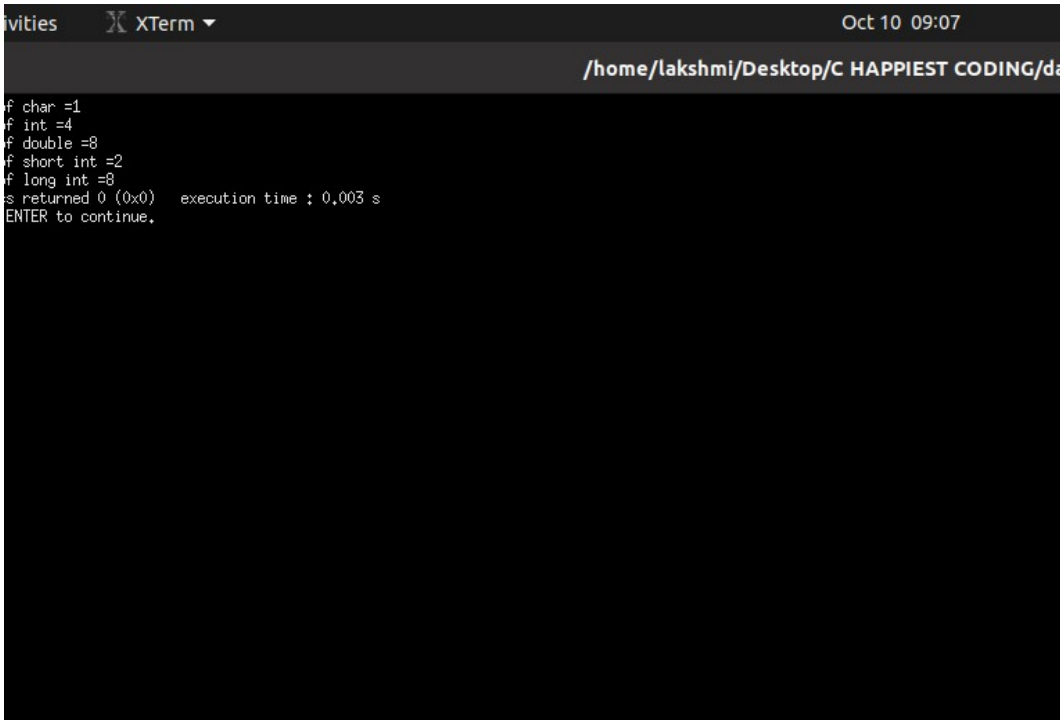
List of Programming Assignments for Laboratory(PSTC)

Statements, Expressions & Conditionals:

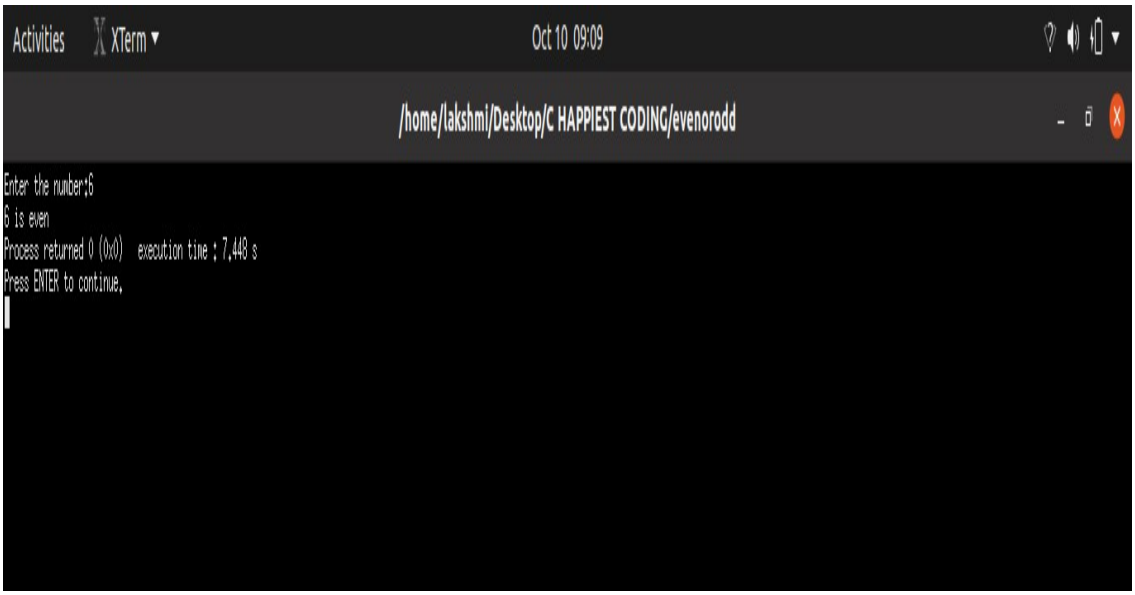
1.Write a program to print the memory allocation required for all the datatype in C Language?

```
#include<stdio.h>
int main()
{
char a;
int b;
double c;
short int d;
long int e;
printf("size of char =%d",sizeof(a));
printf("\nsize of int =%d",sizeof(b));
printf("\nsize of double =%d",sizeof(c));
printf("\nsize of short int =%d",sizeof(d));
printf("\nsize of long int =%d",sizeof(e));
return 0;
}
```



2.Write a program to check whether the given number is even number or odd number?

```
#include<stdio.h>
int main()
{
int num,rem;
printf("Enter the number:");
scanf("%d",&num);
rem=num%2;
if(rem==0)
{
   printf("%d is even",num);
}
else
{
   printf("%d is odd",num);
}
```



}

3.Write a menu based program to take of input of two values followed input of choice and accordingly perform arithmetic operations like Addition, Subtraction, Multiplication, Modulus, Division, Power(Using Switch Statement)

```
#include<stdio.h>
int main()
{
    float a,b;
    int x,y,pow;
    int op;
    printf("WELCOME TO BASIC MAATHEMATICAL
OPERATIONS");
    printf("\n \n \n \n");
    printf("Here are the some operations \n");
    printf("1.Addition \n2.subtraction \n3.multiplication \
n4.division \n5.modulus \n6.power");
    printf("\n \n");
    printf("Enter your number:");
    scanf("%f %f",&a,&b);
    printf("enter your option:");
    scanf("%d",&op);
    switch(op)
```

```
    {
        case 1:
        printf("sum of the %f and %f is:%f",a,b,a+b);
        break;
        case 2:
        printf("subtraction of the %f and %f is:%f",a,b,a-b);
        break;
        case 3:
        printf(" multiplication  of the %f and %f is:%f",a,b,a*b);
        break;
        case 4:
        printf("sdivision of the %f and %f is:%f",a,b,a/b);
        break;
        case 5:
            printf("modulus of %f and %f is:%d",x,y,x%y);
            break;
        case 6:
            while(y)
            {
              pow=pow*a;
              y--;

            }
            printf("power id %d",pow);
            break;
        default:
            printf("Enter the correct option");
            break;
    }
    return 0;
}
```

```
WELCOME TO BASIC MAATHEMATICAL OPERATIONS



Here are the some operations
1.Addition
2.subtraction
3.multiplication
4.division
5.modulus
6.power

Enter your number:7
5
enter your option:3
 multiplication  of the 7.000000 and 5.000000 is:35.000000
Process returned 0 (0x0)   execution time : 11.449 s
Press ENTER to continue.
```

4.Write a program to swap two given numbers with and without using extra variable.

Ans:

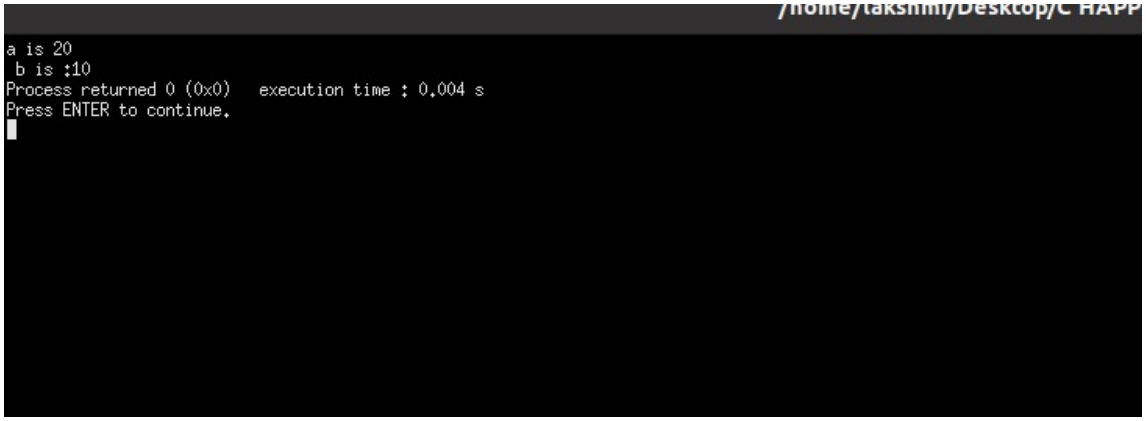
Without variable:

```
#include<stdio.h>
int main()
{
int a=60;
int b=30;
int temp=a;
a=b;
b=temp;
printf("the new a,b are %d %d",a,b);
}
```

```
/home/lakshmi/Desktop/C HAPPIEST CODING/swap
the new a,b are 30 60
Process returned 0 (0x0)   execution time : 0.002 s
Press ENTER to continue.
```

With variable:

```
#include<stdio.h>
int main()
{
int a=10;
int b=20;
a=a+b;
b=a-b;
a=a-b;
printf("a is %d \n b is :%d",a,b);
}
```



5.Write a program to find out the whether the given number is a perfect square or not.

