Program for Calculating Simple Interest

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int n;
 float p,r,si;
 clrscr();
 printf("Enter the principal amount \n");
 scanf("%f",&p);
 printf("enter the number of years \n");
 scanf("%d",&n);
 printf("enter the rate of interest \n");
 scanf("%f",&r);
 si=(p*n*r)/100;
 printf("the simple interest is %f",si);
 getch();
}
```

Output:

```
Enter the principal amount
1000
Enter the number of years
6
Enter the rate of interest
3
The simple interest is 1800.000000
```

Program For Swapping Of Numbers

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int a,b,c;
 clrscr();
 printf("enter the two numbers \n");
 scanf("%d%d",&a,&b);
 c=a;
 a=b;
 b=c;
 printf("The swapped numbers are \n");
 printf("a = %d \n",a);
```

```
 printf("b = %d \n",b);
 getch();
}
```

Output:

```
Enter two numbers
12
13
The swapped numbers are
a = 13
b = 12
```

Program To Print Reverse Of An Integer

```
#include<stdio.h>
#include<conio.h>
 void main()
 {
   long a,b,c=0;
   clrscr();
   printf("Enter the number \n");
   scanf("%ld",&a);
   while(a>0)
   {
     b=a%10;
     a=a/10;
     c=b+c*10;
   }
   printf("Reverse number is %ld",c);
   getch();
 }
```

Output:

```
Enter the number
17654
Reverse number is 45671
```

Program For Sum Of Digits

```
#include<stdio.h>
#include<conio.h>
void main()
{
 long x,y,z=0;
```

```
 clrscr();
 printf("Enter the number \n");
 scanf("%ld",&x);
 while(x>0)
 {
  y=x%10;
  z=z+y;
  x=x/10;
 }
 printf("Sum of digits is %ld",z);
 getch();
}
```

Output:

Enter the number
12456
Sum of digits is 18

Finding A Number Is Palindrome Or Not

```
#include<stdio.h>
#include<conio.h>
void main()
{
  long int a=0,b=0,c=0,d=0,e=0;
  clrscr();
  printf("Enter the number\n");
  scanf("%ld",&a);
  e=a;
  while(a>0)
  {
    b=a%10;
    c=c+b;
    a=a/10;
    d=b+d*10;
  }
  if(e==d)
    printf("%ld is a PALIDROME",e);
  else
    printf("%ld is not a PALIDROME",e);
  getch();
  }
```

Output:

Enter the number
959
959 is a PALIDROME

Program To Find Factorial Of A Number

```
#include<stdio.h>
#include<conio.h>
void main()
{
 long i,j,x=1,k=1;
 clrscr();
 printf("Enter the number\n");
 scanf("%ld",&i);
 if(i==0)
   printf("Factorial is %ld",k);
 else
 {
   for(j=1;j<=i;j++)
   {
    x=j*x;
   }
   printf("The factorial is %ld",x);
 }
 getch();
 }
```

Output:

Enter the number
6
The factorial is 720

Sum of series

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int a[10]={1,2,3,4,5,6,7,8,9,10},I,t,s=0;
clrscr();
for(I=0;I<10;I++)
{
  t=a[I]*a[I];
  s+=t;
```

```
 }
printf("the sum of the series is: %d",s);
getch();
}
```

Output:

The sum of the series is: 385

Simple Calculator

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int a,b,c,n;
 clrscr();
 printf("Enter two numbers \n");
 scanf("%d%d",&a,&b);
 printf("\n 1.ADD 2.SUBSTRACT 3.MULTIPLY 4.DIVIDE \n");
 printf("\n Enter the option\n");
 scanf("%d",&n);
 switch(n)
 {
  case 1:
   c=a+b;
   printf("Sum = %d",c);
   break;
 case 2:
   c=a-b;
   printf("Substraction = %d",c);
   break;
 case 3:
   c=a*b;
   printf("Multiplication = %d",c);
   break;
 case 4:
   if(b<a)
   {
    c=a/b;
    printf("Division result = %d",c);
   }
   else
   {
    printf("Invalid");
   }
   break;
 default:
```

```
    printf("No such option\n");
  }
  getch();
}
```

Output:

```
Enter two numbers
21
3
1.ADD      2.SUBSTRACT      3.MULTIPLY      4.DIVIDE
Enter the option
4
Division result = 7
```

