<u>OPERATING SYSTEM LAB02</u>

<u>PRACTICE WORK UPDATE</u>

P.PRIYADHARSHINI

2019103562

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<u>SHELL SCRIPTING</u>

SAMPLE PROGRAM

```
[s2019103562@centos8-linux Mon Mar 01 10:58 AM ~]$ ./test.sh sample program
Hello!
What's your name?
Priya
Priya
Filename:./test.sh
First parameter:sample
Second parameter:program
Number of parameters:2
[s2019103562@centos8-linux Mon Mar 01 10:58 AM ~]$
```

1.*DECISION MAKING*

If-then-else-fi

```
[s2019103562@centos8-linux Mon Mar 01 10:53 AM ~]$ ./decmaking.sh
0
1
2
3
4
5
Stopped
10
11
13
14
15
[s2019103562@centos8-linux Mon Mar 01 10:54 AM ~]$
```

(Usage of break and continue statements)

2.LOOPING CONSTRUCTS

FOR LOOP

```
[s2019103562@centos8-linux Mon Mar 01 03:01 PM ~]$vim forloop.sh
[s2019103562@centos8-linux Mon Mar 01 03:05 PM ~]$ ./forloop.sh sample program for forloop construct
Display numbers from 1 to 9
Entry 1 : 1
Entry 2 : 2
Entry 3 : 3
Entry 4 : 4
Entry 5 : 5
Entry 6 : 6
Entry 7 : 7
Entry 8 : 8
Entry 9 : 9
Displaying the arguments
sample
program
for
forloop
construct
Arithmetic operations:
Enter the operands
4
3
Addition: 7
Diffrence: 1
Product: 12
Division: 1
Enter the operands
8
5
Addition: 13
Diffrence: 3
Product: 40
Division: 1
```

NESTED FOR LOOPS:

```
Nested For loops
Pass 1 in outer loop
Pass 1 in inner loop
Pass 2 in inner loop
Pass 3 in inner loop
Pass 4 in inner loop
Pass 5 in inner loop
Pass 1 in outer loop
Pass 1 in inner loop
Pass 2 in inner loop
Pass 3 in inner loop
Pass 4 in inner loop
Pass 5 in inner loop
Pass 1 in outer loop
Pass 1 in inner loop
Pass 2 in inner loop
Pass 3 in inner loop
Pass 4 in inner loop
Pass 5 in inner loop
Pass 1 in outer loop
Pass 1 in inner loop
Pass 2 in inner loop
Pass 3 in inner loop
Pass 4 in inner loop
Pass 5 in inner loop
Pass 1 in outer loop
Pass 1 in inner loop
Pass 2 in inner loop
Pass 3 in inner loop
Pass 4 in inner loop
Pass 5 in inner loop
[s2019103562@centos8-linux Mon Mar 01 10:54 AM ~]$
```

3.WHILE LOOP

```
[s2019103562@centos8-linux Mon Mar 01 10:54 AM ~]$ ./while.sh
0
1
2
3
4
5
6
7
8
9
Priya
You entered: Priya
Dharshini
You entered: Dharshini
quit
You entered: quit
Nested while loops
Pass 1 in outer loop
Pass 1 in inner loop
Pass 2 in inner loop
Pass 3 in inner loop
Pass 4 in inner loop
Pass 5 in inner loop
Pass 2 in outer loop
Pass 3 in outer loop
Pass 4 in outer loop
Pass 5 in outer loop
[s2019103562@centos8-linux Mon Mar 01 10:57 AM ~]$
```

4.UNTIL LOOP

```
[s2019103562@centos8-linux Mon Mar 01 10:57 AM ~]$ ./until.sh
0
1
2
3
4
5
Nested until loops
Pass 1 in outer loop
Pass 1 in inner loop
Pass 2 in inner loop
Pass 3 in inner loop
Pass 4 in inner loop
Pass 5 in inner loop
Pass 2 in outer loop
Pass 3 in outer loop
Pass 4 in outer loop
Pass 5 in outer loop
[s2019103562@centos8-linux Mon Mar 01 10:57 AM ~]$
```

