Amrita School of Computing, Amritapuri Campus.
19CSE101: Computer Systems Essentials
LAB SHEET 7-Operating Systems
Shell Programming using Regular Expressions

Section 8 Shell scripting introduction

Shells have support for programming constructs that can be saved as scripts. These scripts in turn then become more shell commands. Many Linux commands are scripts.

Starting with the first shell program

Shell scripting can be defined as a group of commands executed in sequence. The steps needed for developing shell scripts are

Step 1: Open a file with .sh extension.

gedit example.sh

Step 2: All shell scripts should begin with **#!/bin/bash** or whatever other shell you prefer. This line is called the shebang, and although it looks like a comment, it's not: it notifies the shell of the interpreter to be used for the script. The provided path must be an absolute one (you can't just use "bash", for example), and the shebang must be located on the first line of the script without any preceding space.

Step 3: Now type your actual Shell Program you want to develop and save it. (You can use the manual uploaded in lab-1 and understand the syntax for shell program).

Our first shell script will be the usual "Hello World" routine.

#!/bin/sh

echo "Hello World"

Step 4: The next step is to make the script executable by using chmod command.

Take a terminal and type

chmod 744 example.sh

or

chmod +x example.sh

Step 5: Now you can simply run the shell program file as

./example.sh

Lab Exercise

Shell Programming

1. Write a shell program to perform the following actions in the given order.

   a. Create a directory hierarchy in your home folder

   Test1 ➡ Test2 ➡ Test3

   b. Create a file file1 in directory Test3 with the contents same as output of the command ls -l
   c. Go to directory Test3
   d. Find the names of all files and folders in file1
   e. Find the names of all files and folders starting with d(case insensitive)
   f. Print all words of file1 on a separate line.
   g. Go back to your home directory.
2. Write a shell program to perform the following actions in the given order.

   a. Create a file **numericdata** with the following contents

   Karunagappally 34567 7864 6785
   Kollam 56754 6754 7654
   Vallikkavu 54328 7548 45675
   Trivandrum 16423 6654 6754
   Ernakulam 28796 8549 9875
   Kayamkulam 35589 75892 3451
   kottayam 45557 6773 6547
   tirukulum 45675 56476 7896
   (Hint : First field is referred as Place second as code1 third as code2 and fourth as code3)

   b. Display the details of Places that starts with 'T'(case sensitive)
   c. Display code3 in sorted order(ascending) of the places that start with 'K'(case insensitive)
   d. Filter code2 that starts with 6 and ends with 4
   e. Filter code2 having one or more occurrence of the digit 6.
   f. Filter all code1 having one or more occurrence of the digit 5.

3. Write shell scripts for the following actions in the given order:
    a. Create a file **Studdetails** with the following contents

Student Alice Essentials 20 PSAT 22 Maths 34 Cultural 25 Physics 80 English 70

Student Bob Essentials 23 PSAT 21 Maths 32 Cultural 18 Physics 18 English 94

Student Boby Essentials 43 PSAT 31 Maths 22 Cultural 8 Physics 76 English 93

Student Clara Essentials 18 PSAT 16 Maths 27 Cultural 12 Physics 34 English 45

Student Dirck Essentials 25 PSAT 23 Maths 48 Cultural 25 Physics 45 English 98

Student Eve Essentials 8 PSAT 6 Maths 12 Cultural 13 Physics 4 English 5

    b. Filter the details of the student Bob
    c. Find the number of students with their names containing the letter i, e or a
    d. Find the marks of students whose names starts with ‘b’ (case insensitive)
    e. Find the marks of students whose names starts with b (case insensitive)

4. Write a shell script to perform the following actions in the given order:
    f. Create a file **numericdata** with the following contents
    Karunagappally 34567 7864 6785
    Kollam 56754 6754 7654
    Vallikkavu 54328 7548 45675
    Trivandrum 16423 6654 6754
    Ernakulam 28796 8549 9875
    Kayamkulam 35589 75892 3451
    kottayam 45557 6773 6547
    tirukulum 45675 56476 7896
    (Hint : First field is referred as Place second as code1 third as code2 and fourth as code3)
    g. Display the details of Places that starts with ‘T’(case sensitive)
    h. Display code3 in sorted order(ascending) of the places that start with ‘K’(case insensitive) and ends with am
    i. Filter code2 that starts with ‘6’ and ends with 4
    j. Filter code2 which has more than one occurence of the digit 6.
    k. Filter all code1 having one or more occurrence of ‘5’.
    l. Replace all places that ends with am as ending with ty

5. Write a shell script to perform the following actions in the given order:
    m. Write the contents of ls -la to a file named **HiddenDetails**
    n. Write the contents of file HiddenDetails to **HiddenFiles** after replacing multiple occurrences of space with a single space.
    o. Using the file **HiddenFiles,** find the total number of files and folders that starts with 'p'(case insensitive)
    p. Using the file **HiddenFiles,** find the names of files and folders that starts with '.' and ends with 'nda'
    q. Using the file **HiddenFiles,** list all the directories
    (The first field in ls -la denotes the permissions associated with the file. If the first letter in permission is 'd' then it is a directory)
6. Write shell program to perform the following actions in the given order:
    r. Write the contents of the command man sort into a file **SortManual.**
    s. Filter all lines form the file **SortManual** which starts with 'compare'.
    t. Filter all lines form the file **SortManual** which ends with 'sort'.
    u. Display the number of lines in **SortManual** which has the word 'numeric'.
    v. Write the contents of file **SortManual** to another file named **Sort** after replacing multiple occurrences of '-' with a single '-'

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