Program :

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

Output :

```
 Enter a number : 5
 Number is odd
```

Program :

```
#include<stdio.h>
int main()
{
      int n,rev,i;
      printf(" Enter a Number : ");
      scanf("%d",&n);
      rev=0;
      while(n>0)
      {
            rev=rev*10+n%10;
            n/=10;
      }
      printf(" Reverse is %d\n",rev);
}
```

Output :

```
 Enter a number : 1234
 Reverse is 4321
```

Program :

```
#include<stdio.h>
int main()
{
      int n,sum;
      printf(" Enter a number : ");
      scanf("%d",&n);
      sum=0;
      while(n>0)
      {
            sum+=n%10;
            n/=10;
      }
      printf(" Sum of digits is %d\n",sum);
}
```

Output :

```
 Enter a number : 4356
 Sum of digits is 18
```

Program :

```
#include<stdio.h>
int main()
{
      int x,temp,sumcube,i;
      printf(" Enter a 3-digit number : ");
      scanf("%d",&x);
      temp=x;
      sumcube=0;
      if(x<100||x>999){
            printf(" Not a  3 digit number\n");
            return 1;
      }
      while(x>0)
      {
            i=x%10;
            sumcube+=i*i*i;
            x/=10;
      }
      if(temp==sumcube)
            printf(" Yes, it is an armstrong number \n");
      else
            printf(" Not an armstrong number \n");
}
```

Output :

```
 Enter a 3-digit number : 153
 Yes, it is an armstrong number
```

Program :

```
#include<stdio.h>
char convert(int n)
{
      if(n<10)
            return n+'0';
      else
            return n+'A'-10;
}
int main()
{
      int d,i=0,j;
      char res[100]="0",temp;
      printf(“ Enter a decimal number\n");
      scanf("%d",&d);
      while(d>0)
      {
            res[i]=convert(d%16);
            d/=16;
            i++;
      }
      for(j=0;j<i/2;j++)
      {
            temp=res[j];
            res[j]=res[i-j-1];
            res[i-j-1]=temp;
      }
      res[i>1?i:1]='\0';
      printf(" Hexadecimal is %s\n",res);
}
```

Output :
 Enter a decimal number : 16
 Hexadecimal is 10

Program :

```
#include<stdio.h>
int main()
{
      char c;
      printf("Enter a character\n");
      scanf("%c",&c);
      if(c=='a' || c=='e'||c=='i'||c=='o'||c=='u'||c=='A'||c=='E'||c=='I'||
c=='O'||c=='U')
            printf(" It is a vowel ");
      else
            printf(" Not a vowel\n");
}
```

Output :
 Enter a character : B
 Not a vowel

Program :

```
#include<stdio.h>
int main()
{
      int n,a[1000],i,j,temp,max,count,k=0,modes[1000];
      float mean=0,median;
      printf(" Enter no of elements : ");
      scanf("%d",&n);
      printf(" Enter elements : ");
      for(i=0;i<n;i++)
      {
            scanf("%d",&a[i]);
            mean+=((float)a[i]/n);
      }
      for(i=0;i<n;i++)
            for(j=0;j<n-1;j++)
                  if(a[j]>a[j+1])
                  {
                        temp=a[j];
                        a[j]=a[j+1];
                        a[j+1]=temp;
                  }
      max=count=1;
      for(i=0;i<n-1;i++)
      {
            if(a[i]==a[i+1])
                  count++;
            else
            {
                  if(count>max)
                        max=count;
                  count=1;
            }
      }
      if(max>1)
      {
            for(i=0;i<n-1;i++)
```

```
            {
                  if(a[i]==a[i+1])
                        count++;
                  else
                  {
                        if(count==max)
                        {
                              modes[k]=a[i];
                              k++;
                        }
                        count=1;
                  }
            }
      }
      if(n%2==0)
            median=(float)(a[n/2]+a[n/2-1])/2;
      else
            median=a[n/2];
      printf(" Mean is %.2f \n Median is %.2f \n",mean,median);
      if(k==0)
            printf(" No modes \n");
      else
      {
            if(k>1)
                  printf(" Modes are : ");
            else
                  printf(" Mode is  ");
            for(i=0;i<k;i++)
                  printf("%d ",modes[i]);
            printf("\n");
      }
      return 0;
}
```

```
Output :
 Enter no of elements : 7
 Enter elements : 4 3 24 5 2 3 2
 Mean is 6.14
 Median is 3.00
 Modes are : 2 3
```