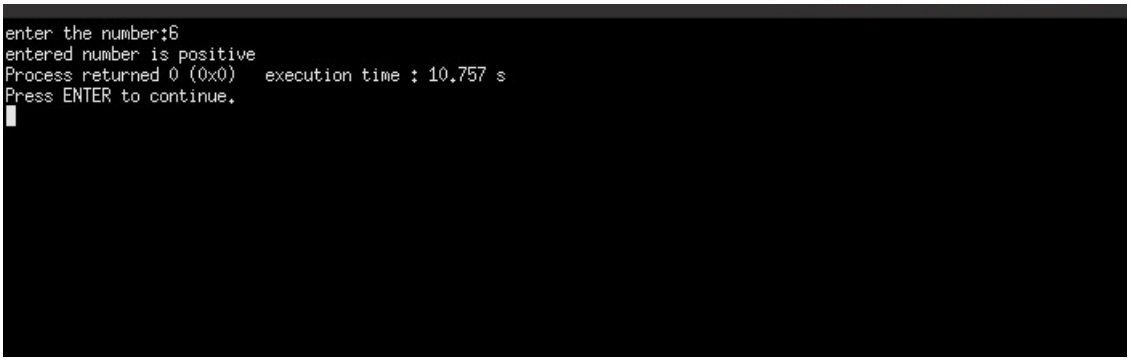
```
#include<stdio.h>
int main()
{
    int n;
    printf("enter the number:");
    scanf("%d",&n);
    int root_value=sqrt(n);
    root_value=root_value*root_value;
    if(root_value==n)
    {
        printf("entered number is perfect square");
```

```
    }
    else{
        printf("entered number is not  perfect square");
    }
}
```

```
Enter an integer number: 16
16 is a perfect square.
--------------------------------
Process exited after 25.96 seconds with return value 0
Press any key to continue . . .
```

6.Write a program to find out whether the given number is positive,negative or zero value?

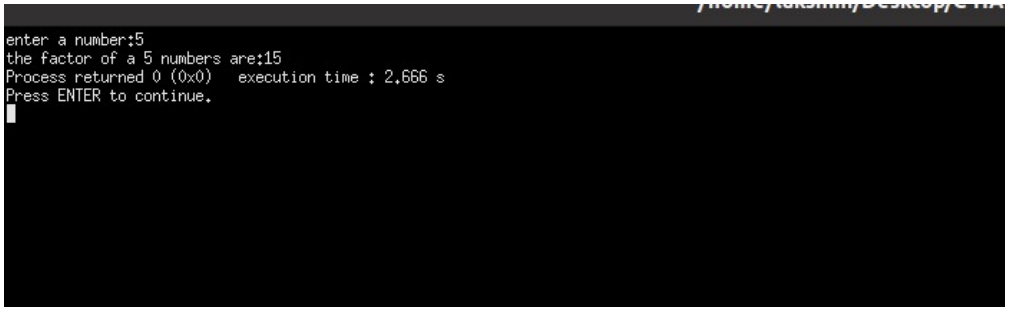
```
#include<stdio.h>
int main()
{
    int n;
    printf("enter the number:");
    scanf("%d",&n);
    if(n>0)
    {
        printf("entered number is positive");
    }
        else
        {
            printf("entered number is negative");
    }

}
```



Iterative Constructs - I: For Loop, While Loop &Do. While:

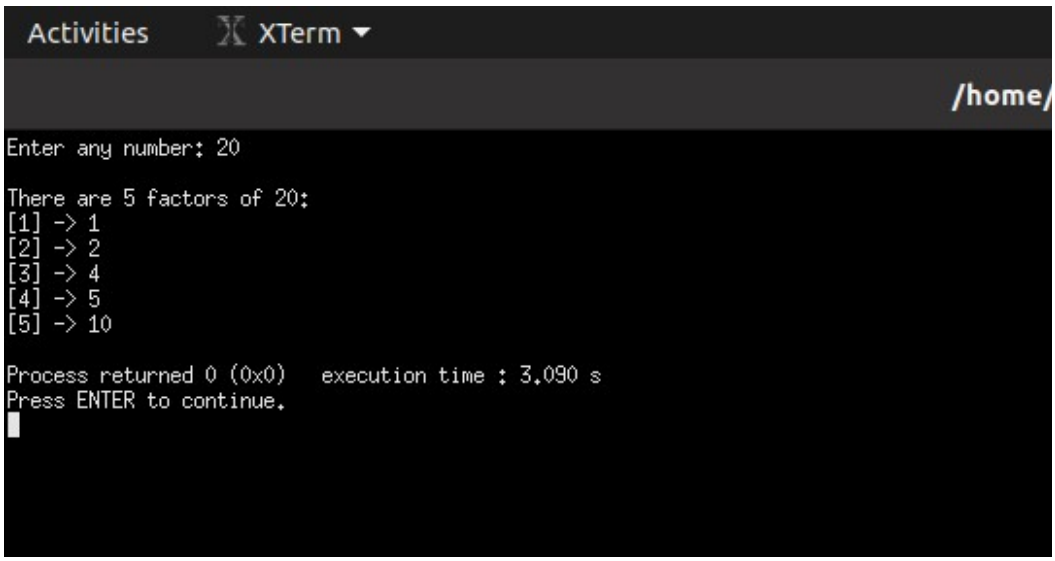
1.Write a program print all the factors of a given number?

```
#include<stdio.h>
int main()
{
int num, rem, i, count=0;
printf("Enter any number: ");
scanf("%d", &num);
for(i=1; i<num; i++)
{
if(num%i==0)
count++;
}
printf("\nThere are %d factors of %d:\n", count, num);
count=1;
for(i=1; i<num; i++)
{if(num%i==0)
{
printf("[%d] -> %d\n", count, i);
count++;
}
}
return 0;
}
```



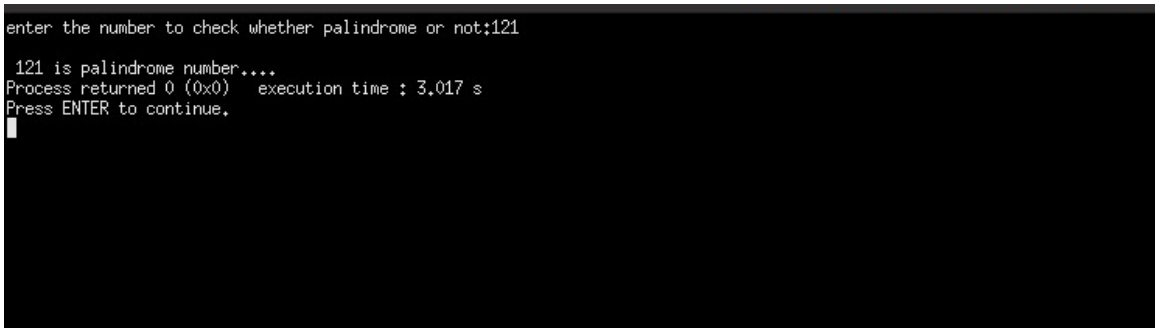
2.Write a program to find the factorial of a given number?

```
#include<stdio.h>
int main()
{
   int n,i;
   printf("enter a number:");
   scanf("%d",&n);
   printf("the factor of a %d numbers are:",n);
   for(i=1;i<=n;++i)
   {
      if(n%i==0)
      {
         printf("%d",i);
      }
   }
}
```



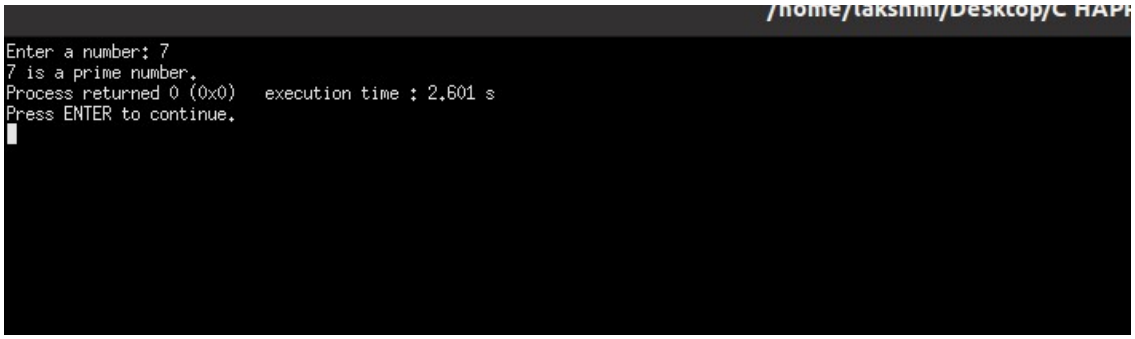
3. Write a program to find whether a given number is Palindrome or not.?

```
  #include<stdio.h>
int main()
{
   int num,rev=0,rem,temp;
   printf("enter the number to check whether palindrome or not:");
   scanf("%d",&num);
   temp=num;
   while(temp>0)
   {
      rem=temp%10;
      rev=(rev*10)+rem;
      temp=temp/10;
   }
   if(rev==num)
      printf("\n %d is palindrome number....",num);
   else
   printf("\n %d is not  palindrome number....",num);
   return 0;
}
```