Program To Find If A Number Is Odd Or Even

```
#include<stdio.h>
#include<conio.h>
void oden(int n)
{
 int r;
 r=n%2;
 if(r==0)
  printf("even");
 else
  printf("odd");
}
void main()
{
  int a;
  clrscr();
  printf("Enter any number\n");
  scanf("%d",&a);
  oden(a);
  getch();
}
```

Output:

```
Enter any number
12
Even
```

Program To Find The Smallest And The Largest Number

```
#include<stdio.h>
#include<conio.h>
int max(int x,int y)
{
  int z;
  z=(x>=y)?x:y;
  return(z);
}
int min(int m,int n)
{
 int p;
 p=(m<=n)?m:n;
 return(p);
}
void main()
{
  int a,b,c,d,e;
  clrscr();
  printf("Enter 3 numbers\n");
  scanf("%d%d%d",&a,&b,&c);
  d=max(a,b);
  e=min(a,b);
  printf("The largest number is= %d\n",max(c,d));
  printf("The smallest number is= %d",min(c,e));
  getch();
}
```

Output:

```
Enter 3 numbers
14
13
8
The largest number is = 14
The smallest number is = 8
```

Program To Find Factorial Using Recursive Fn

```
#include<stdio.h>
#include<conio.h>
long int factorial(int n);
void main()
{
  int n;
  clrscr();
  printf("Number, n= ");
```

```
  scanf("%d",&n);
  printf("n!= %d\n",factorial(n));
 getch();
}
long int factorial(int n)
{
 if(n<=1)
   return(1);
 else
  return(n*factorial(n-1));
}
```

Output:

```
Number, n = 6
n! = 720
```

Program To Print GCD

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

void main()
{
 int n1,n2;
 clrscr();
 printf("Enter two numbers\n");
 scanf("%d%d",&n1,&n2);
 printf("The gcd of %d and %d is %d\n",n1,n2,gcd(n1,n2));
 getch();
}
```

Output:

```
Enter two numbers
8
16
The GCD of 8 and 16 is 8
```

Program To Find Average Of N Nos. Using Array

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int a[10],i,n,sum=0;
 float avg;
 clrscr();
 printf("Enter the limit (<=10)\n");
 scanf("%d",&n);
 printf("Enter the %d values\n",n);
 for(i=0;i<n;i++)
   scanf("%d",&a[i]);
 for(i=0;i<n;i++)
   sum+=a[i];
 avg=sum/n;
 printf("Sum = %d\n",sum);
 printf("Average = %f",avg);
 getch();
}
```

Output:

```
Enter the limit (<=10)
5
Enter the 5 values
10
12
14
15
14
Sum = 65
Average = 13.000000
```

Program To Sort An Array

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int a[10],temp=0,i,j,n;
 clrscr();
 printf("Enter the limit\n");
 scanf("%d",&n);
 printf("Enter the %d elements\n",n);
 for(i=0;i<n;i++)
  scanf("%d",&a[i]);
 for(i=0;i<n-1;i++)
```

```
 {
  for(j=i;j<n;j++)
  {
   if(a[i]>a[j])
   {
    temp=a[i];
    a[i]=a[j];
    a[j]=temp;
   }
  }
 }
 printf("The sorted order = \n");
 for(i=0;i<n;i++)
  printf("%d ",a[i]);
 getch();
}
```

Output:

```
Enter the limit
5
Enter the 5 elements
1
4
7
3
2
The sorted order = 1    2         3         4         7
```

Program To Search An Element

```
#include<stdio.h>
#include<conio.h>
#define SIZE 25
void main()
{
 int i,j,k,n,search,count,array[SIZE];
 count=0;
 clrscr();
 printf("Enter the limit\n");
 scanf("%d",&n);
 printf("Enter the elements \n");
 for(i=0;i<n;i++)
  scanf("%d",&array[i]);
 printf("Enter the element to be searched\n");
 scanf("%d",&search);
 for(i=0;i<n;i++)
 {
```

```
   if(array[i]==search)
    {
     ++count;
    }}
  if(count==0)
  printf("Element not present\n");
 else
   printf("%d occurs %d times \n",search,count);
   getch();
}
```

Output:

```
Enter the limit
5
Enter the elements
4
12
14
15
4
Enter the element to be searched
4
4 occurs 2 times
```

Program To Print Addition, Substraction & Multiplication Of Matrix