Program :

```
#include<stdio.h>
int main()
{
      int n,i,j,a[100][100];
      printf(" Enter n :");
      scanf("%d",&n);
      for(i=0;i<100;i++)
      {
            for(j=0;j<100;j++)
                  a[i][j]=0;
            a[i][0]=1;
      }
      for(i=1;i<n;i++)
            for(j=1;j<=i;j++)
                  a[i][j]=a[i-1][j-1]+a[i-1][j];

      for(i=0;i<n;i++)
      {
            for(j=0;j<=n-i;j++)
                  printf(" ");
            for(j=0;j<=i;j++)
                  printf("%d ",a[i][j]);
            printf("\n");

      }
}
```

Output :

```
 Enter n :5
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
```

Program :

```
#include<stdio.h>
int main(){
      int a[100],n,i,j;
      printf(" Enter no of elements : ");
      scanf("%d",&n);
      printf(" Enter elements : ");
      for(i=0;i<n;i++)
            scanf("%d",&a[i]);
      for(i=0;i<n;i++)
            for(j=0;j<n-i-1;j++)
                  if(a[j]>a[j+1])
                  {
                        a[j]=a[j]^a[j+1];
                        a[j+1]=a[j]^a[j+1];
                        a[j]=a[j]^a[j+1];
                  }
      printf("Sorted array is : ");
      for(i=0;i<n;i++)
            printf("%d ",a[i]);
}
```

Output :

```
 Enter no of elements : 8
 Enter elements : 3 4 2  2 1 4 5 0
 Sorted array is : 0 1 2 2 3 4 4 5
```

Program :

```
#include<stdio.h>
int main()
{
      int a[100][100],b[100][100],sum[100][100],dif[100][100],m,n,i,j;
      printf(" Enter no of rows and colomns : ");
      scanf("%d%d",&m,&n);
      printf(" Enter matrix A :\n");
      for(i=0;i<m;i++)
            for(j=0;j<n;j++)
                  scanf("%d",&a[i][j]);
      printf(" Enter matrix B :\n");
      for(i=0;i<m;i++)
            for(j=0;j<n;j++)
                  scanf("%d",&b[i][j]);
      for(i=0;i<m;i++)
            for(j=0;j<n;j++)
            {
                  sum[i][j]=a[i][j]+b[i][j];
                  dif[i][j]=a[i][j]-b[i][j];
            }
      printf(" A+B =\n");
      for(i=0;i<m;i++)
      {
            for(j=0;j<n;j++)
                  printf("%d ",sum[i][j]);
            printf("\n");
      }
      printf(" A-B =\n");
      for(i=0;i<m;i++)
      {
            for(j=0;j<n;j++)
                  printf("%d ",dif[i][j]);
            printf("\n");
      }


}
```

Output :

```
 Enter no of rows and colomns : 2 3
 Enter matrix A :
 2 3 5
 1 2 3
 Enter matrix B :
 5 3 2
 7 6 5
 A+B =
 7 6 7
 8 8 8
 A-B =
 -3 0 3
 -6 -4 -2
```

Program :

```
#include<stdio.h>
int main()
{
      int m,n,p,q,a[100][100],b[100][100],r[100][100],i,j,k;
      printf(" Enter no of rows and colomns of matrix A : ");
      scanf("%d%d",&m,&n);
      printf(" Enter matrix A :\n");
      for(i=0;i<m;i++)
            for(j=0;j<n;j++)
                  scanf("%d",&a[i][j]);
      printf(" Enter no of rows and colomns of matrix B : ");
      scanf("%d%d",&p,&q);
      if(n!=p)
      {
            printf(" Multiplication not possible \n");
            return;
      }
      printf(" Enter matrix B :\n");
      for(i=0;i<p;i++)
            for(j=0;j<q;j++)
                  scanf("%d",&b[i][j]);
      for(i=0;i<m;i++)
            for(j=0;j<q;j++)
            {
                  r[i][j]=0;
                  for(k=0;k<p;k++)
                        r[i][j]+=a[i][k]*b[k][j];
            }
      printf(" A x B=\n");
      for(i=0;i<m;i++)
      {
            for(j=0;j<q;j++)
                  printf(" %d",r[i][j]);
            printf("\n");
      }
}
```