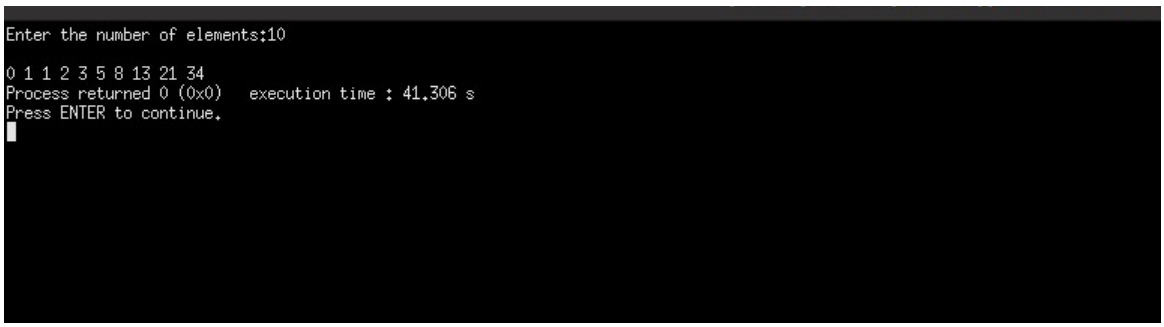
4.Write a program to find whether a given number is Prime or not?

```
#include <stdio.h>
int main() {
  int n, i, flag = 0;
  printf("Enter a number: ");
  scanf("%d", &n);

  for (i = 2; i <= n / 2; ++i) {
    // condition for non-prime
    if (n % i == 0) {
      flag = 1;
      break;
    }
  }

  if (n == 1) {
    printf("1 is neither prime nor composite.");
  }
  else {
    if (flag == 0)
      printf("%d is a prime number.", n);
    else
      printf("%d is not a prime number.", n);
  }

  return 0;
}
```



5. Write a program to print the Fibonacci series upto given 'n' number of terms?

```
#include<stdio.h>
int main()
{int n1=0,n2=1,n3,i,number;
printf("Enter the number of elements:");
scanf("%d",&number);
printf("\n%d %d",n1,n2);
for(i=2;i<number;++i)
{
n3=n1+n2;
printf(" %d",n3);
n1=n2;
n2=n3;
}
return 0;
}
```



Iterative Constructs – II: Nested Loops

1.Write a program to print the first 'n' prime numbers and prime numbers upto 'n' value?

```
#include<stdio.h>
int isprime(int num);        //declaring a fuction
int main()
{
      int num=2,i,j,n;
```

```
        printf("enter the no of lines you want to print=");
        scanf("%d",&n);
        for(i=1;i<=n;i++)     //inner loo[ for rows
        {
              for(j=1;j<=i;j++)     //outer loop for printing elements in
columns
              {
                    while(!isprime(num))  //while loop executes if it is
not a prime number and terminates if it is not a prime number
                    {
                                num++;
                    }
                    printf("%d\t ",num);
               num++;
              }
              printf("\n");
}
}
int isprime(int num)   //fuction to know whether given number is
prime or not
{
       int m,count=0;
       for(m=2;m<num;m++)
       {
             if(num%m!=0)
            count=1;
             else
             {
                    count=0;
                    break;
             }
       }
if(count==1 || num==2)    //returns 1 if it is a prime number
 return 1;
else
```

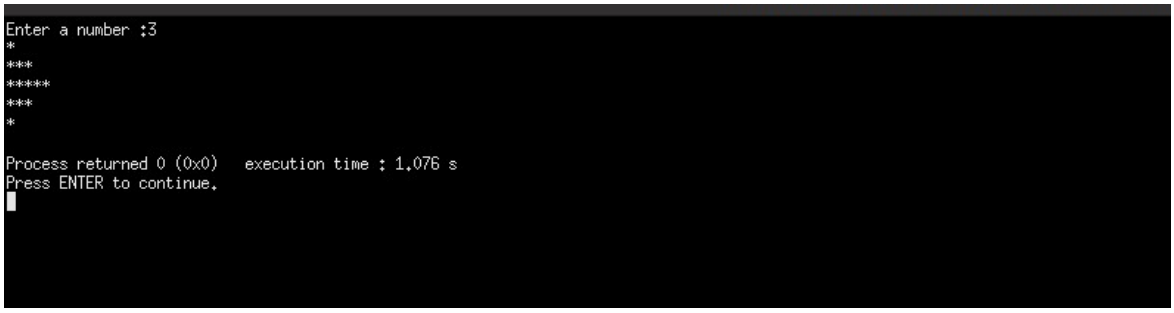
```
 return 0;          //returns 0 if it is not a prime number
}
```

```
Find prime numbers between 1 to : 7
All prime numbers between 1 to 7 are:
2,3,5,7,
Process returned 0 (0x0)   execution time : 2.379 s
Press ENTER to continue.
```

2.Write a program to print the Pascal Triangle for given 'n' value?

```
#include<stdio.h>
long factorial(int);
int main()
{
   int i,n,c;
   printf("How many rows you want to show in pascal triangle:");
   scanf("%d",&n);
   for (i=0;i<n;i++)
   {
      for (c=0;c<=(n-i-2);c++)
      printf(" ");
      for(c=0;c<=i;c++)
         printf("%ld",factorial(i)/(factorial(c)*factorial(i-c)));
         printf("\n");
   }
   return 0;
}

long factorial(int n)
{
   int c;
   long result = 1;

   for( c = 1 ; c <= n ; c++ )
   result = result*c;
```

```
    return ( result );
}
```



3.Write a program to print the first ‘n’ perfect number for a given ‘n’ value?

```
#include <stdio.h>
#include<math.h>
int isPerfect(long long int n){
long long int dsum = 0;
long long int i;
for (i = 1; i <= sqrt(n); ++i)
{
if (n % i == 0) {
if (i == n / i) {
dsum += i;
}
else {
dsum += i;
dsum += n / i;
}
}
}
dsum = dsum - n;
if (dsum == n) return 1;
else
return 0;
}
int main() {
```

```
long long int n, i, temp;
printf("Enter n: ");
scanf("%d", &n);
i = 1;
while (n > 0) {
if (isPerfect(i) == 1) {
printf("%d ", i);
n = n - 1;
}
i = i + 1;
}
printf("\n");
}
```


```
#include<stdio.h>
int main(){
int n,i,j,k,sum;
printf("Enter initial number of range:");
scanf("%d",&j);
printf("Enter final number of range : ");
scanf("%d",&k);
for(n = j;n < k; n++)
{
i = 1;
sum = 0;
while(i < n)
{
if(n % i == 0)
sum += i;
i++;
```

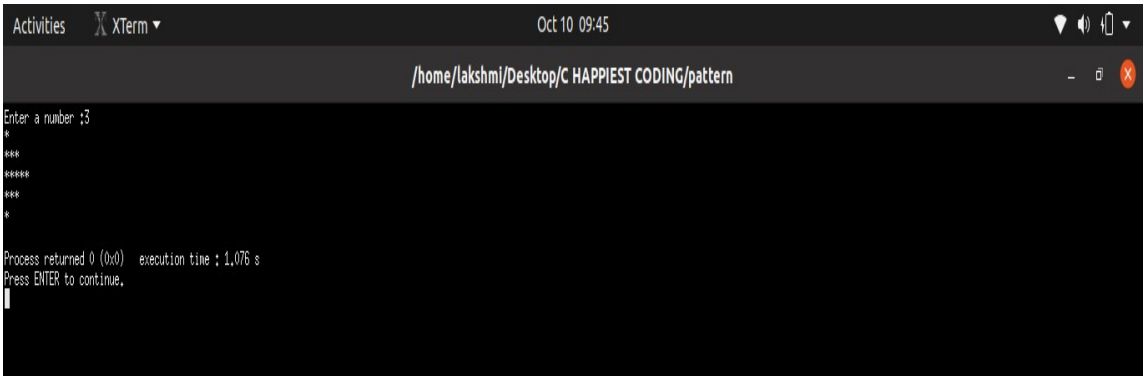
```
}
if (sum == n)
printf("%d\n",n);
}
return 0;
}
```

4.Write a program to print the following pattern for given 'n' value?
For eg.if n = 4,the output would be

```
*
***
*****
***
*
```

```
#include <stdio.h>
void main(){
int n,i = 1,j;
printf("Enter a number :");
scanf("%d",&n);
while(i < ((2 * n) + 1))
{
for(j = 1 ; j <= i;j++){
printf("*");
}
```

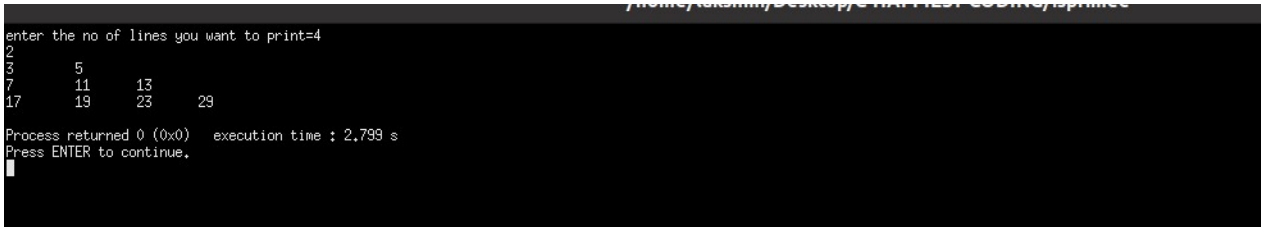
```
printf("\n");
i = i + 2;
}
i = i - 3;
while(i > 1)
{
for (j = 1; j < i;j++ )
{
printf("*");
}
printf("\n");
i = i - 2;
}
}
```