5.SWITCH CASE

```
[s2019103562@centos8-linux Mon Mar 01 03:16 PM ~]$ ./switch.sh
0 Sunday 1 Monday 2 Tuesday 3 Wednesday 4 Thursday 5 Friday 6 Saturday
Enter N
4
You entered Thursday
[s2019103562@centos8-linux Mon Mar 01 03:16 PM ~]$
```

FILTERS AND STREAM EDITORS

Grep

  ❖ Case insensitive pattern search

```
[s2019103562@centos8-linux Mon Mar 01 01:01 PM ~]$ grep -i "data" sample.txt
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
IT plays a major role in storing the data.
```

  ❖ Display the count of number of matches

```
[s2019103562@centos8-linux Mon Mar 01 01:01 PM ~]$ grep -c "IT" sample.txt
3
```

  ❖ Check for the whole words in a pattern

```
[s2019103562@centos8-linux Mon Mar 01 01:01 PM ~]$ grep -w "IT" sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
IT plays a major role in storing the data.
```

  ❖ Display only the matched pattern

```
[s2019103562@centos8-linux Mon Mar 01 01:01 PM ~]$ grep -o "data" sample.txt
data
data
data
data
```

  ❖ Display the line number while displaying the output

```
[s2019103562@centos8-linux Mon Mar 01 01:02 PM ~]$ grep -n "IT" sample.txt
1:ROLE OF IT IN ENVIRONMENT
2:INFORMATION TECHNOLOGY(IT)
9:IT plays a major role in storing the data.
```

❖ Inverting the pattern search

```
[s2019103562@centos8-linux Mon Mar 01 01:02 PM ~]$ grep -v "IT" sample.txt
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
```

❖ Matching the lines that start with the pattern

```
[s2019103562@centos8-linux Mon Mar 01 01:58 PM ~]$ grep "^IT" sample.txt
IT plays a major role in storing the data.
```

❖ Matching the lines that end with the pattern

```
[s2019103562@centos8-linux Mon Mar 01 02:04 PM ~]$ grep "data.$" sample.txt
Organised form of data.
IT plays a major role in storing the data.
```

❖ Specifying the pattern with -e option

```
[s2019103562@centos8-linux Mon Mar 01 02:04 PM ~]$ grep -e "environment" sample.txt
Environmental databases are used to store environment related information.
```

❖ -f File option takes the pattern from a file and searches in another file

```
[s2019103562@centos8-linux Mon Mar 01 02:09 PM ~]$ grep -f pat.txt sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:09 PM ~]$ cat pat.txt
IT
[s2019103562@centos8-linux Mon Mar 01 02:09 PM ~]$ 
```

❖ Print n specific lines from a file
  o A – prints the line containing the pattern and n lines after the result.
  o B- prints the line containing the pattern and n lines before the result.
  o C- prints the line containing the pattern and n lines before and after the result.

```
[s2019103562@centos8-linux Mon Mar 01 02:09 PM ~]$ grep -A2 IT sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
--
IT plays a major role in storing the data.


[s2019103562@centos8-linux Mon Mar 01 02:10 PM ~]$ grep -B2 IT sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
--
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.


[s2019103562@centos8-linux Mon Mar 01 02:11 PM ~]$ grep -C2 IT sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
--
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:11 PM ~]$
```

Sed

❖ Replacing/substituting the string

```
[s2019103562@centos8-linux Mon Mar 01 02:11 PM ~]$ sed 's/data/info/' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize info gathered.
Organised form of info.
Environmental infobases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the info.
[s2019103562@centos8-linux Mon Mar 01 02:15 PM ~]$
```

❖ Replacing the occurrence of a pattern in a line

```
[s2019103562@centos8-linux Mon Mar 01 02:19 PM ~]$ sed 's/world/globe/1' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the globe.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:20 PM ~]$
```

