ASSIGNMENT-03

Title : Lab Assignment – 3
Course Code : CSE-122

Submitted To :

AL AKRAM CHOWDHURY
LECTURER
Dept. of Computer Science & Engineering, MU

Submitted By :

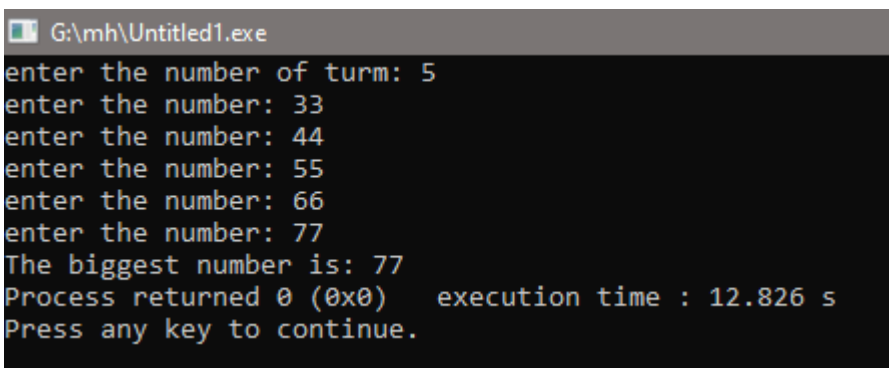
Prohor Paul
ID No : 221-115-106
Batch : 56th
Section : c
Dept. of Computer Science & Engineering, MU

Date of Submission : June 9,2022

Array

1.Write a program that will take n (n = any positive integer less than 100) from the user and find the biggest number among them.

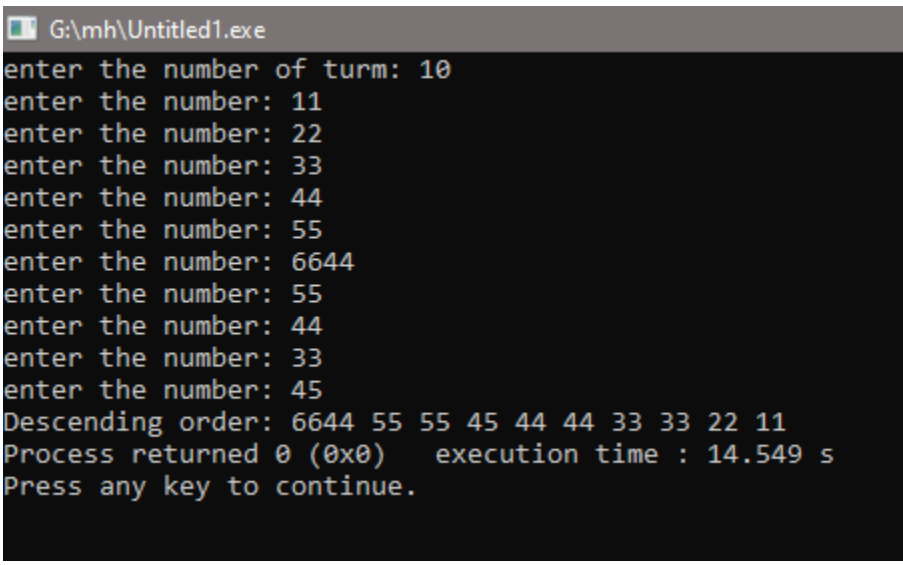
```
#include<stdio.h>
int main()
{
   int a[100],i,n;
   printf("enter the number of turm: ");
   scanf("%d",&n);
   for(i=0;i<n;i++)
   {
      printf("enter the number: ");
      scanf("%d",&a[i]);
   }
   for(i=1;i<n;i++)
   {
      if(a[0]<a[i])
      {
         a[0]=a[i];
      }
   }
   printf("The biggest number is: %d",a[0]);
   return 0;
}
```



2. Write a program that will take n (n = any positive integer less than 100) from the user and

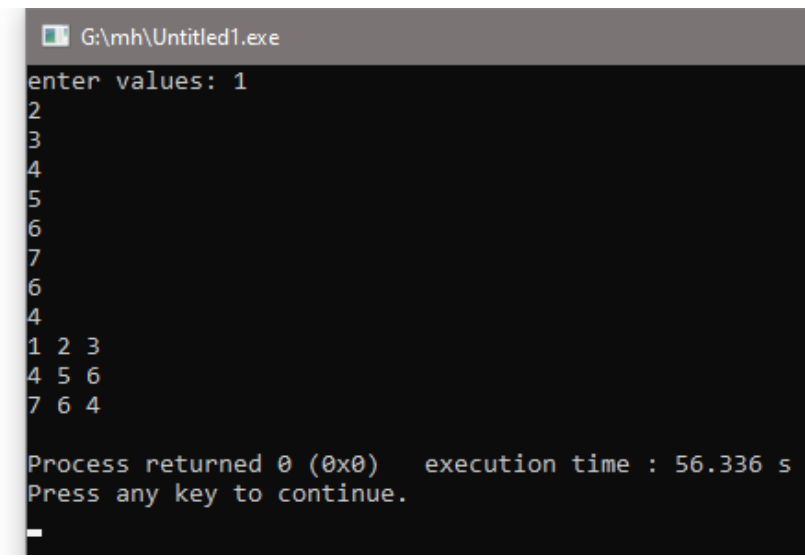
print them in descending order.

```
#include<stdio.h>
int main()
{
   int a[100];
   int i,j,b,n;
   printf("enter the number of turm: ");
   scanf("%d",&n);
   for(i=0;i<n;i++)
   {
      printf("enter the number: ");
      scanf("%d",&a[i]);
   }
   for(i=0;i<n;i++)
   {
      for(j=i+1;j<n;j++)
      {
         if(a[i]<a[j])
         {
            b=a[i];
            a[i]=a[j];
            a[j]=b;
         }
      }
   }printf("Descending order: ");
   for(i=0;i<n;i++){
   printf("%d ",a[i]);}
   return 0;
}
```