5.Write a program to print the following pattern for given n value
For eg:if n=4,the output would be
2
3 5
7 11 13
17 19 23 29

```
#include<stdio.h>
int isPrimeNumber(int num);
int main() {
int i, j, rows;
int counter = 2;
```

```
printf("Enter the number of rows :");scanf("%d", &rows);
for (i = 1; i <= rows; i++) {
for (j = 1; j <= i; j++) {
/* Try to find next prime number by
incrementing counter and testing it for primality */
while(!isPrimeNumber(counter)){
counter++;
}
printf("%d ", counter);
counter++;
}
printf("\n");
}
return(0);
}
int isPrimeNumber(int num) {
int i, isPrime = 1;
for (i = 2; i <= (num/2); i++) {
if (num % i == 0){
isPrime = 0;
break;
}}
if (isPrime==1 || num==2)
return 1;
else
return 0;
}
```



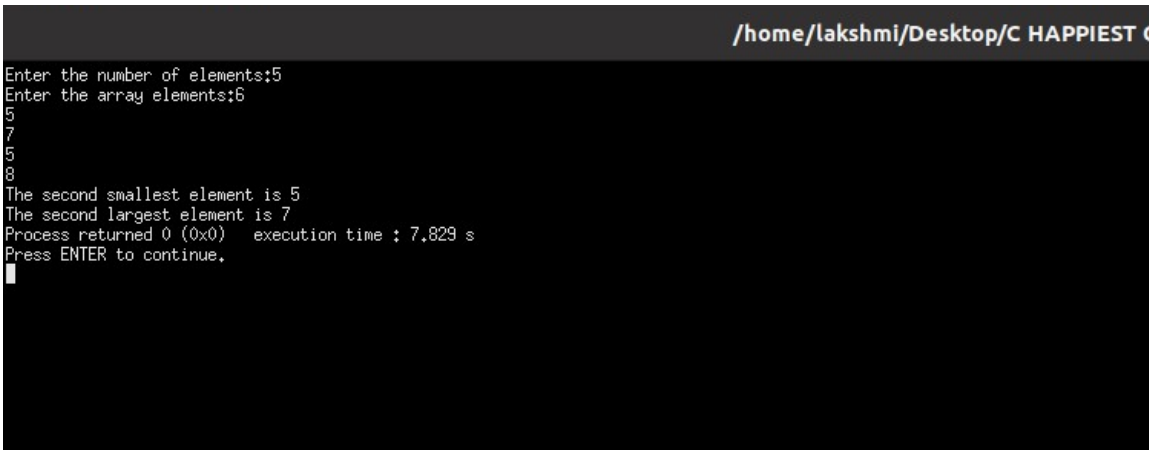
Single Dimensional Arrays: Basic Operations and Problems

1). write a program to take an input array of ‘n’ numbers and fin
//write a program to take an input array of ‘n’ numbers and find out the sum of all the elements, product of all the elements .

```
#include<stdio.h>
int main()
{
    int arr[20];
    int product,i,n,sum;
    float num[100],avg;

    printf("enter the n value:\n");
    scanf("%d",&n);
    printf("enter the elements:\n");
    for(i=0;i<n;i++)
    {
        printf("enter arr[%d]:",i);
        scanf("%d",&arr[i]);
    }
    sum=0;
    product=1;
    for(i=0;i<n;i++)
    {
        sum=sum+arr[i];
        product=product*arr[i];
    }
    avg=sum/n;
    printf("Average=%f",avg);
    printf("\nsum of array is:%d",sum);
    printf("\nproduct of array:%d",product);
    return 0;
}
```

2.Write a program to take an input array of 'n' numbers and print the second smallest and second largest element of all elements in the array.

```
#include<stdio.h>
int main()
{
    int arr[20];
    int product,i,n,sum;
    float num[100],avg;

    printf("enter the n value:\n");
    scanf("%d",&n);
    printf("enter the elements:\n");
    for(i=0;i<n;i++)
    {
        printf("enter arr[%d]:",i);
        scanf("%d",&arr[i]);
    }
    sum=0;
    product=1;
    for(i=0;i<n;i++)
    {
        sum=sum+arr[i];
        product=product*arr[i];
    }
    avg=sum/n;
    printf("Average=%f",avg);
    printf("\nsum of array is:%d",sum);
    printf("\nproduct of array:%d",product);
    return 0;
}
```



Two dimensional arrays – matrices & its operations

1. Write a program to find the addition and subtraction for the given two matrices of sizes 'M x N' and 'P x Q' respectively?

```
#include<stdio.h>
int main()
{
   int n, m,p,q,c,d,first[10][10],second[10][10],sum[10]
[10],diff[10][10];
printf("\nEnter the number of rows and columns of the first
matrix\n\n");
scanf("%d%d",&m,&n);
printf("\nenter the number of rows and columns of the second
matrix\n\n");
scanf("%d%d",&p,&q);
printf("\nEnter the %d elements of the first matrix \n\n",m*n);
for(c=0;c<m;c++)
for(d=0;d<n;d++)
scanf("%d",&first[c][d]);
printf("\nEnter the %d elements of the second matrix\n\n",p*q);
for(c =0;c<p;c++)
for(d=0;d<q;d++)
scanf("%d",&second[c][d]);
printf("\n\nThe first matrix m*n is: \n\n");
for(c=0;c<m;c++)
{
for(d=0;d<n;d++)
{
```

```
printf("%d\t",first[c][d]);
}
printf("\n");
}
printf("\n\nThe second matrix p*q is: \n\n");
for(c=0;c<p;c++)
{
for(d=0;d<q;d++)
{
printf("%d\t",second[c][d]);
}
printf("\n");
}
for(c=0;c<m;c++)
for(d=0;d<n;d++)
sum[c][d]=first[c][d]+second[c][d];
printf("\n\nThe sum of the two entered matrices is: \n\n");
for(c=0;c<m;c++)
{
for(d=0;d<n;d++)
{
printf("%d\t",sum[c][d]);
}
printf("\n");
}
for(c=0;c<m;c++)
for(d=0;d<n;d++)
diff[c][d]=first[c][d]-second[c][d];
printf("\n\nThe difference(subtraction) of the two entered
matricesis: \n\n");
for(c=0;c<m;c++)
{
for(d =0;d<n;d++)
{
printf("%d\t",diff[c][d]);
```

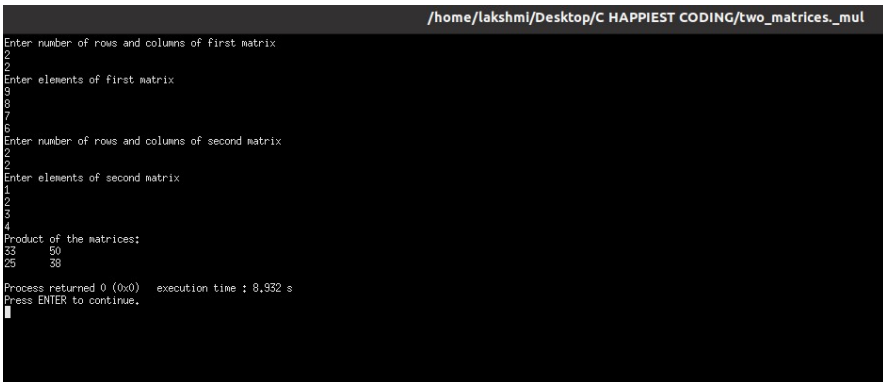
```
}
printf("\n");}
return 0;
        }
```

```
/home/laksmmi/Desktop/C HAPPIEST CODING/two_matri

Enter the number of rows and columns of the first matrix

2
2

enter the number of rows and columns of the second matrix

2
2

Enter the 4 elements of the first matrix

6
7
8
9

Enter the 4 elements of the second matrix

9
8
7
6

The first matrix m*n is:

6       7
8       9

The second matrix p*q is:

9       8
7       6

The sum of the two entered matrices is:

15      15
15      15

The difference(subtraction) of the two entered matricesis:

-3      -1
1       3

Process returned 0 (0x0)   execution time : 17.288 s
```

2).write a program to find the multiplication of the given two matrices of sizes ‘m x n’ and ‘p x q’ respectively?

```
#include <stdio.h>

int main()
{
  int m,n,p,q,c,d,k,sum=0;
  int first[10][10],second[10][10],multiply[10][10];
  printf("Enter number of rows and columns of first matrix\n");
  scanf("%d%d", &m, &n);
  printf("Enter elements of first matrix\n");
  for (c=0;c<m;c++)
    for (d=0;d<n;d++)
      scanf("%d",&first[c][d]);
  printf("Enter number of rows and columns of second matrix\n");
  scanf("%d%d",&p,&q);
  if(n!=p)
    printf("The multiplication isn't possible.\n");
  else
  {
```

