirectories in working directories

echo ===============================

echo

head sh\_files.txt

echo ===============================

echo

head txt\_files.txt

echo ===============================

echo

head c\_files.txt

echo ===============================

echo

echo finished

# TASK3:

**Write a Shell program to read a 5 digit number from user and find the number of occurrences of second digit of that number.**

**Sample Input: 16386**

**Second Digit: 6**

**Number of Occurrences of second digit= 2**

## CODE:

#! /bin/bash

echo -n "Enter a 5-digit number: "

read A #Get a 5 digit number as input from the user.

second\_digit="${A:1:1}"

echo Second Digit: $second\_digit #Extract the 2nd digit from that number.

counter=0

for ((i=0; i<5; i++))

do

each\_digit=${A:i:1}

if [[ $second\_digit = $each\_digit ]] #Loop through and check if each digit equals to 2nd digit.

then

counter=$((counter+1))

fi

done

echo Number of Occurrences of $second\_digit is: $counter