Experiment: 5

Write a shell script and C Program to perform the following string operations:

a) To Extract a substring from a given string
   - Shell Script

```
  GNU nano 6.2                           str.sh
str="Welcome to Miet."
echo "Total characters in string: ${#str}"

echo "Extracting list of 10 characters of string"
substr="${str:0:10}"
echo "$substr"

echo "Extracting from specific character onwards"
substr="${str:11}"
echo "$substr"

echo "Extracting characters between given range"
substr="${str:11:6}"
echo "$substr"

echo "Extracting characters by giving range in negative"
substr="${str:-1}"
echo "$substr"
```

   - C Program

```
  GNU nano 6.2                                                    string.c
#include <stdio.h>
int main()
{
    char str[50]="Welcome to Miet.";
    printf("Total characters in string: 16");
    printf("\n\n");
    // character extraction
    printf("Extracting list of 10 characters of string:-");{
    for (int i = 0; i<=10; i++) {
        if (str[i] != ' ') {
            printf("%c", str[i]);
        }
    }
    }
    printf("\n\n");
    printf("Extracting from specific character onwards:-");{
    for (int i = 10; i<=15; i++){
        if (str[i] != ' ') {
            printf("%c", str[i]);
        }
    }
    }
    printf("\n\n");
    printf("Extracting characters between given range:-");{
    for (int i = 4; i<=13; i++) {
        if (str[i] != ' ') {
            printf("%c", str[i]);
        }
    }
    }
    printf("\n\n");
    printf("Extracting characters by giving range in negative:-");{
    for (int i = -1; i<=16; i++) {
        if (str[i] != ' ') {
            printf("%c", str[i]);
        }
    }
    }
    printf("\n\n");
    return 0;
}
```

- Output using time command for both C program and shell script.

```
rohin@rohin-VirtualBox:~/new$ chmod +x str.sh
rohin@rohin-VirtualBox:~/new$ time ./str.sh
Total characters in string: 16
Extracting list of 10 characters of string
Welcome to
Extracting from specific character onwards
Miet.
Extracting characters between given range
Miet.
Extracting characters by giving range in negative
Welcome to Miet.

real    0m0.002s
user    0m0.002s
sys     0m0.000s
rohin@rohin-VirtualBox:~/new$ gcc string.c
rohin@rohin-VirtualBox:~/new$ time ./a.out
Total characters in string: 16

Extracting list of 10 characters of string:-Welcometo

Extracting from specific character onwards:-Miet.

Extracting characters between given range:-ometoMie

Extracting characters by giving range in negative:-◆WelcometoMiet.


real    0m0.001s
user    0m0.001s
sys     0m0.000s
rohin@rohin-VirtualBox:~/new$ S
```

b) To find the length of a given string

- Shell Script

```
GNU nano 6.2                                           strlen.sh
str="WELCOME to Miet."
echo "The total no of char in the string are: ${#str}"
```

- C Program

```
  GNU nano 6.2                                                    strlen.c
#include <stdio.h>
#include <string.h>

int main() {
    char str[1000];


    printf("Enter the string: ");
    scanf("%s", str);


    int length;


    length = strlen(str);


    printf("The length of the string is %d ", length);
    printf("\n\n");

    return 0;
}
```

- Output using time command for both c program and shell script.

```
rohin@rohin-VirtualBox:~/new$ nano strlen.sh
rohin@rohin-VirtualBox:~/new$ nano strlen.c
rohin@rohin-VirtualBox:~/new$ chmod +x strlen.sh
rohin@rohin-VirtualBox:~/new$ time ./strlen.sh
The total no of char in the string are: 16

real    0m0.002s
user    0m0.002s
sys     0m0.000s
rohin@rohin-VirtualBox:~/new$ gcc strlen.c
rohin@rohin-VirtualBox:~/new$ time ./a.out
Enter the string: RohinSabharwal
The length of the string is 14


real    0m9.483s
user    0m0.001s
sys     0m0.000s
rohin@rohin-VirtualBox:~/new$
```