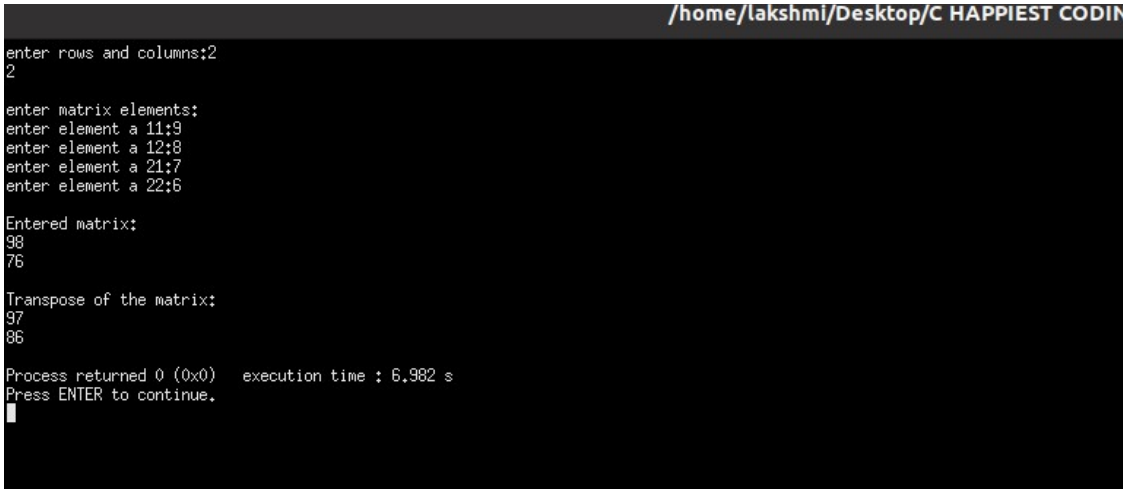
```
    printf("Enter elements of second matrix\n");

    for (c=0;c<p;c++)
      for (d=0;d<q;d++)
        scanf("%d",&second[c][d]);

    for (c=0;c<m;c++) {
      for (d=0;d<q;d++) {
        for (k=0;k<p;k++) {
          sum=sum+first[c][k]*second[k][d];
        }
        multiply[c][d]=sum;
        sum = 0;
      }
    }
    printf("Product of the matrices:\n");
    for (c=0;c<m;c++)
        {
      for (d =0;d<q;d++)
        printf("%d\t",multiply[c][d]);
      printf("\n");
    }
  }
  return 0;
}
```



3.write a program to find the transpose of a matrix?

```
#include<stdio.h>
int main()
{
    int a[1][10],transpose[10][10],r,c;
    printf("enter rows and columns:");
    scanf("%d%d",&r,&c);
    printf("\nenter matrix elements:\n");
    for(int i=0;i<r;++i)
        for(int j=0;j<c;++j)
    {
        printf("enter element a %d%d:",i+1,j+1);
        scanf("%d",&a[i][j]);
    }
    printf("\nEntered matrix:\n");
    for(int i=0;i<r;++i)
        for(int j=0;j<c;++j)
    {
        printf("%d",a[i][j]);
        if(j==c-1)
            printf("\n");
    }
    for(int i=0;i<r;++i)
        for(int j=0;j<c;++j)
    {
        transpose[j][i]=a[i][j];
    }
    printf("\nTranspose of the matrix:\n");
    for(int i=0;i<c;++i)
        for(int j=0;j<r;++j)
    {
        printf("%d",transpose[i][j]);
        if(j==r-1)
            printf("\n");
    }
```

```
    return 0;
}
```

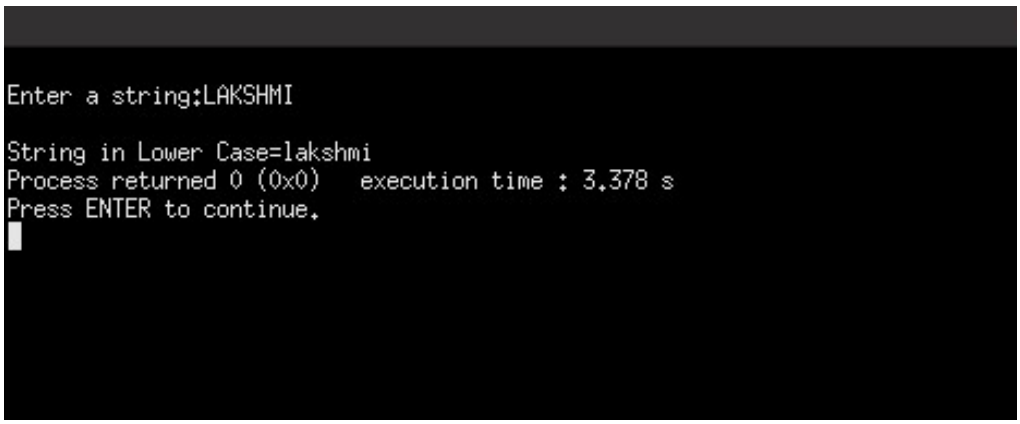


Strings – Dealing with non-numerical data

1. Write a program to convert the Lower Case letters to Upper Case Letters and Upper Case Letters to Lower Case Letters in a given input string?

```
#include<stdio.h>
#include<string.h>
int main()
{
    char s[100];
    int i;
    printf("\nEnter a string:");
    gets(s);
    for(i=0;s[i]!='\0';i++)
    {
        if(s[i]>='A'&&s[i]<='Z')
        {
            s[i]=s[i]+32;
        }
    }
    printf("\nString in Lower Case=%s",s);
    return 0;
```

```
}
```



2.Write a program to the print out the number of vowels, consonants, and digits (0-9) present in the given input string?

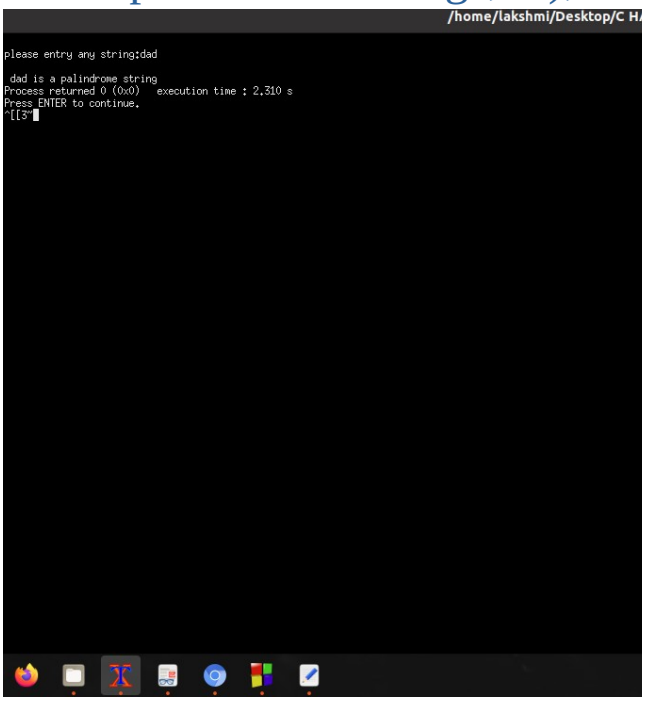
```
#include <stdio.h>
int main() {
    char line[150];
    int vowels,consonant,digit,space;
    vowels=consonant=digit=space=0;
    printf("Enter a line of string: ");
    fgets(line, sizeof(line),stdin);
    for (int i = 0;line[i]!='\0';++i)
        {
        if (line[i] == 'a' || line[i] == 'e' || line[i] == 'i' ||
            line[i] == 'o' || line[i] == 'u' || line[i] == 'A' ||
            line[i] == 'E' || line[i] == 'I' || line[i] == 'O' ||
            line[i] == 'U')
            {
            ++vowels;
        }
    else if
        ((line[i] >= 'a' && line[i] <= 'z') || (line[i] >= 'A' && line[i]
<= 'Z'))
        {
            ++consonant;
```

```
        }
        else if
            (line[i] >= '0' && line[i] <= '9')
            {
            ++digit;
        }
        else if
        (line[i] == ' ')
         {
            ++space;
        }
    }

    printf("Vowels: %d", vowels);
    printf("\nConsonants: %d", consonant);
    printf("\nDigits: %d", digit);
    printf("\nWhite spaces: %d", space);
    return 0;
}
```

2.Write a program to check whether the given input string is palindrome string or not?

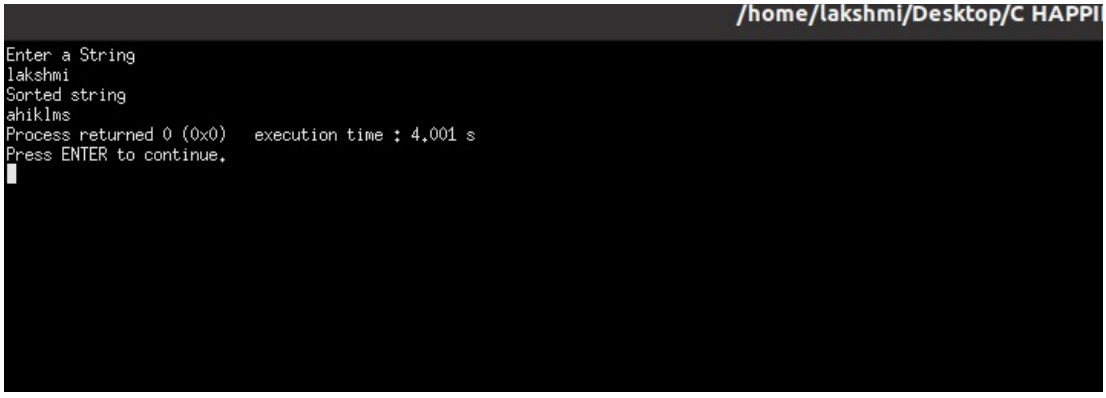
```
#include<stdio.h>
#include<string.h>
int main()
{
```

```
    char str[100];
    int i,len,flag;
    flag=0;
    printf("\nplease entry any string:");
    gets(str);
    len=strlen(str);
    for(i=0;i<len;i++)
    {
        if(str[i]!=str[len-i-1])
        {
            flag=1;
            break;

        }
    }
    if(flag==0)
    {
        printf("\n %s is a palindrome string",str);

    }
    else
    {
        printf("\n %s is not a palindrome string",str);
    }
    return 0;
}
```



3.Write a program to sort the given string of characters?