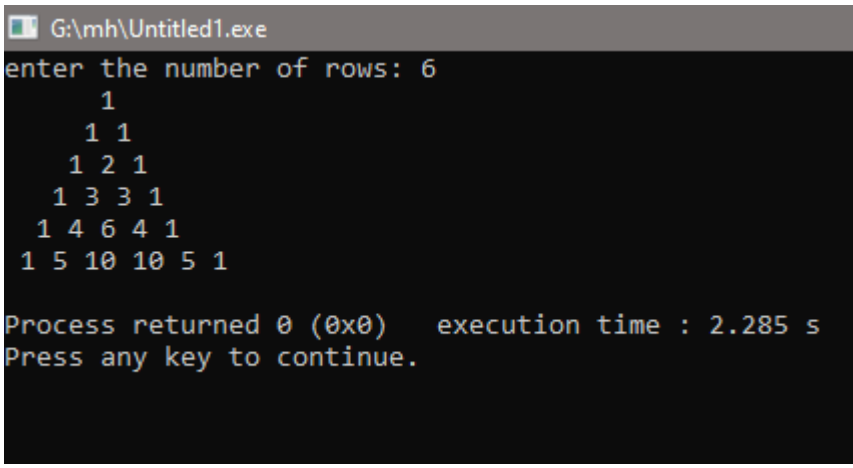
3. WAP to input the values in a two dimensional array of integers and display the values.

```
#include<stdio.h>
int main()
{
   int a[3][3];
   int i,j;
   printf("enter values: ");
   for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      scanf("%d",&a[i][j]);
   }
   for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      {printf("%d ",a[i][j]);}
   printf("\n");}
}
```



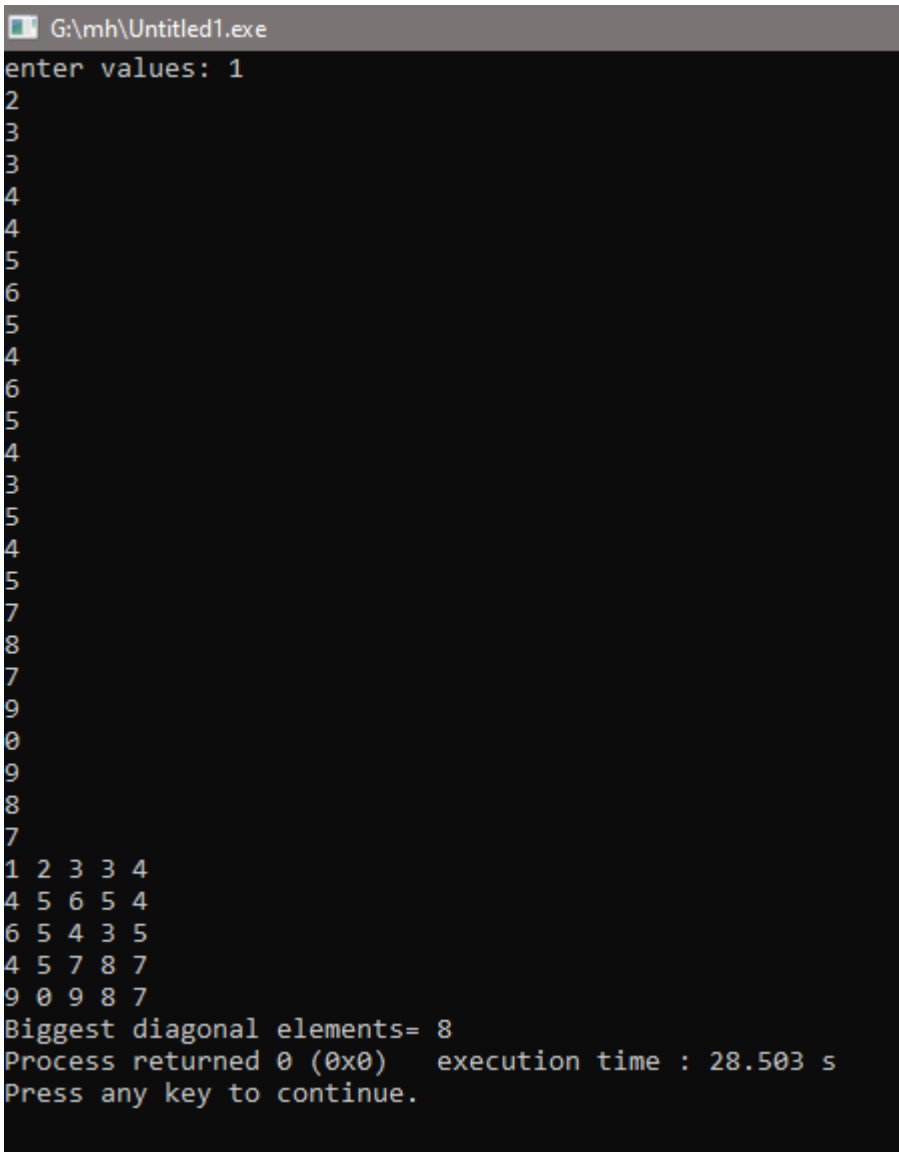
4. Draw the Pascal's Triangle using two-dimensional array.

```
#include<stdio.h>
int main()
{
   int n,i,j;
   printf("enter the number of rows: ");
   scanf("%d",&n);
   int a[n][n];
      for(i=0;i<n;i++)
      {
         for(int s=1; s<=n-i; s++)
   printf(" ");
         for(j=0;j<=i;j++)
         {
            if(j==0||j==i)
               a[i][j]=1;
            else
               a[i][j]=a[i-1][j-1]+a[i-1][j];
            printf("%d ",a[i][j]);
         }printf("\n");
      }
}
```



5. WAP that takes a 5x5 matrix of integer values as input and then find out the biggest number from upper-left to lower bottom diagonal elements of that matrix.

```
#include<stdio.h>
int main()
{
   int a[5][5];
   int i,j;
   printf("enter values: ");
   for(i=0;i<5;i++)
   {
      for(j=0;j<5;j++)
      scanf("%d",&a[i][j]);
   }
   for(i=0;i<5;i++)
   {
      for(j=0;j<5;j++)
      {printf("%d ",a[i][j]);}
   printf("\n");}
    for(i=1;i<5;i++)
   {
      j=i;
         if (a[0][0]<a[i][j])
         {a[0][0]=a[i][j];}
   } printf("Biggest diagonal elements= %d",a[0][0]);
}
```