Output :

```
 Enter no of rows and colomns of matrix A : 2 3
 Enter matrix A :
 2 3 4
 6 7 8
 Enter no of rows and colomns of matrix B : 3 2
 Enter matrix B :
 4 5 2
 3 3 3
 A x B=
 26 31
 62 75
```

Program :

```
#include<stdio.h>
int main()
{
      int flag=1,n,i;
      char s[1000];
      printf(" Enter string : ");
      scanf("%s",s);
      for(n=0;s[n]!='\0';n++);
      for(i=0;i<n/2;i++)
            if(s[i]!=s[n-i-1])
                  flag=0;
      if(flag)
            printf("%s is a palindrome \n",s);
      else
            printf("%s is not a palindrome \n",s);
}
```

Output :

```
 Enter string : madam
 madam is a palindrome
```

Program :

```
#include<stdio.h>
#include<string.h>
#include<stdlib.h>
int lenstr(char s[])
{
      int r;
      for(r=0;s[r]!='\0';r++);
      return r-1;
}
int search(char s[],char k[])
{
      int n=lenstr(s),m=lenstr(k),i,j;
      for(i=0;i<n;i++)
      {
            for(j=0;j<m&&i+j<n;j++)
            {
                  if(s[i+j]!=k[j])
                        break;
            }
            if(j==m)
                  return i;

      }
      return -1;
}
void delete(char s[],int pos,int k)
{
      int i;
      for(i=pos;i+k<lenstr(s);i++)
            s[i]=s[k+i];
    s[i]='\0';
}
int main()
{
      char s[1000],sub[1000];
      printf(" Enter string : ");
      fgets(s,1000,stdin);
```

```
      printf("Enter substring : ");
      fgets(sub,1000,stdin);
     if(search(s,sub)==-1)
      {
         printf("Substring not found\n");}
      else{
            delete(s,search(s,sub),lenstr(sub));
            printf("String after deletion : %s\n",s);
      }
}
```

```
Output :
 Enter string : Hello World
 Enter substring : orl
 String after deletion : Hello Wd
```

```
Program :

#include<stdio.h>
int main()
{
      char s[1000];
      printf(" Enter String : ");
      fgets(s,1000,stdin);
      int n,count=0;
      for(n=0;s[n]!='\0';n++)
            if(s[n]==' ')
                  count++;
      printf("Number of spaces = %d\n",count);

}
```

```
Output :
 Enter String : Hello everyone, How are you
 Number of spaces = 4
```

```
Program :

#include<stdio.h>
#include<string.h>
int main()
{
      int n,i,j;
      char s[100][1000];
      printf(" Enter Number of strings : ");
      scanf("%d",&n);
      printf(" Enter strings : ");
      for(i=0;i<n;i++)
            scanf("%s",s[i]);
      i=0;
      while(i<n)
      {
            if(i==0 || strcmp(s[i],s[i-1])>=0)
                  i++;
            else
            {
                  char temp[1000];
                  strcpy(temp,s[i]);
                  strcpy(s[i],s[i-1]);
                  strcpy(s[i-1],temp);
                  i--;
            }
```

```
      }

      printf(" Sorted strings are : \n");
      char ts[1000];
      strcpy(ts,s[0]);
      for(i=0;i<n;i++)
            printf("%s\n",s[i]);
}
```

```
Output :
 Enter Number of strings : 4
 Enter strings :
 athira
 appu
 vishnu
 game
 Sorted strings are :
 appu
 athira
 game
 vishnu
```

```
Program :

#include<stdio.h>
int main()
{
      printf(" Enter an year : ");
      int n;
      scanf("%d",&n);
      if(n%400==0||(n%4==0&&n%100!=0))
            printf(" It is a leap year \n");
      else
            printf(" Not a leap year \n");
}
```

```
Output :
 Enter an year : 1997
 Not a leap year
```

```
Program :

#include<stdio.h>
int fact(int f)
{
      if(f<=1)
            return 1;
      else
            return f*fact(f-1);
}
int main()
{
      int n;
      printf(" Enter a number : ");
      scanf("%d",&n);
      printf(" Factorial of %d is  %d  \n",n,fact(n));
}
```

```
Output :
 Enter a number : 8
 Factorial of 8 is 40320
```