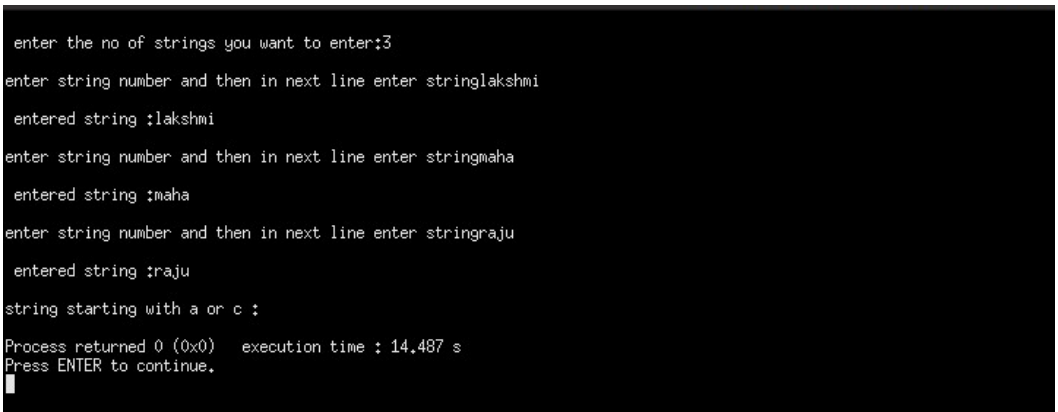
```
#include<stdio.h>#include<string.h>
int main(){
char str[100][100],ch;
int n,i,k;
printf("\n enter the no of strings you want to enter:");
scanf("%d",&n);
i=0;
while(n){
printf("\nenter string number and then in next line enter string");
scanf("%d\n",&k);
gets(str[i]);
printf("\n entered string :");
puts(str[i]);
n--;
i++;
}
i=0;
printf("\nstring starting with a or c :\n");
while(k){
ch=str[i][0];
if(ch=='a'){puts(str[i]);
}
else if(ch=='c'){
puts(str[i]);
}
i++;
k--;
}
return
0;
}
```



Array of Strings

1.Write a program to find the strings starting with “c” and “a” for the given n input strings?

```
#include<stdio.h>#include<string.h>
int main(){
char str[100][100],ch;
int n,i,k;
printf("\n enter the no of strings you want to enter:");
scanf("%d",&n);
i=0;
while(n){
printf("\nenter string number and then in next line enter string");
scanf("%d\n",&k);
gets(str[i]);
printf("\n entered string :");
puts(str[i]);
n--;
i++;
}
i=0;
printf("\nstring starting with a or c :\n");
while(k){
ch=str[i][0];
if(ch=='a'){puts(str[i]);
}
else if(ch=='c'){
puts(str[i]);
}
i++;
k--;
}
return 0;
}
```

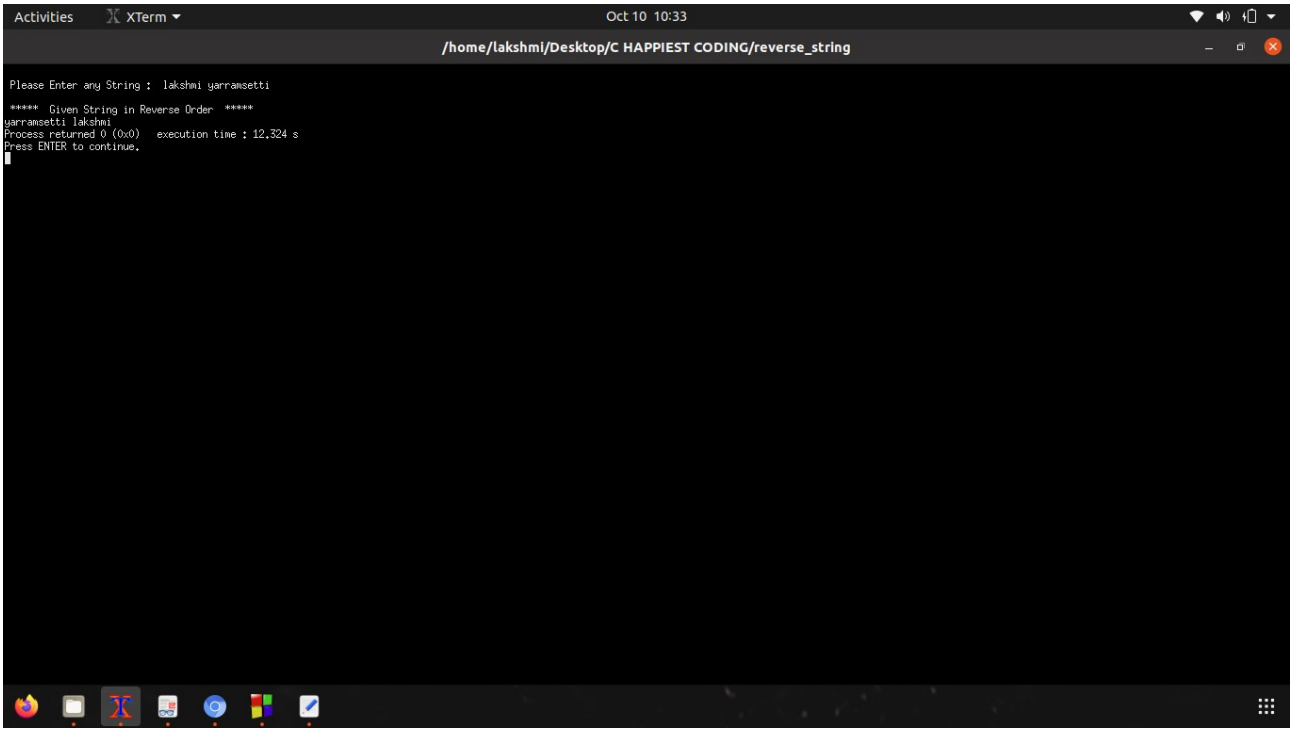


2.Write a program to print the words of given input string in reverse order

/ C Program to Reverse Order of Words in a String */*

```
#include <stdio.h>
#include <string.h>

int main()
{
	char str[100];
	int i, j, len, startIndex, endIndex;

	printf("\n Please Enter any String :  ");
	gets(str);

	len = strlen(str);
	endIndex = len - 1;

	printf("\n *****  Given String in Reverse Order  ***** \n");
	for(i = len - 1; i >= 0; i--)
	{
		if(str[i] == ' ' || i == 0)
		{
			if(i == 0)
			{
				startIndex = 0;
			}
			else
			{
				startIndex = i + 1;
			}
			for(j = startIndex; j <= endIndex; j++)
			{
				printf("%c", str[j]);
			}
```

```
                endIndex = i - 1;
                printf(" ");
            }
        }

        return 0;
```

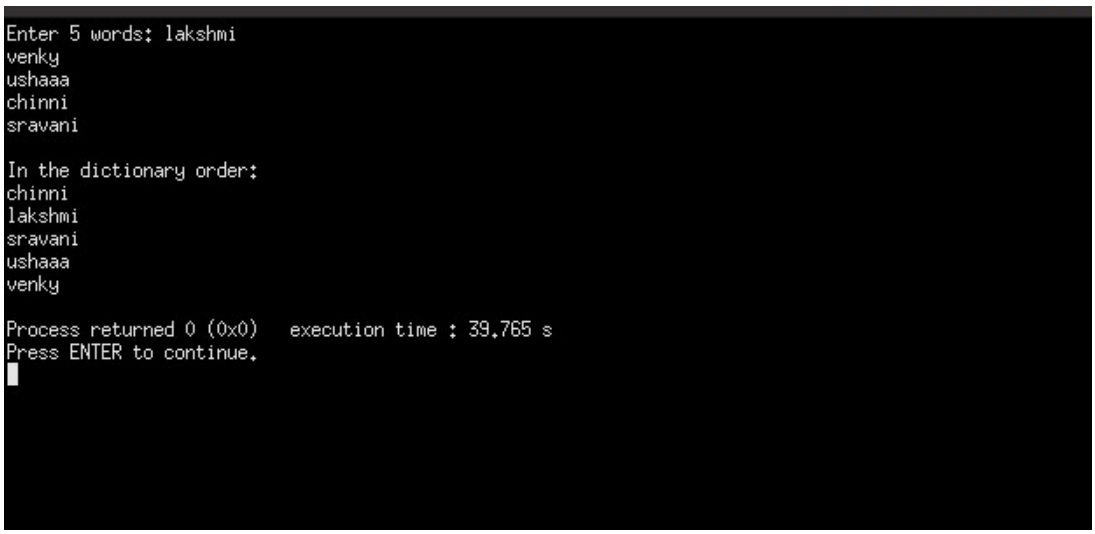



```
}
```

3.Write a program to arrange the given ‘n’ strings in Dictionary Order?

```
#include <stdio.h>
#include <string.h>
int main() {
char str[5][50], temp[50];
printf("Enter 5 words: ");
for (int i = 0; i < 5; ++i) {
fgets(str[i], sizeof(str[i]), stdin);
}
for (int i = 0; i < 5; ++i) {
```

```
for (int j = i + 1; j < 5; ++j) {
if (strcmp(str[i], str[j]) > 0) {
strcpy(temp, str[i]);
strcpy(str[i], str[j]);
strcpy(str[j], temp);
}
}
}
printf("\nIn the dictionary order: \n");for (int i = 0; i < 5; ++i) {
fputs(str[i], stdout);
}
return 0;
}
```



functions

1.Write a program to implement the string operations like Length of String, String Copying, String Concatenation, Conversion to Uppercase and String Comparison.(Define own Function for each of the operation. Header file “string.h” is not allowed)

```
#include<stdio.h>
char len(char str[]){int i=0;
while(str[i]){
```

```
i=i+1;
}
printf("\n length of the string is %d",i);
}
char copy(char str[]){
char copy[100];
int i=0;
while(str[i]){
copy[i]=str[i];
i=i+1;
}
printf("\nstring after copy: ");
i=0;
while(copy[i]){
printf("%c",copy[i]);
i=i+1;
}
}
char conct(char str1[],char str2[]){char concte[100];
int i=0,j=0;
while(str1[i]){
concte[i]=str1[i];
i=i+1;
}
while(str2[j]){
concte[i]=str2[j];
i=i+1;
j=j+1;
}
printf("\nstring after concatination is :");
i=0;
while(concte[i]){
printf("%c",concte[i]);
i=i+1;
}
```