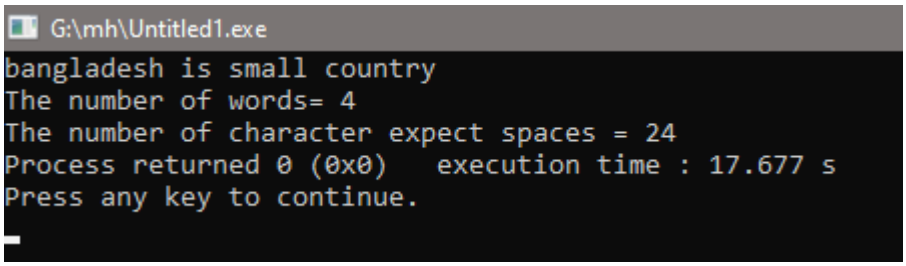


String

1. WAP to count the number of words and number of characters in a given line of text

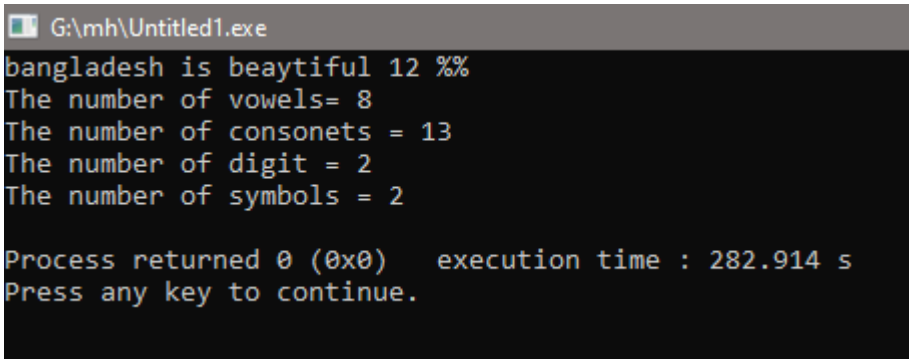
except the spaces.

```
#include<stdio.h>
int main()
{
   char a[100];
   int i,j=0,len,count=1,s;
   gets(a);
   len=strlen(a);
   for(i=0;i<len;i++)
   {
    if(a[i]==' ')
    {count++; }
   }
   printf("The number of words= %d\n",count);
    for(i=0;i<len;i++)
   {
    if(a[i]==' ')
    {j++; }
   }
   s=len-j;
   printf("The number of character expect spaces = %d",s);
   return 0;
   }
```



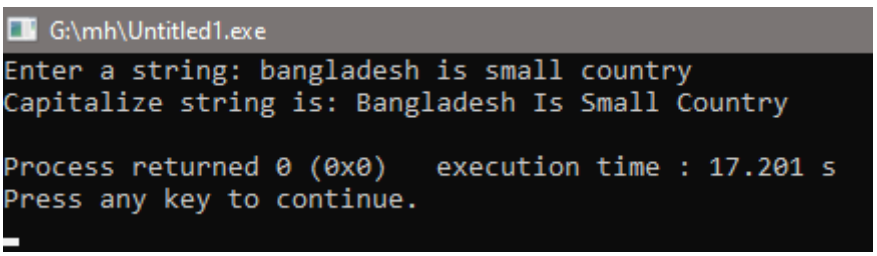
2. WAP to count the numbers of vowels, consonants, digits and special symbols in a given string.

```
#include<stdio.h>
int main()
{
   char a[100];
   int i,len,vow,con,dig,sym,sps,s,s1;
   vow=con=dig=sym=sps=0;
   gets(a);
   len=strlen(a);
   for(i=0;i<len;i++)
   {
if(a[i]=='a'||a[i]=='A'||a[i]=='e'||a[i]=='E'||a[i]=='i'||a[i]=='I'||a[i]=='o'||a[i]=='
O'||a[i]=='u'||a[i]=='U')
    {vow++;  }
else if(a[i]>='a'&&a[i]<='z'||a[i]>='A'&&a[i]<='Z')
    {con++; }
 else if(a[i]>='0'&&a[i]<='9')
       { dig++; }
       else if(a[i]==' ')
       {  sps++; }
       else
       {sym++;}
    }
    s=sps+sym;
    s1=s-sps;
   printf("The number of vowels= %d\n",vow);
   printf("The number of consonets = %d\n",con);
   printf("The number of digit = %d\n",dig);
   printf("The number of symbols = %d\n",s1);
   return 0;
   }
```



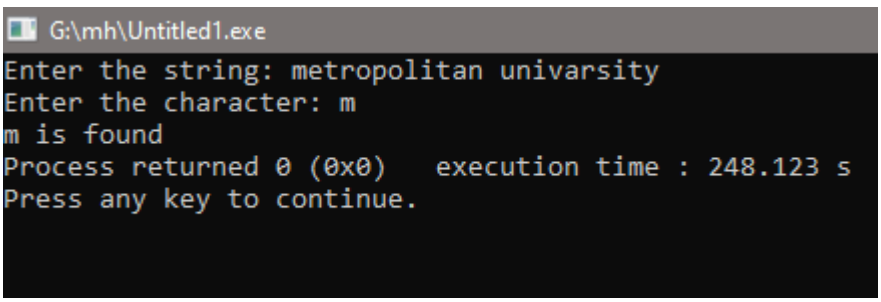
3. WAP to input a multi word string and produce a string in which first letter of each word is capitalized.

```
#include<stdio.h>
int main()
{  char a[100];
   int i,l;
   printf("Enter a string: ");
   gets(a);
   l=strlen(a);
for(i=0;i<l;i++)
   { if(i==0)
      {   if((a[i]>='a' && a[i]<='z'))
               a[i]=a[i]-32;
               continue;  }
      if(a[i]==' ')
                           {   ++i;
         if(a[i]>='a' && a[i]<='z')
               { a[i]=a[i]-32;
           continue; }
                           }
                           else
                           {   if(a[i]>='A' && a[i]<='Z')
                                                a[i]=a[i]+32;  }
        }
  printf("Capitalize string is: %s\n",a);
  return 0;
}
```



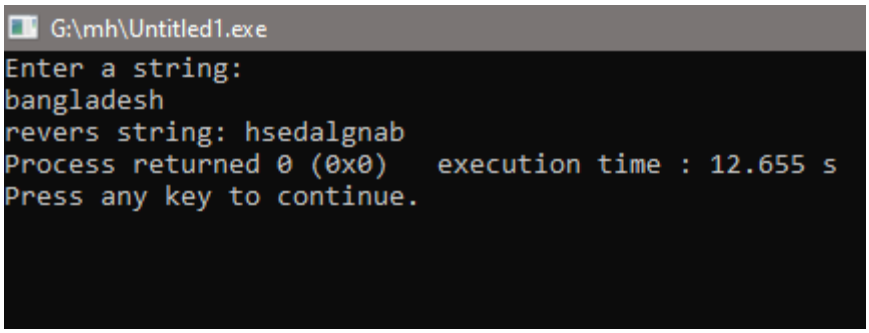
4. WAP to search a character in a given string.

```
#include<stdio.h>
int main()
{
    char a[100],ch;
    int i,j=0,k,len;
   printf("Enter the string: ");
   gets(a);
   printf("Enter the character: ");
   scanf("%c",&ch);
   len=strlen(a);
   for(i=0;i<len;i++)
   {
      if(a[i]==ch)
      {
       j=1;    }
  }
if(j==1)
   printf("%c is found",ch);
   else
   printf("%c is not found",ch);
return 0;
}
```



5. WAP to reverse a string.

```
#include<stdio.h>
int main()
{
   char a[100];
   int i,l,s;
   printf("Enter a string: \n");
   gets(a);
   s=strrev(a);
   printf("revers string: %s",s);
   return 0;

}
```



6. WAP to input a string and replace every lower case letter with upper case letter, upper case letter with a lower case letter, digit with a '#' and a special symbol with a '%'. Display the new string.