```
#include<stdio.h>
#include<conio.h>
int a[5][5],b[5][5],c[5][5],d[5][5],e[5][5];
int i,j,k,m,n,p,q;
void inputa()
{
 printf("Enter the order of first matrix\n");
 scanf("%d%d",&m,&n);
 printf("Enter the value of the matrix A\n");
 for(i=0;i<m;i++)
 {
   {
    for(j=0;j<n;j++)
    scanf("%d",&a[i][j]);
   }
 }
}
void inputb()
{
 printf("Enter the order of second matrix\n");
 scanf("%d%d",&p,&q);
```

```
 printf("Enter the value of the matrix B\n");
 for(i=0;i<p;i++)
 {
   {
    for(j=0;j<q;j++)
    scanf("%d",&b[i][j]);
   }
 }
}
 void add()
 {

  if(m==p&&n==q)
  {
   for(i=0;i<m;i++)
   {
    for(j=0;j<n;j++)
    {
     c[i][j]=a[i][j]+b[i][j];
    }
  }
  }
  else
    printf("Addition not possible\n");
}
 void sub()
 {

  if(m==p&&n==q)
  {
   for(i=0;i<m;i++)
   {
    for(j=0;j<n;j++)
    {
     d[i][j]=a[i][j]-b[i][j];
    }
  }
  }
  else
    printf("Substraction not possible\n");
}
void mul()
{
 if(n==p)
 {
  printf("multiplication is possible\n");
```

```
 for(i=0;i<m;i++)
 {
  for(j=0;j<q;j++)
  {
   e[i][j]=0;
   for(k=0;k<p;k++)
   {
        e[i][j]=e[i][j]+a[i][k]*b[k][j]
        ;
   }
  }
 }
 }
 else
  printf("Matrix multiplication not possible\n");
}
void resm()
{
  printf("Multiplication result= \n");
 for(i=0;i<m;i++)
 {
  for(j=0;j<q;j++)
  {
   printf("%4d\t",e[i][j]);
  }
  printf("\n");
 }
}
void resadd()
{
  printf("Addition result= \n");
 for(i=0;i<m;i++)
 {
  for(j=0;j<n;j++)
  printf("%4d\t",c[i][j]);
  printf("\n");
 }
}
 void resub()
{
  printf("Substraction result= \n");
 for(i=0;i<m;i++)
 {
  for(j=0;j<n;j++)
  printf("%4d\t",d[i][j]);
  printf("\n");
```

```
  }
 }
 void main()
 {
  clrscr();
  inputa();
  inputb();
  add();
  resadd();
  sub();
  resub();
  mul();
  resm();
  getch();
}
```

Output:

```
Enter the order of first matrix
3
3
Enter the value of the matrix A
1       2       3
4       5       6
7       8       9
Enter the order of second matrix
3
3
Enter the value of the matrix B
11      2       3
14      11      15
17      8       3

Addition result =
12      4       6
18      16      21
24      16      12

Substraction result =
-10     0       0
-10     -6      -9
-10     0       6
Multiplication is possible
Multiplication result =
90      48      42
216     111     105
342     174     168
```

Sum of diagonal Of a Matrix

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int a[3][3], I, j, d=0;
clrscr();
printf("the matrix is");
for(I=0;I<3;I++)
{
printf("\n");
for(j=0;j<3;j++)
{
 scanf("%d",&a[I][j])
}
}
printf("\n");
for(I=0;I<3;I++)
{
 for(j=0;j<3;j++)
{
 if(I==j)
 {
 d+=a[I][j];
 }
 }
printf("the sum of diagonals is %d",d);
getch();
}
```

Output:

```
The matrix is
2 3 4
5 6 7
8 9 8
the sum of diagonals is 16
```

Program To Find Vowels In String

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int vol=0,i;
 char text[100],ch;
 clrscr();
```