❖ Replacing all the occurrences of a pattern in a line

```
[s2019103562@centos8-linux Mon Mar 01 02:20 PM ~]$ sed 's/information/data/g' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related data.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:22 PM ~]$
```

❖ Replace from nth occurrence to all occurrences of a pattern in a line

```
[s2019103562@centos8-linux Mon Mar 01 02:22 PM ~]$ sed 's/to/to(auxillary verb)/2g' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to sto(auxillary verb)re,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to sto(auxillary verb)re environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:27 PM ~]$ █
```

❖ Replace the pattern on a specific line number

```
[s2019103562@centos8-linux Mon Mar 01 02:27 PM ~]$ sed '1 s/IT/Information Technology/' sample.txt
ROLE OF Information Technology IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:28 PM ~]$
```

❖ Duplicating the replaced line

```
[s2019103562@centos8-linux Mon Mar 01 02:28 PM ~]$ sed '1 s/IT/Information Technology/p' sample.txt
ROLE OF Information Technology IN ENVIRONMENT
ROLE OF Information Technology IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:30 PM ~]$ █
```

❖ Printing only the replaced lines

```
[s2019103562@centos8-linux Mon Mar 01 02:31 PM ~]$ sed -n 's/IT/Information Technology/p' sample.txt
ROLE OF Information Technology IN ENVIRONMENT
INFORMATION TECHNOLOGY(Information Technology)
Information Technology plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:31 PM ~]$
```

❖ Replace the pattern on a range of lines

```
[s2019103562@centos8-linux Mon Mar 01 02:31 PM ~]$ sed '1,2 s/IT/Information Technology/' sample.txt
ROLE OF Information Technology IN ENVIRONMENT
INFORMATION TECHNOLOGY(Information Technology)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:33 PM ~]$
```

❖ Deleting a particular line

```
[s2019103562@centos8-linux Mon Mar 01 02:33 PM ~]$ sed '1d' sample.txt
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:34 PM ~]$
```

❖ Deleting the last line

```
[s2019103562@centos8-linux Mon Mar 01 02:34 PM ~]$ sed '$d' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
[s2019103562@centos8-linux Mon Mar 01 02:35 PM ~]$
```

❖ Deleting the lines from range x to y

```
[s2019103562@centos8-linux Mon Mar 01 02:35 PM ~]$ sed '1,3d' sample.txt
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:36 PM ~]$
```

❖ Deleting the lines from nth line to last line

```
[s2019103562@centos8-linux Mon Mar 01 02:36 PM ~]$ sed '2,$d' sample.txt
ROLE OF IT IN ENVIRONMENT
[s2019103562@centos8-linux Mon Mar 01 02:37 PM ~]$
```

❖ Deleting pattern matching line

```
[s2019103562@centos8-linux Mon Mar 01 02:37 PM ~]$ sed '/data/d' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Can be accessed all over the world.
[s2019103562@centos8-linux Mon Mar 01 02:39 PM ~]$
```

AWK

❖ Prints every line of data from the specified file

```
[s2019103562@centos8-linux Mon Mar 01 02:39 PM ~]$ awk '{print}' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Databases
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:40 PM ~]$
```

❖ Print the lines which matches the given pattern

```
[s2019103562@centos8-linux Mon Mar 01 02:40 PM ~]$ awk '/IT/{print}' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:41 PM ~]$
```

❖ Splitting a line into fields

```
[s2019103562@centos8-linux Mon Mar 01 02:41 PM ~]$ awk '{print $1,$2}' sample.txt
ROLE OF
INFORMATION TECHNOLOGY(IT)
Application of
Databases
Helps to
Organised form
Environmental databases
Can be
IT plays
[s2019103562@centos8-linux Mon Mar 01 02:42 PM ~]$
```