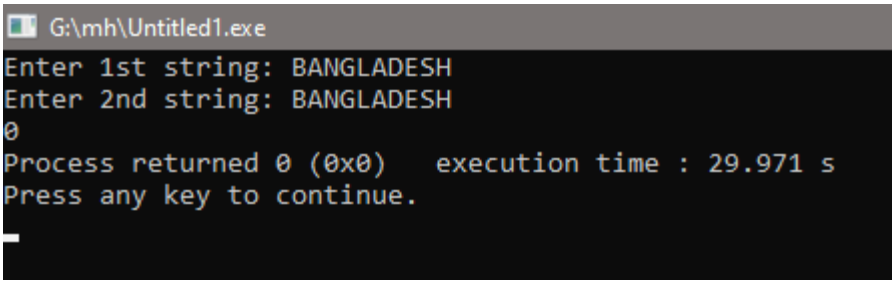
```
#include <stdio.h>
int main()
{
        char str[100];
        int i;
        printf("Enter a string: ");
        gets(str);
        for(i=0; str[i]!='\0'; i++)
        {
           if((str[i]>='a' && str[i]<='z'))
                {str[i]=str[i]-32;
                  continue; }
           else if(str[i]>='A' && str[i]<='Z')
                  {
                    str[i]=str[i]+32;
                    continue;
                   }
           else if(str[i]>='0' && str[i]<='9')
                    {str[i]='#';}
          else if(str[i]==' ')
                   str[i]=' ';
           else
               str[i]='%';
    }
    printf("New string is: %s\n",str);
    return 0;
}
```

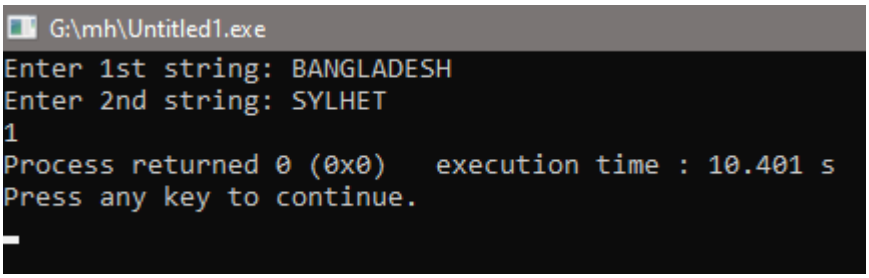
```
G:\mh\Untitled1.exe
Enter a string: jET COver ME 077**
New string is: Jet coVER me ###%%

Process returned 0 (0x0)   execution time : 102.181 s
Press any key to continue.
```

Pointer

1. **Write a function to compare two strings using pointers. Function has two string arguments and returns 0 if strings are equal else returns 1**

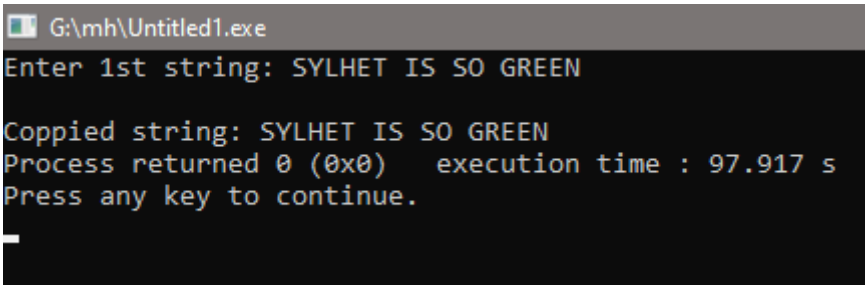
```
#include <stdio.h>
int main()
{
        char a[100],a1[100],*b,*b1;
        int i=0;
        printf("Enter 1st string: ");
        gets(a);
        printf("Enter 2nd string: ");
        gets(a1);
        b=&a;
        b1=&a1;
        while (*b!='\0'||*b1!='\0')
  {
    if(*b != *b1)
    {  i=1;
       break;
    }
    *b++;
    *b1++;
  }
        if(i==0)
    printf("0");
  else
     printf("1");
          return 0;
}
```





2. Write a program that will copy one string to another. You can't use strcpy() function.

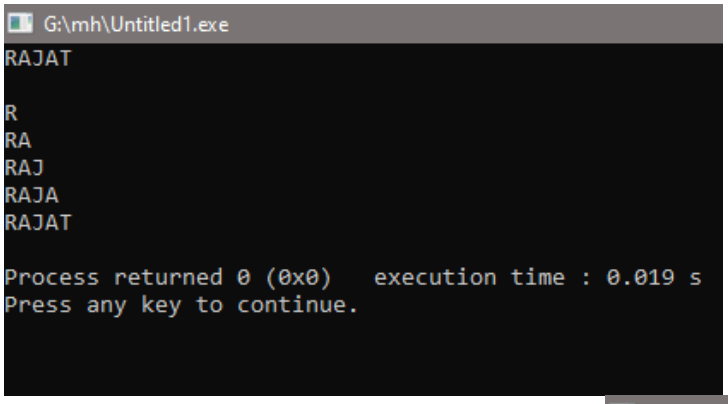
```
#include <stdio.h>
int main()
{
        char a[100],a1[100],*b,*b1;
        int i=0;
        printf("Enter 1st string: ");
        gets(a);
        b=&a;
        b1=&a1;
        while (*b!='\0')
  {
    *b1 = *b;

    *b++;
    *b1++;
  }
        *b1='\0';
        printf("\nCoppied string: %s",a1);
         return 0;
}
```