```
 printf("Enter the text\n");
 scanf("%[^\n]",text);
 i=0;
 while((ch=tolower(text[i++]))!='\0')
 {
  if(ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u')
  ++vol;
 }
 printf("The text cointains %d vowels",vol);
 getch();
}
```

Output:

Enter the text
Kalasalingam university
The text contains 9 vowels

Program For String Handling Functions

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
 char s1[20],s2[20],st1[20],st2[20];
 int c,l1,l2,t;
 clrscr();
 printf("Enter string 1\n");
 scanf(" %[^\n]",s1);
 printf("Enter string 2\n");
 scanf(" %[^\n]",s2);
 while(c<6)
 {
 printf("Enter 1 for string length\n");
 printf("Enter 2 for string concatenation\n");
 printf("Enter 3 for string compare\n");
 printf("Enter 4 for string copy\n");
 printf("Enter 5 for string reverse\n");
 scanf("%d",&c);
 switch(c)
 {
   case 1:
   {
     l1=strlen(s1);
     l2=strlen(s2);
```

```
    printf("\nlength of string 1=%d\n",l1);
    printf("\nlength of string 2=%d\n",l2);
    break;
   }
  case 2:
   {
    printf("the concatenated string is = %s",strcat(s1,s2));
    break;
   }
   case 3:
   {
    t=strcmp(s1,s2);
    if(t<0)
     printf("String 1 is alphabetically above string2");
    else
     printf("String 2 is alphabetically above string1");
     break;
   }
   case 4:
   {
     strcpy(st1,s1);
     strcpy(st2,s2);
     printf("String 1= %s\n",strcpy(s1,s2));
     printf("String 2 = %s",strcpy(st2,st1));
     break;
   }
   case 5:
   {
    printf("The reversed s1=%s\n",strrev(s1));
    printf("The reversed s2=%s\n",strrev(s2));
    break;
   }
   default:
    printf("Wrong option");
  }
  getch();
  clrscr();
 }
 getch();
}
```

Output:

Enter string1
Kalasalingam
Enter string2
University

```
Enter 1 for string length
Enter 2 for string concatenation
Enter 3 for string compare
Enter 4 for string copy
Enter 5 for string reverse
2
The concatenated string = kalasalingamuniversity
```

Swapping of numbers

```
#include<stdio.h>
#include<conio.h>
int swap(int*,int*);
void main()
{
 int a,b;
 clrscr();
 printf("Enter the value of a and b\n");
 scanf("%d%d",&a,&b);
 printf("Values before swapping %d %d\n",a,b);
 swap(&a,&b);
 printf("Values after swapping %d %d\n",a,b);
  getch();
}
int swap(int *x,int *y)
{
 int temp=0;
 temp=*x;
 *x=*y;
 *y=temp;
 return;
}
```

Output:

```
Enter the value of a and b
4 5
Values before swapping
4 5
Values after swapping
5 4
```

Sorting the array of numbers

```
#include<stdio.h>
#include<conio.h>
void reorder(int n,int *x);
void main()
{
 int i,n,*x;
 clrscr();
 printf("Enter the limit \n");
 scanf("%d",&n);
 printf("\n");
 x=(int*)malloc(n*sizeof(int));
 for(i=0;i<n;++i)
 {
   printf("i=%d x=",i+1);
   scanf("%d",x+i);
 }
 reorder(n,x);
 printf("Reordered list\n");
 for(i=0;i<n;i++)
  printf("i=%d v=%d\n",i+1,*(x+i));
 getch();
 }
 void reorder(int n,int *x)
 {
  int i,item,temp;
  for(item=0;item<n-1;item++)
  for(i=item+1;i<n;i++)
    if(*(x+i)<*(x+item))
    {
     temp=*(x+item);
     *(x+item)=*(x+i);
     *(x+i)=temp;
    }
  return;
}
```

Output:

```
Enter the limit
3
I=1 x=89 I=2 x=78 I=3 x=90
Reordered list
78 89 90
```

Dynamic memory allocation

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#include<string.h>
#define NULL 0
void main()
{
char *buffer;
clrscr();
if((buffer=(char*)malloc(10))==NULL)
{
printf("malloc failed\n");
exit(1);
}

strcpy(buffer,"hyderabad");
printf("Buffer contains %s\n",buffer);
if((buffer=(char*)realloc(buffer,15))==NULL)
{
 printf("Reallocation failed\n");
 exit(1);
}
printf("Buffer size modified\n");
printf("Buffer still contains %s",buffer);
strcpy(buffer,"secundrabad");
printf("\nBuffer contains %s",buffer);
free(buffer);
getch();
}
```

Employee database