❖ Prints line number

```
[s2019103562@centos8-linux Mon Mar 01 02:45 PM ~]$ awk '{print NR,$0}' sample.txt
1 ROLE OF IT IN ENVIRONMENT
2 INFORMATION TECHNOLOGY(IT)
3 Application of telecommunication and other equipments.
4 Databases
5 Helps to store,analyse and visualize data gathered.
6 Organised form of data.
7 Environmental databases are used to store environment related information.
8 Can be accessed all over the world.
9 IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:45 PM ~]$ ▮
```

❖ Prints last field

```
[s2019103562@centos8-linux Mon Mar 01 02:47 PM ~]$ awk '{print $NF}' sample.txt
ENVIRONMENT
TECHNOLOGY(IT)
equipments.
Databases
gathered.
data.
information.
world.
data.
[s2019103562@centos8-linux Mon Mar 01 02:47 PM ~]$ ▮
```

❖ Display lines from Line number 3 to 6

```
[s2019103562@centos8-linux Mon Mar 01 02:48 PM ~]$ awk 'NR==3,NR==6{print NR,$0}' sample.txt
3 Application of telecommunication and other equipments.
4 Databases
5 Helps to store,analyse and visualize data gathered.
6 Organised form of data.
[s2019103562@centos8-linux Mon Mar 01 02:48 PM ~]$
```

❖ Display any particular field

```
[s2019103562@centos8-linux Mon Mar 01 02:48 PM ~]$ awk '{print $2}' sample.txt
OF
TECHNOLOGY(IT)
of

to
form
databases
be
plays
[s2019103562@centos8-linux Mon Mar 01 02:50 PM ~]$
```

❖ To print any non-empty line if present

```
[s2019103562@centos8-linux Mon Mar 01 02:50 PM ~]$ awk 'NF<0' sample.txt
[s2019103562@centos8-linux Mon Mar 01 02:51 PM ~]$
```

❖ To find the length of the longest line present in the file

```
[s2019103562@centos8-linux Mon Mar 01 02:53 PM ~]$ awk '{if(length($0)>max) max=length($0)} END {print max}' sample.txt
74
[s2019103562@centos8-linux Mon Mar 01 02:54 PM ~]$
```

❖ To count the number of lines in a file

```
[s2019103562@centos8-linux Mon Mar 01 02:54 PM ~]$ awk '{print NR}' sample.txt
1
2
3
4
5
6
7
8
9
[s2019103562@centos8-linux Mon Mar 01 02:55 PM ~]$
```

❖ Printing lines with more than 10 characters

```
[s2019103562@centos8-linux Mon Mar 01 02:55 PM ~]$ awk 'length($0)>10' sample.txt
ROLE OF IT IN ENVIRONMENT
INFORMATION TECHNOLOGY(IT)
Application of telecommunication and other equipments.
Helps to store,analyse and visualize data gathered.
Organised form of data.
Environmental databases are used to store environment related information.
Can be accessed all over the world.
IT plays a major role in storing the data.
[s2019103562@centos8-linux Mon Mar 01 02:56 PM ~]$
```

❖ To check for any string in any specific column

```
[s2019103562@centos8-linux Mon Mar 01 02:56 PM ~]$ awk '{if($3=="telecommunication")print $0;}' sample.txt
Application of telecommunication and other equipments.
[s2019103562@centos8-linux Mon Mar 01 02:57 PM ~]$
```

❖ Print the squares of numbers from 1 to n

```
[s2019103562@centos8-linux Mon Mar 01 03:00 PM ~]$ awk 'BEGIN{for(i=1;i<=9;i++) print "Square of",i,"is",i*i;}'
Square of 1 is 1
Square of 2 is 4
Square of 3 is 9
Square of 4 is 16
Square of 5 is 25
Square of 6 is 36
Square of 7 is 49
Square of 8 is 64
Square of 9 is 81
[s2019103562@centos8-linux Mon Mar 01 03:01 PM ~]$
```