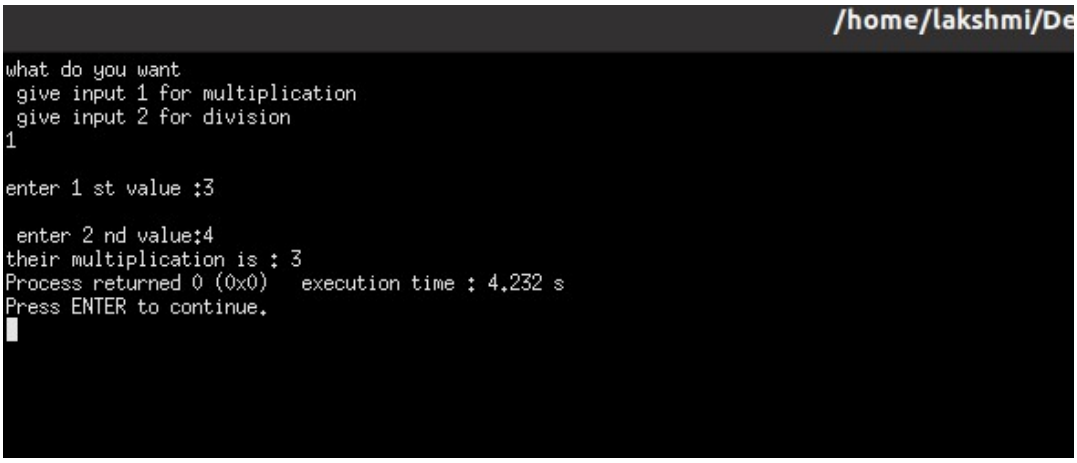
```
}
char upp(char str[]){
int i=0;
printf("\n string in upper:\n");while(str[i]){
printf("%c",str[i]-32);
i=i+1;
}
}
char compare(char str1[],char str2[]){
int i=0,n=0,k=0;
while(str1[i]||str2[i]){
if(str1[i]>str2[i]){
k++;
i=100;
}
else if(str1[i]==str2[i]){
k=k;
n=n;
i++;
}
else{
n++;
i=100;
}}
if(k>0){
printf("\nstring 2 is grater");
}
else if(n>0){
printf("\nstring 3 is grater");
}
else if(k==0&&n==0){
printf("\nboth strings are equal");
}
}
int main(){
```

```
char str[100],str1[100],str2[100];
printf("enter string number 1");
gets(str);
printf("\n enter string number 2");
gets(str1);
printf("\n enter string number 3");
gets(str2);
len(str);
copy(str);conct(str1,str2);
upp(str);
compare(str1,str2);
return 0;
}
```

2.Write a C program to implement Multiplication and Division Operations without using operators "" and "\" respectively. Define function "mul" for multiplication and "div" for integer?*

```
#include<stdio.h>
int mul(a,b){
int i,c;
c=a;
for(i=0;i<b;i++){
c=c+a;}
printf("their multiplication is : %d",a);
}
```

```
int div(a,b){
int i=0;
while(a>=b){
a=a-b;
i++;
}
printf("reminder is %d",a);
printf("quotient is %d",i);
printf("\n a/b is %d",i);
}
int main(){
int a,b,option;
printf("what do you want\n give input 1 for multiplication \n give
input 2 for division\n" );
scanf("%d",&option);
switch(option){
case(1):{
printf("\nenter 1 st value :");
scanf("%d",&a);
printf("\n enter 2 nd value:");
scanf("%d",&b);mul(a,b);
break;
}
case(2):{
printf("\nenter 1 st value :");
scanf("%d",&a);
printf("\n enter 2 nd value:");
scanf("%d",&b);
div(a,b);
break;
}
}
return 0;
}
```



Recursion

1 .Write a program to print the integers from 1 to N and then N to for the given input number ‘N’ without using any loops?

```
#include<stdio.h>
void print(int n);
main()
{
   int n;
   printf("enter n value:");
   scanf("%d",&n);
   print(n);
}
void print(int n)
{
   if(n>=1)
   {
      print(n-1);
      printf("%d",n);
   }
}
```

```
enter n value:5
12345
Process returned 0 (0x0)   execution time : 1.991 s
Press ENTER to continue.
```

2.Write a program to find the X power N(XN) using the user defined recursive function "pow(X,N)" without using any predefined function

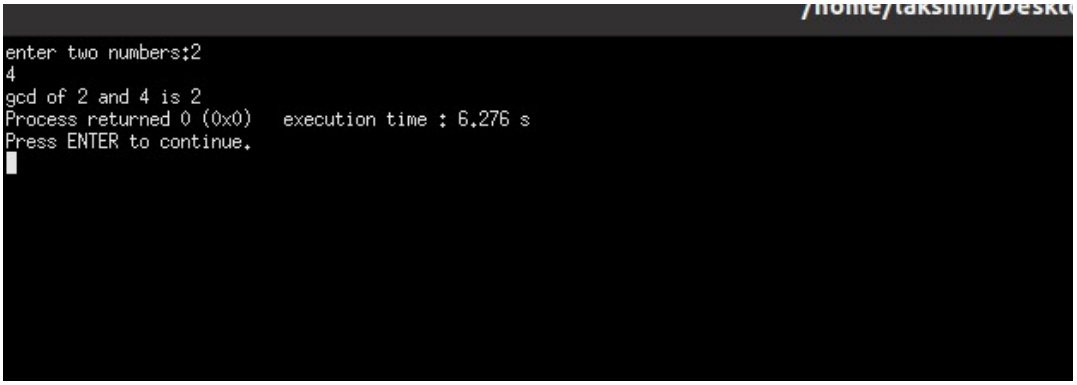
```
#include<stdio.h>
int power(a,b)
{
   if(b>0)
   {
      return(a*power(a,b-1));
   }
   else{
      return 1;
   }
}
int main()
{
   int a,b,asn;
   printf("enter a base number");
   scanf("%d",&a);
   printf("\nenter exponent number:");
   scanf("%d",&b);
   asn=power(a,b);
   printf("\n\n a power b is:%d",asn);
   return 0;
}
```

```
/home/lakshmi/Deskto
enter a base number3

enter exponent number:4


 a power b is:81
Process returned 0 (0x0)   execution time : 3.939 s
Press ENTER to continue.
```

3.Write a program to find the GCD of two numbers ‘a’ and ‘b’ by defining a recursive function GCD(a,b)?

```
#include<stdio.h>
int gcd(a,b)
{
   if(a==0)
   {
      return b;
   }
   else if(b==0)
   {
      return a;
   }
   else if(a==b)
   {
      return a;
   }
   else if(a>b)
   {
      return gcd(a-b,b);
   }
   else if(b>a)
   {
      return gcd(a,b-a);
   }

}
int main()
{
   int a,b,val;
   printf("enter two numbers:");
   scanf("%d \n %d",&a,&b);
   val=gcd(a,b);
```

```
    printf("gcd of %d and %d is %d",a,b,val);
    return 0;
```