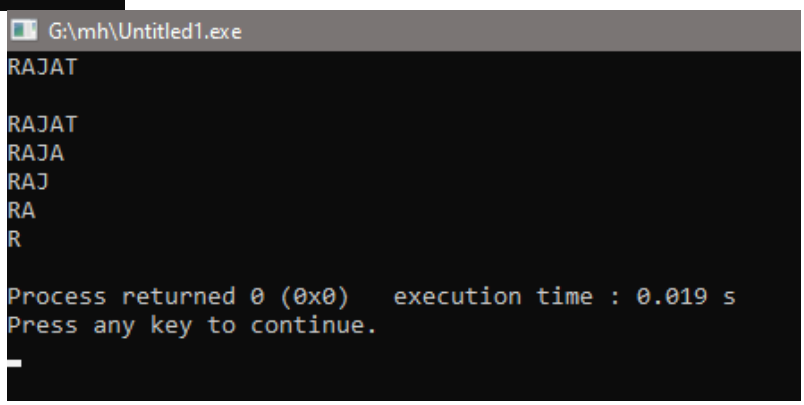


3. Write a function having one argument of string type and print the string in the following pattern using pointers.

```
#include <stdio.h>
int main()
{   char a[]="RAJAT";
            int i,j,len;
            len=strlen(a);
            printf("RAJAT\n\n");
            for(i=0;i<len;i++)
          {
        for(j=0;j<=i;j++)
      {
        printf("%c",a[j]);
      }
       printf("\n");
   }
              return 0;
}
```

```
#include <stdio.h>
int main()
{
            char a[]="RAJAT";
            int i,j,len;
            len=strlen(a);
            printf("RAJAT\n\n");
            for(i=len-1;i>=0;i--)
   {
      for(j=0;j<=i;j++)
      {
         printf("%c",a[j]);
      }
       printf("\n");
   }
              return 0;
}
```

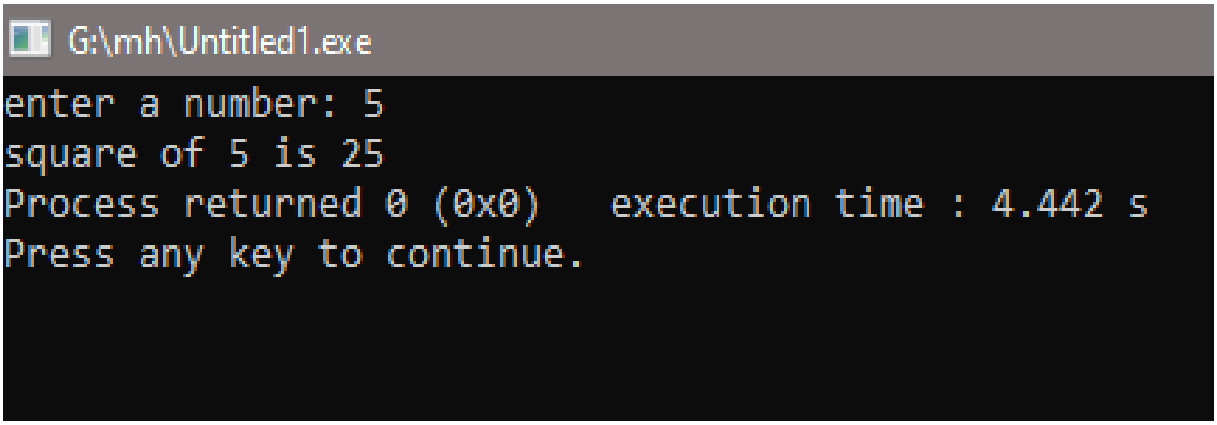




Function

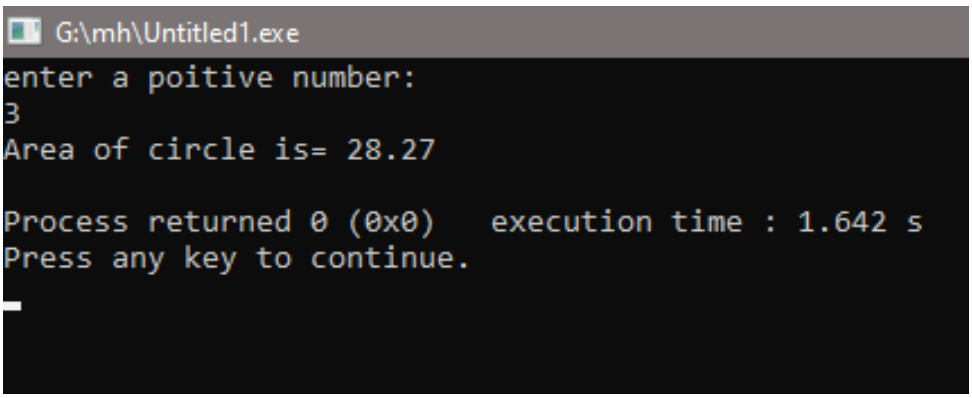
1. **Write a function that takes one integer argument and returns its square.**

```
#include<stdio.h>
int sqr(int n)
{
   return n*n;
}
int main()
{
   int x;
   printf("enter a number: ");
   scanf("%d",&x);
   int sqrt=sqr(x);
   printf("square of %d is %d",x,sqrt);
   return 0;
}
```



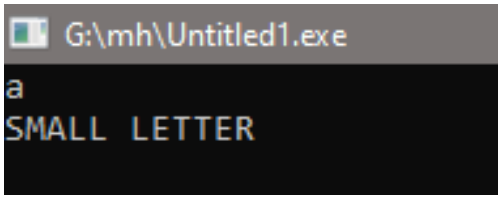
2. Write a function to calculate the area of a circle where radius is passed to the function as argument

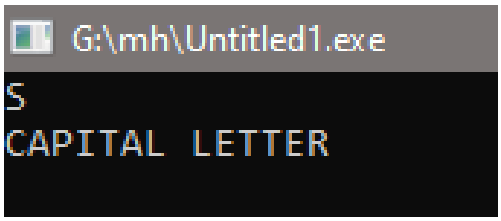
```
#include<stdio.h>
#define pi 3.1416
double area(double radius)

{

   return pi*radius*radius;

}
int main()

{

   double x;
   printf("enter a poitive number: \n");

   scanf("%lf",&x);
   double rad =  area(x);
   printf("Area of circle is= %.2lf\n",rad);


   return 0;

}
```

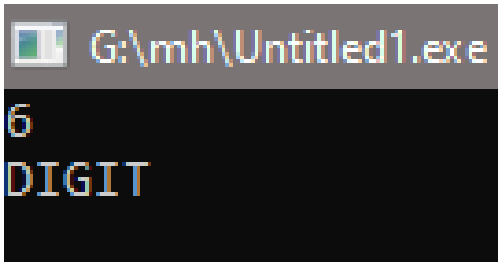


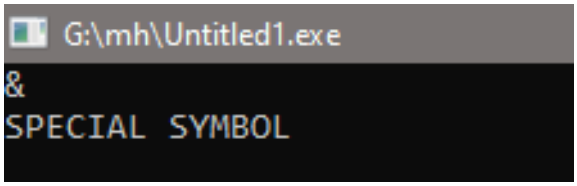
3. Write a function that has one character argument and displays that it's a small letter, capital letter, a digit or a special symbol.

```
#include<stdio.h>
void charec(char si)

{
if(si>=65 && si<=90)
printf("CAPITAL LETTER\n");
else if(si>=97 && si<=122)
printf("SMALL LETTER\n");
else if(si>=48 && si<=57)
printf("DIGIT\n");
else
printf("SPECIAL SYMBOL\n");
}
int main()
{
char s;
scanf("%c",&s);
charec(s);
return 0;
}
```