Program :

```
#include<stdio.h>
int main()
{
      int n,i,j;
      printf(" Enter a number : ");
      scanf("%d",&n);
      i=2;
      printf(" Prime Factors are : ");
      while(n>1)
      {
            if(n%i==0)
            {
                  printf("%d ",i);
                  n=n/i;
            }
            else
                  i++;
      }
      printf("\n");

}
```

Output :

```
 Enter a number : 100
 Prime Factors are : 2 2 5 5
```

Program :

```
#include<stdio.h>
int binarysearch(int a[],int key,int beg,int end)
{
      if(beg>end)
            return -1;
      int mid=(beg+end)/2;

      if(a[mid]==key)
            return mid;
      else if(a[mid]>key)
            return binarysearch(a,key,beg,mid-1);
      else
            return binarysearch(a,key,mid+1,end);
}
int linearsearch(int a[],int key,int n)
{
      int i;
      for(i=0;i<n;i++)
            if(a[i]==key)
                  return i;
      return -1;
}

int main()
{
      int n,i,a[1000],key;
      printf(" Enter number of elements : ");
      scanf("%d",&n);
      printf(" Enter Array in sorted order  : ");
      for(i=0;i<n;i++)
            scanf("%d",&a[i]);
```

```
      printf(" Enter Element to search : ");
      scanf("%d",&key);
      printf(" Binary search : \n ");
      i=binarysearch(a,key,0,n);
      if(i==-1)
            printf(" Element not found \n");
      else
            printf(" Element found at position %d \n\n",i+1);
      printf(" Linear search : \n");
      i=linearsearch(a,key,n);
      if(i==-1)
            printf(" Element not found \n");
      else
            printf(" Element found at position %d ",i+1);
}
```

```
Output :
 Enter number of elements : 7
 Enter Array in sorted order  : 2 4 5 9 13 34 454
 Enter Element to search : 13
 Binary search :
  Element found at position 5

 Linear search :
  Element found at position 5
```

Program :

```
#include<stdio.h>
int fib(int n)
{
      if(n==0)
            return 0;
      else if (n==1)
            return 1;
      else
            return fib(n-1)+fib(n-2);
}
int main()
{
      int n;
      printf(" Enter a number : ");
      scanf("%d",&n);
      printf(" Fib(%d) = %d\n",n,fib(n));
}
```

```
Output :
 Enter a number : 10
 Fib(10) = 55
```

Program :

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

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

Output :

```
 Enter two numbers : 8 12
 gcd(8,12) = 4
```

Program :

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
      int *p,*q,*temp;
      p=malloc(sizeof(int));
      q=malloc(sizeof(int));
      printf(" Enter two ints a,b : ");
      scanf("%d%d",p,q);
      temp=p;
      p=q;
      q=temp;
      printf(" a= %d, b= %d \n",*p,*q);
}
```

Output :

```
 Enter two ints a,b : 2 5
 a= 5, b= 2
```

Program :

```
#include<stdio.h>
void sort(int *a,int n)
{
      int i=0;
      while(i<n)
      {
            if(i==0||*(a+i)>=*(a+i-1))
                  i++;
            else{
                  int temp;
                  temp=*(a+i);
                  *(a+i)=*(a+i-1);
                  *(a+i-1)=temp;
                  i--;
            }
```

```
	}
}
int main()
{
	printf(" Enter N : ");
	int n,a[100],i;
	scanf("%d",&n);
	printf(" Enter elements : ");
	for(i=0;i<n;i++)
		scanf("%d",&a[i]);
	sort(a,n);
	printf(" Sorted elements are : ");
	for(i=0;i<n;i++)
		printf("%d ",a[i]);
}
```