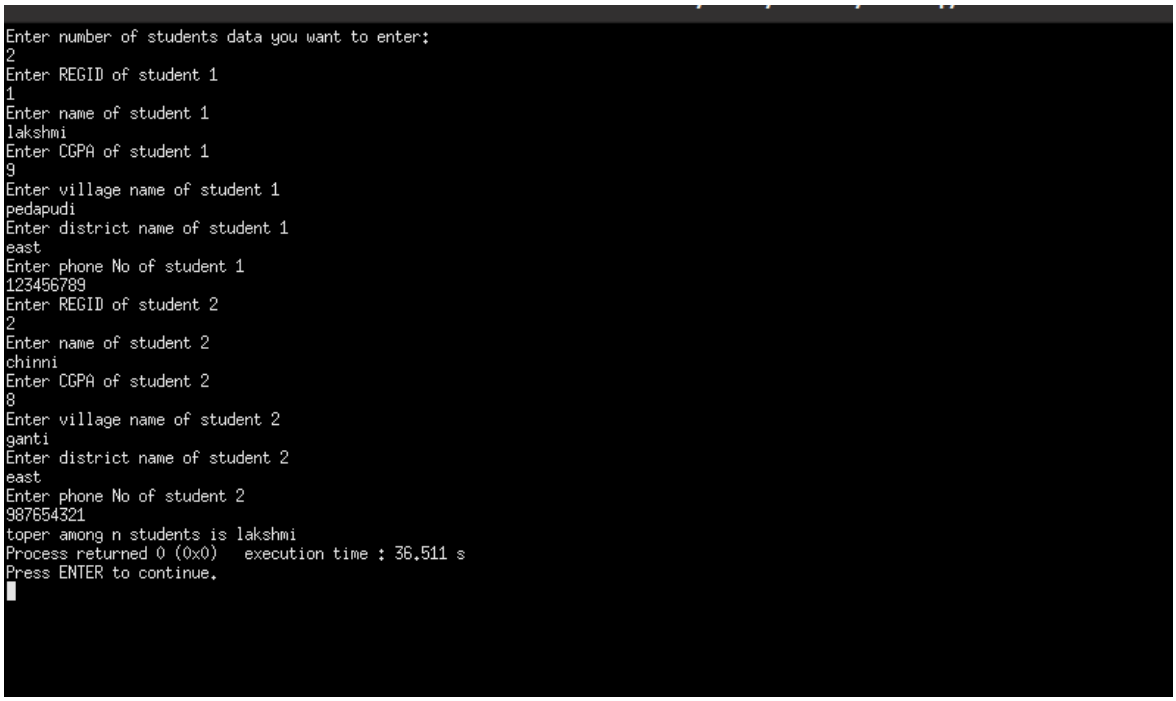
}

Structures

1.Write a program to take the information of 'n' Students (REGID, Name, CGPA, Address – Village, District, Phone NO) and print the topper among the n students.

```
#include <stdio.h>
struct student
{
   int REGID;
       char name[30];
       float CGPA;
       char village[30];
       char district[30];
       long long int phone;
};

void main()
{
       int i, n,j;
       struct student st[20], temp;
       printf("Enter number of students data you want to enter:\n");
       scanf("%d",&n);
       for(i=0;i < n;i++)
       {
          printf("Enter REGID of student %d\n",(i+1));
             scanf("%d",&st[i].REGID);
             printf("Enter name of student %d\n",(i+1));
             scanf("%s",&st[i].name);
             printf("Enter CGPA of student %d\n",(i+1));
             scanf("%f",&st[i].CGPA);
             printf("Enter village name of student %d\n",(i+1));
             scanf("%s",&st[i].village);
             printf("Enter district name of student %d\n",(i+1));
             scanf("%s",&st[i].district);
             printf("Enter phone No of student %d\n",(i+1));
```

```
            scanf("%lld",&st[i].phone);

        }
        for(i=0;i < (n-1);i++)
        {
            for(j=0;j < (n-i-1);j++)
            {
                if(st[j].CGPA > st[j+1].CGPA)
                {
                    temp = st[j];
                    st[j] = st[j+1];
                    st[j+1] = temp;
                }
            }
        }
    printf("toper among n students is %s",st[n-1].name);
}
```



2.Write a program to take the information of 'n' Students (REGID, Name, CGPA, Address – Village, District, Phone NO) and print the students in the ascending order of Regn ID.

```
#include <stdio.h>
struct student
{
   int REGID;
       char name[30];
       float CGPA;
       char village[30];
       char district[30];
       long long int phone;
};

void main()
{
       int i, n,j;
       struct student st[20], temp;
       printf("Enter number of students data you want to enter:\n");
       scanf("%d",&n);
       for(i=0;i < n;i++)
       {
          printf("Enter REGID of student %d\n",(i+1));
             scanf("%d",&st[i].REGID);
             printf("Enter name of student %d\n",(i+1));
             scanf("%s",&st[i].name);
             printf("Enter CGPA of student %d\n",(i+1));
             scanf("%f",&st[i].CGPA);
             printf("Enter village name of student %d\n",(i+1));
             scanf("%s",&st[i].village);
             printf("Enter district name of student %d\n",(i+1));
             scanf("%s",&st[i].district);
             printf("Enter phone No of student %d\n",(i+1));
             scanf("%lld",&st[i].phone);

       }
       for(i=0;i < (n-1);i++)
       {
```

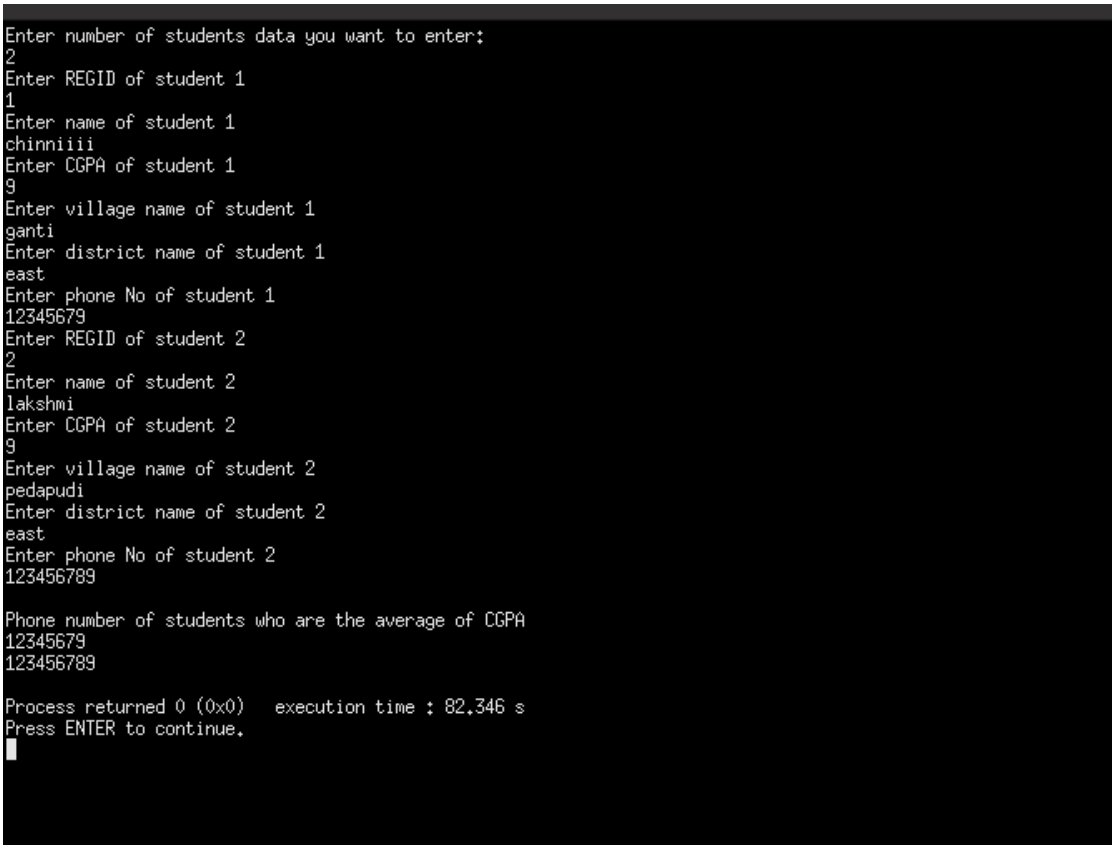
```
            for(j=0;j < (n-i-1);j++)
            {
                  if(st[j].REGID > st[j+1].REGID)
                  {
                        temp = st[j];
                        st[j] = st[j+1];
                        st[j+1] = temp;
                  }
            }
      }
   printf("\n\n\n\t\t******Sorted in ascending order******\n");
      for(i=0; i < n;i++)
      {
            printf("REGID of student %d\n",st[i].REGID);
            printf("name of student %S\n",st[i].name);
            printf("CGPA of student %f\n",st[i].CGPA);
            printf("village name of student %s\n",st[i].village);
            printf("district name of student %s\n",st[i].district);
            printf("phone No of student %lld\n",st[i].phone);
      }
}
```

```
Enter number of students data you want to enter:
2
Enter REGID of student 1
1
Enter name of student 1
lashmi
Enter CGPA of student 1
9
Enter village name of student 1
pedapudi
Enter district name of student 1
east
Enter phone No of student 1
2345679
Enter REGID of student 2
2
Enter name of student 2
chinni
Enter CGPA of student 2
10
Enter village name of student 2
ganti
Enter district name of student 2
east
Enter phone No of student 2
98765412



                ******Sorted in ascending order******
REGID of student 1
name of student CGPA of student 9.000000
village name of student pedapudi
district name of student east
phone No of student 2345679
REGID of student 2
name of student CGPA of student 10.000000
village name of student ganti
district name of student east
phone No of student 98765412

Process returned 0 (0x0)   execution time : 36.392 s
Press ENTER to continue.
```

3. Write a program to take the information of 'n' Students (REGID, Name, CGPA, Address – Village, District, Phone NO)and print the list of Phone Number for the students who are the above average of CGPA.

```
#include <stdio.h>
struct student
{
   int REGID;
       char name[30];
       float CGPA;
       char village[30];
       char district[30];
       long long int phone;
};

void main()
{
       int i, n,j;
       struct student st[20], temp;
       printf("Enter number of students data you want to enter:\n");
       scanf("%d",&n);
       for(i=0;i < n;i++)
       {
          printf("Enter REGID of student %d\n",(i+1));
             scanf("%d",&st[i].REGID);
             printf("Enter name of student %d\n",(i+1));
             scanf("%s",&st[i].name);
             printf("Enter CGPA of student %d\n",(i+1));
             scanf("%f",&st[i].CGPA);
             printf("Enter village name of student %d\n",(i+1));
             scanf("%s",&st[i].village);
             printf("Enter district name of student %d\n",(i+1));
             scanf("%s",&st[i].district);
```

```
            printf("Enter phone No of student %d\n",(i+1));
            scanf("%lld",&st[i].phone);

        }
        printf("\nPhone number of students who are the average of CGPA\n");
        for(i=0;i <= (n-1);i++)
        {
                if(st[i].CGPA > 7.5)
                {
                printf("%lld\n",st[i].phone);
                }
        }
}
```



NAME:GAJALAKSHMI
ID:S180316
CLASS :CSE{1E}