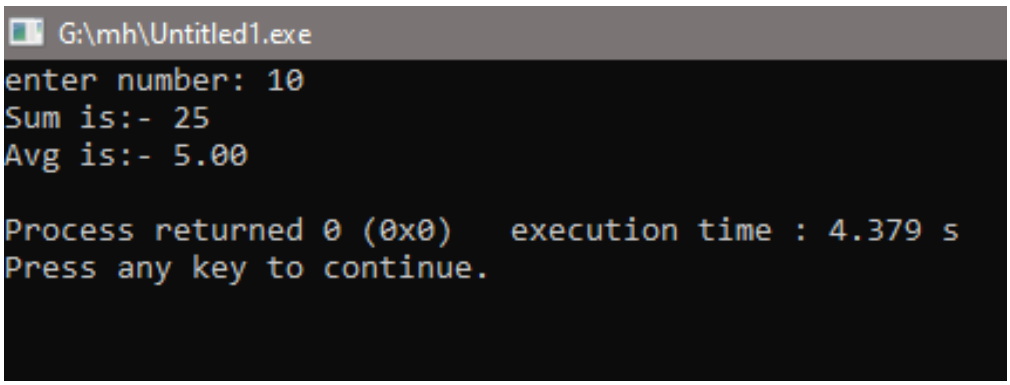






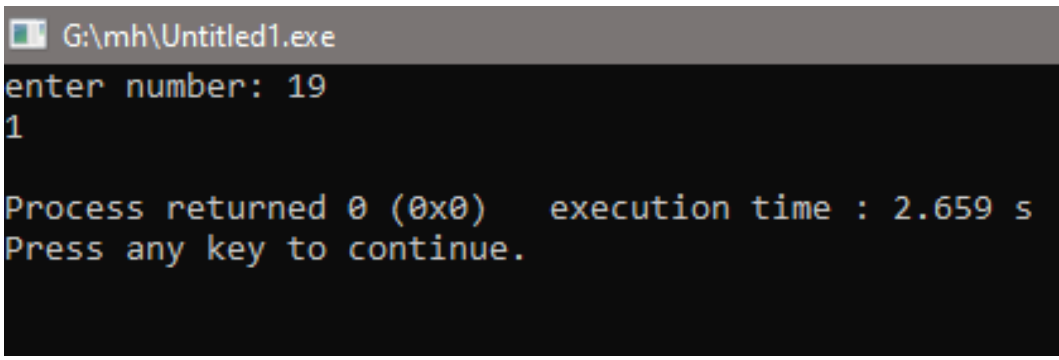
4. Write a function to print the sum and average of first n odd numbers where n is passed to the function as argument.

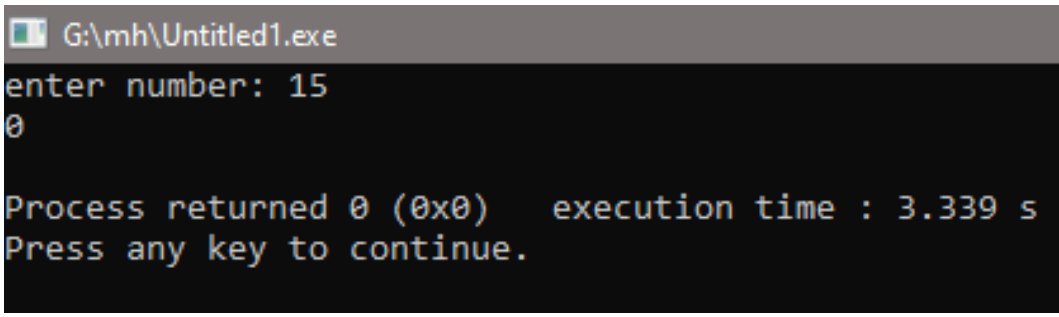
```
#include<stdio.h>
void sum(int num)
{
int i,sum=0,k=0;
for(i=1; i<=num; i++)
{
if(i%2!=0)
  {
  sum+=i;
  k++;
  }
}
printf("Sum is:- %d\n",sum);
printf("Avg is:- %.2lf\n",(double)sum/k);
}
int main()
{
int n;
printf("enter number: ");
scanf("%d",&n);
sum(n);
return 0;
}
```



5. Write a function that returns 1 if the number is prime and 0 if not prime. Number is passed to the function as argument.

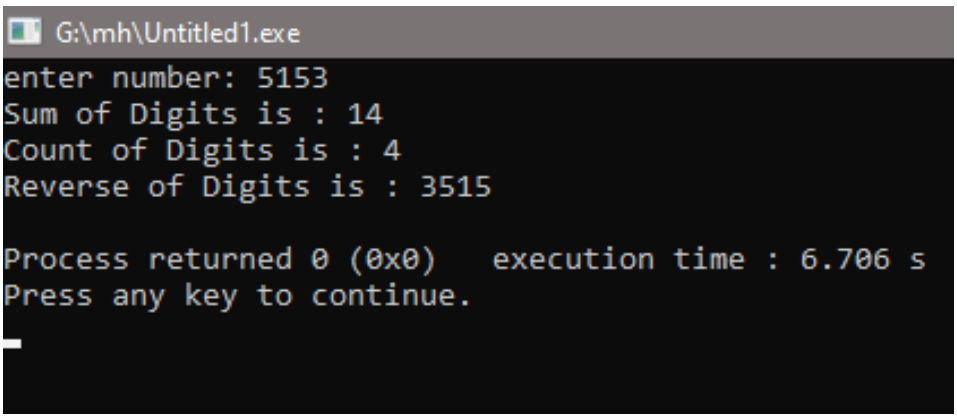
```
#include<stdio.h>
void prime(int num)
{
int i,k=0;
for(i=2; i<num; i++)
{
if(num%i==0)
  {
  k++;
  }
}
if(k==0)
printf("1\n");
else
printf("0\n");
}
int main()
{
int n;
printf("enter number: ");
scanf("%d",&n);
prime(n);
return 0;
}
```