```
Output :
 Enter N : 6
 Enter elements : 34 2 3 62 2 2
 Sorted elements are : 2 2 2 3 34 62
```

Program :

```
#include<stdio.h>
#include<string.h>
struct Student{
	char firstname[50],lastname[50];
	int mark[6],rank;
	int sum;
	float avg;
};
int main(){
	struct Student student[60];
	int n,i,j,opt,temp;
	printf(" Enter Number of students (max 60) : ");
	scanf("%d",&n);
	for(i=0;i<n;i++){
		printf(" Enter Firstname and lastname of student %d (Seperated by
space) : ",i+1);
		scanf("%s%s",(student[i].firstname),(student[i].lastname));
		student[i].sum=0;
		for(j=0;j<4;j++){
			printf(" Enter mark of %s in subject %d  :
",student[i].firstname,j+1);
			scanf("%d",&(student[i].mark[j]));
			student[i].sum+=(student[i].mark[j]);
		}
		student[i].avg=student[i].sum/4;
	}
	printf("\nData Entered Successfully ! \n");

	while(1){
		printf("\n  Enter Option :\n\t\t1.Display\n\t\t2.Edit\n\t\t3.Add\n\t
\t4.Exit\n");
		scanf("%d",&opt);
		if(opt==1){
			printf("|  Roll No.  |        Name          |       Marks     |
Total  |    Avg   |\n");
			for(i=0;i<n;i++){
			printf("|%12d|",i+1);
			printf("%10s %10s",(student[i].firstname),(student[i].lastname));
				printf(" ");
```

```
                printf("   | ");
                for(j=0;j<4;j++)
                     printf("%3d ",(student[i].mark[j]));
                printf("|%10d|%10.2f|\n",student[i].sum,student[i].avg);
           }
     }
     else if(opt==2){
           printf(" Enter Roll no to edit : ");
           scanf("%d",&i);
           i--;
           printf(" Enter Firstname and lastname of student %d (Seperated by
space) : ",i+1);
           scanf("%s%s",(student[i].firstname),(student[i].lastname));
           student[i].sum=0;
           for(j=0;j<4;j++){
                printf(" Enter mark of %s in subject %d  :
",student[i].firstname,j+1);
                scanf("%d",&(student[i].mark[j]));
                student[i].sum+=(student[i].mark[j]);
           }
           student[i].avg=student[i].sum/4;
           printf(" Updated \n");
     }
  else     if(opt==3){
           i=n;
           n++;
           printf(" Enter Firstname and lastname of student %d (Seperated by
space) : ",i+1);
           scanf("%s%s",(student[i].firstname),(student[i].lastname));
           student[i].sum=0;
           for(j=0;j<4;j++){
                printf(" Enter mark of %s in subject %d  :
",student[i].firstname,j+1);
                scanf("%d",&(student[i].mark[j]));
                student[i].sum+=(student[i].mark[j]);
           }
           student[i].avg=student[i].sum/4;
           printf(" Added \n");
     }
     else
           break;

}}
```

```
Output :
 Enter Number of students (max 60) : 3
 Enter Firstname and lastname of student 1 (Seperated by space) : Athira Nair
 Enter mark of Athira in subject 1  :  45
 Enter mark of Athira in subject 2  :  34
 Enter mark of Athira in subject 3  :  56
 Enter mark of Athira in subject 4  :  47
 Enter Firstname and lastname of student 2 (Seperated by space) : Mathew George
 Enter mark of Mathew in subject 1  :  34
 Enter mark of Mathew in subject 2  :  46
 Enter mark of Mathew in subject 3  :  57
 Enter mark of Mathew in subject 4  :  45
 Enter Firstname and lastname of student 3 (Seperated by space) : Chandler Bing
 Enter mark of Chandler in subject 1  :  50
 Enter mark of Chandler in subject 2  :  45
 Enter mark of Chandler in subject 3  :  49
 Enter mark of Chandler in subject 4  :  34
```

```
Data Entered Successfully !