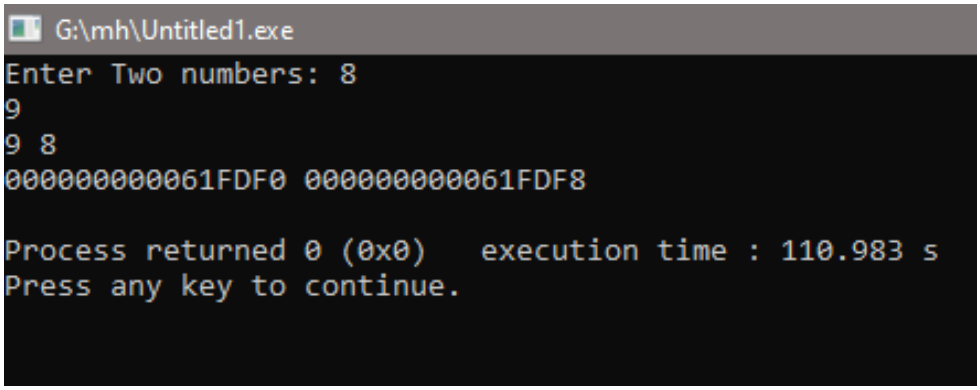
6. Write a function that prints the sum of the digits, count of the digits and reverse of a number. Number is passed to the function as argument.

```
#include<stdio.h>
void ss(int num)
{
int i,c=0,rem,sum=0,sum1=0;
while(num!=0)
      {
       rem = num%10;
       sum = sum + rem;
       sum1 = sum1*10 + rem;
       num = num/10;
       c++;
       }
   printf("Sum of Digits is : %d\n",sum);
   printf("Count of Digits is : %d\n",c);
   printf("Reverse of Digits is : %d\n",sum1);
}
int main()
{
   int n;
printf("enter number: ");
scanf("%d",&n);
ss(n);
return 0;
}
```



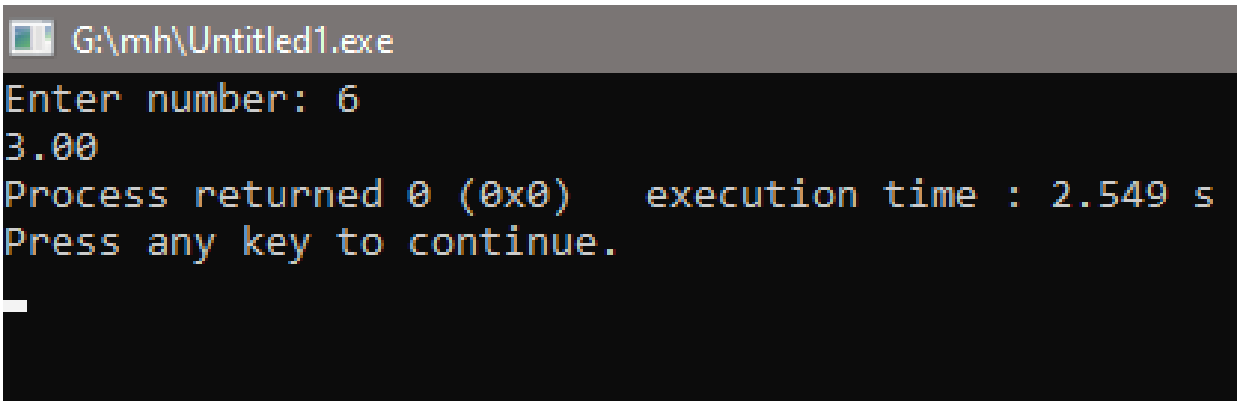
7. Write a program to take two numbers as input and function to swap them by passing parameters as values and also as addresses.

```
#include<stdio.h>
int swap(int i,int j)
{
 int x;
 x=i;
 i=j;
 j=x;
 printf("%d %d\n", i,j);
 x=&i;
 i=&j;
 printf("%p %p\n", x,i);
}
int main()
{
 int k,l;
 printf("Enter Two numbers: ");
 scanf("%d%d", &k,&l);
 swap(k,l);
 return 0;
}
```



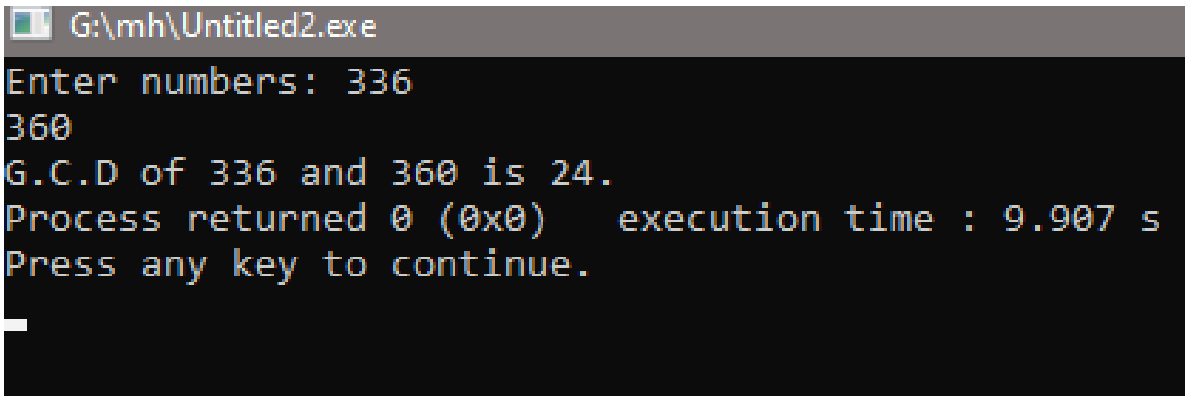
8. Write a recursive function that will find the average of an integer

```
#include<stdio.h>
float avg(int x)
{
 if(x!=0)
 {
 return x/2;
 }
 else
 {
 return x;
 }
}
int main()
{
 int a;
 float z;
 printf("Enter number: ");
 scanf("%d", &a);
 z=avg((float) a);
 printf("%.2f ",z);
 return 0;
}
```



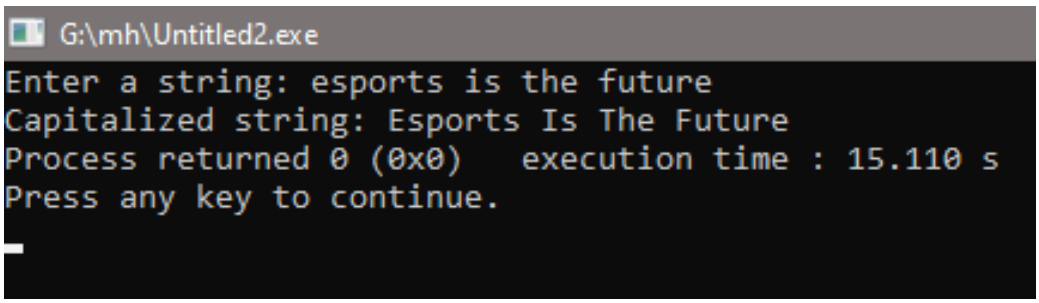
9. Write a recursive function that will find the GCD of two numbers.

```
#include<stdio.h>
int gcd(int x, int y)
{
 if(x>y)
 {
 return gcd(x-y, y);
 }else if (x<y)
 {
 return gcd(y-x, x);
 }else
 {
 return x;
 }
}
int main()
{
 int a,b,result;
 printf("Enter numbers: ");
 scanf("%d%d", &a,&b);
 result=gcd(a,b);
 printf("G.C.D of %d and %d is %d.", a,b,result);
 return 0;
}
```



10. Write a function that receives a string (character array) as argument and produce a string in which first letter of each word is capitalized.

```
#include<stdio.h>
int pass(char a[])
{
 int i,n;
 n=strlen(a);
 a[0]=toupper(a[0]);
 for (i=1; i<n; i++)
 {
 if ( a[i]==' ')
 {
 a[i+1]=toupper(a[i+1]);
 }
 }
 for (i=0; i<n; i++)
 {
 printf("%c", a[i]);
 }
}
int main()
{
 int string[100];
 printf("Enter a string: ");
 gets(string);
 printf("Capitalized string: ");
 pass(string);
 return 0;
}
```



Structure

1. WAP that takes name, age and salary of 5 employees as input and stores it in structure employee and displays all the employee details through emp_disp function and displays employee details of employee who gets highest salary using emp_sal function.

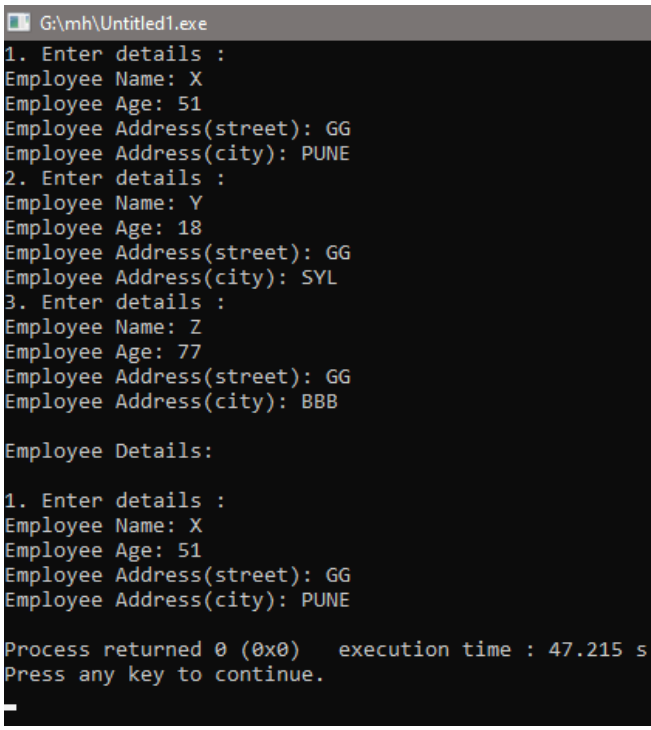
```
#include<stdio.h>
#define m 5
void emp_disp();
void emp_sal();
struct details
{
 char name[100];
 int age;
 float salary;
} emp[100];
int main()
{
 int i;
 for (i=0; i<m; i++)
 {
 printf("Employee Name: ");
 scanf("%s", &emp[i].name);
 printf("Employee Age: ");
 scanf("%d", &emp[i].age);
 printf("Employee Salary: ");
 scanf("%f", &emp[i].salary);
 }
 emp_disp();
 emp_sal();
 return 0;
}
```

```
G:\mh\Untitled1.exe
Employee Name: ashraful
Employee Age: 22
Employee Salary: 45000
Employee Name: quaiyum
Employee Age: 33
Employee Salary: 44000
Employee Name: shafi
Employee Age: 44
Employee Salary: 55000
Employee Name: chowdhury
Employee Age: 43
Employee Salary: 66000
Employee Name: ac shafi
Employee Age: Employee Salary:
Employee Details:

1. Enter details :
Employee Name: ashraful
Employee Age: 22
Employee Salary 45000.00

2. Enter details :
Employee Name: quaiyum
Employee Age: 33
Employee Salary 44000.00

3. Enter details :
Employee Name: shafi
Employee Age: 44
Employee Salary 55000.00

4. Enter details :
Employee Name: chowdhury
Employee Age: 43
Employee Salary 66000.00

5. Enter details :
Employee Name: ac
Employee Age: 0
Employee Salary 0.00


Highest Salary : 66000.000000

Process returned 0 (0x0)   execution time : 142.254 s
Press any key to continue.
```

```
void emp_disp()
{
 int i;
 printf("\nEmployee Details:\n");
 for (i=0; i<m; i++)
 {
 printf("\n%d. Enter details : \n", i+1);
 printf("Employee Name: %s\n", emp[i].name);
 printf("Employee Age: %d\n", emp[i].age);
 printf("Employee Salary %.2f\n", emp[i].salary);
 }
}
void emp_sal()
{
 int i;
 float max;
 max=emp[0].salary;
 for (i=0; i<m; i++)
 {
 if(max<emp[i].salary)
 {
 max=emp[i].salary;
 }
 }
 printf("\n\nHighest Salary : %f\n", max);
}
```

2. WAP to take name, age, address (street, city) input for ‘n’ employees in array of structures and display only the employees who belong to Pune city.

```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>
#define M 3
void emp_disp();
struct details
{
 char name[100],add_street[100],add_city[100];
 int age;
} emp[100];
int main()
{
 int i;
 for (i=0; i<M; i++)
 {
 printf("%d. Enter details : \n", i+1);
 printf("Employee Name: ");
 scanf("%s", &emp[i].name);
 printf("Employee Age: ");
 scanf("%d", &emp[i].age);
 printf("Employee Address(street): ");
 scanf("%s", &emp[i].add_street);
 printf("Employee Address(city): ");
 scanf("%s", &emp[i].add_city);
 }
 emp_disp();
 return 0;
}
```



```
void emp_disp()
{
 int i,j,l,f[100],m,h;
 char citys='pune';
 printf("\nEmployee Details:\n");
 for (i=0; i<M; i++)
 {
 l=strlen(emp[i].add_city);
 for(j=0; j<l; j++)
 {
 if(tolower(emp[i].add_city[j])==citys)
 {
 f[i]=i;
 m++;
 }
 }
 }
 for (i=0; i<m; i++)
 {
 h=f[i];
 printf("\n%d. Enter details : \n", i+1);
 printf("Employee Name: %s\n", emp[h].name);
 printf("Employee Age: %d\n", emp[h].age);
 printf("Employee Address(street): %s\n", emp[h].add_street);
 printf("Employee Address(city): %s\n", emp[h].add_city);
 }
}
```