  Enter Option :
          1.Display
          2.Edit
          3.Add
          4.Exit
1
|  Roll No.  |         Name           |       Marks      |   Total  |    Avg   |
|          1|    Athira       Nair   |  45  34  56  47  |       182|     45.00|
|          2|    Mathew     George   |  34  46  57  45  |       182|     45.00|
|          3|  Chandler       Bing   |  50  45  49  34  |       178|     44.00|

  Enter Option :
          1.Display
          2.Edit
          3.Add
          4.Exit
2
 Enter Roll no to edit : 3
 Enter Firstname and lastname of student 3 (Seperated by space) : Monica Geller
 Enter mark of Monica in subject 1  :  50
 Enter mark of Monica in subject 2  :  50
 Enter mark of Monica in subject 3  :  50
 Enter mark of Monica in subject 4  :  50
 Updated

  Enter Option :
          1.Display
          2.Edit
          3.Add
          4.Exit
3
 Enter Firstname and lastname of student 4 (Seperated by space) : Ross Geller
 Enter mark of Ross in subject 1  :  49
 Enter mark of Ross in subject 2  :  47
 Enter mark of Ross in subject 3  :  50
 Enter mark of Ross in subject 4  :  50
 Added

  Enter Option :
          1.Display
          2.Edit
          3.Add
          4.Exit
1
|  Roll No.  |         Name           |       Marks      |   Total  |    Avg   |
|          1|    Athira       Nair   |  45  34  56  47  |       182|     45.00|
|          2|    Mathew     George   |  34  46  57  45  |       182|     45.00|
|          3|    Monica     Geller   |  50  50  50  50  |       200|     50.00|
|          4|      Ross     Geller   |  49  47  50  50  |       196|     49.00|

  Enter Option :
          1.Display
          2.Edit
          3.Add
          4.Exit
4


Program :
```

```
#include<stdio.h>
#include<stdlib.h>
struct node
{
      int data;
      struct node *next;
};
int main()
{
      int n,i,a,j;
      struct node *first,*cur,*new;
      first=(struct node *) malloc(sizeof(struct node));
      first->next=NULL;
      printf("\nEnter n:");
      scanf("%d",&n);
      printf(" Enter the elements..");
      scanf("%d",&(first->data));
      for(i=1;i<n;i++)
      {
            scanf("%d",&a);
            new=(struct node *) malloc(sizeof(struct node));
            new->next=NULL;
            new->data=a;
            if(a<first->data)
            {
                  new->next=first;
                  first=new;
            }
            else
            {
                  cur=first;
                  do
                  {
                        if(cur->next==NULL)
                        {
                              cur->next=new;
                              break;
                        }
                        else if(cur->data<=a && (cur->next)->data>=a)
                        {
                              new->next=cur->next;
                              cur->next=new;
                              break;
                        }
                        cur=cur->next;
                  }while(1);
            }
      }
      cur=first;
      for(i=0;i<n;i++)
      {
            printf(" %d",cur->data);
            cur=cur->next;
      }
}

Output :
 Enter n:7
 Enter the elements..8 3 2 3 5 2 6
 2 2 3 3 5 6 8
      Program :
```

```c
#include<stdio.h>
#include<stdlib.h>
int main()
{
      char c,filename1[1000],filename2[1000];
      FILE *from,*to;
      printf(" Enter Name of file to copy from : ");
      scanf("%s",filename1);
      from=fopen(filename1,"r");
      if(from==NULL)
      {
            printf("Invalid File \n");
            return 1;
      }
      printf(" File Read Successful, Enter name of file to copy to : ");
      scanf("%s",filename2);
      to=fopen(filename2,"w");
      if(to==NULL)
      {
            printf(" File Read Error ! \n");
            fclose(to);
            return 0;
      }
      while(1)
      {
            c=fgetc(from);
            if(c==EOF)
                  break;
            else
                  fputc(c,to);
      }
      printf(" Copy Successful \n");
      fclose(to);
      fclose(from);
      return 0;
}
```

```
Output :
 Enter Name of file to copy from : input
 File Read Successful, Enter name of file to copy to : output
 Copy Successful
```