```
#include<stdio.h>
#include<stdlib.h>
#include<conio.h>
struct emp
{
 char name[80];
 int basic;
 float hr;
 float da;
 float ta;
 float gross;
}emp[10];
void main()
```

```
 int i,n;
 clrscr();
 printf("Enter the no. of employees\n");
 scanf("%d",&n);
 printf("Collecting details\n");
  for(i=0;i<n;i++)
  {
   printf("Enter the name \n");
   scanf("%s",emp[i].name);
   printf("Enter the basic salary\n");
   scanf("%d",&emp[i].basic);
   emp[i].hr=((emp[i].basic*10)/100);
   emp[i].da=((emp[i].basic*12)/100);
   emp[i].ta=((emp[i].basic*12)/100);
   emp[i].gross=emp[i].basic+emp[i].ta+emp[i].hr+emp[i].da;
   }
 printf("Employee salary details \n");
 printf("No.\t Name\t Basic\t HR\t DA\t TA\t Gross\n");
 for(i=0;i<n;i++)
   {
printf("%d %s %d %f %f %f
          %f\n",i+1,emp[i].name,emp[i].basic,emp[i].hr,emp[i].da,emp[i].ta,emp[i].gross);
   }
 getch();
}
```

Student database

```
#include<stdio.h>
#include<stdlib.h>
#include<conio.h>
struct student
{
 char name[80];
 int roll;
 int m1,m2,m3,m4,m5,m6;
 float total,avg;
 }stdb[10];
void main()
{
 int i,n;
 clrscr();
 printf("Enter the no. of students\n");
 scanf("%d",&n);
 printf("Collecting details\n");
 for(i=0;i<n;i++)
 {
```

```
printf("Enter the name \n");
scanf("%s",stdb[i].name);
printf("Enter the roll no.\n");
scanf("%d",&stdb[i].roll);
printf("Enter the marks in subject1\n");
scanf("%d",&stdb[i].m1);
printf("Enter the marks in subject2\n");
scanf("%d",&stdb[i].m2);
printf("Enter the marks in subject3\n");
scanf("%d",&stdb[i].m3);
printf("Enter the marks in subject4\n");
scanf("%d",&stdb[i].m4);
printf("Enter the marks in subject5\n");
scanf("%d",&stdb[i].m5);
printf("Enter the marks in subject6\n");
scanf("%d",&stdb[i].m6);
stdb[i].total=(stdb[i].m1+stdb[i].m2+stdb[i].m3+stdb[i].m4+stdb[i].m5+stdb[i].m6);
stdb[i].avg=(stdb[i].total/6);
 }


 printf("Students marks details \n");
 printf("Roll\t Name\t Marks1\t Marks2\t Marks3\t Marks4\t Marks5\t Marks6\t Total\t
Average\n");
 for(i=0;i<n;i++)
 {
   printf("%d\t %s\t %d\t %d\t %d\t %d\t %d\t %d\t %f\t
%f\t",stdb[i].roll,stdb[i].name,stdb[i].m1,stdb[i].m2,stdb[i].m3,stdb[i].m4,stdb[i].m5,stdb
[i].m6,stdb[i].total,stdb[i].avg);
   printf("\n \n");
 }
 getch();
}
```

Average of ‘n’ numbers using files

```
#include<stdio.h>
#include<conio.h>
void main()
{
FILE  *fpin, *fpout;
int val, avg, sum=0;
int count=0;
if((fpin=fopen(“values.dat”,”r”))==NULL)
  {
    printf(“\n cannot open the designated file \n”);
   }
```

```
else
 {
   while(!foef(fpin))
    {
          fscanf(fpin,"%d",&val);
          sum+=val;
         count++;
      }
  }
avg=sum/count;
if((fpout=fopen("average.res","w"))==NULL)
{
 printf("\n cannot open the designated file \n");
}
else
{
 fprintf(fpout,"the average of numbers of file values.dat is %d \n",avg);
}
fclose(fpin);
fclose(fpout);
getch();
}
```

Output:

```
Values.dat
4
4
4
4
4
4
4
4
4
4
average.res
the average of numbers of file values.dat is 4
```

Merging of two files

```
#include<stdio.h>
#include<conio.h>
void main()
{
 int x;
FILE  *f1, *f2;
```

```
F1=fopen(“output.txt”,”w”);
F2=fopen(“input1.txt”,”r”);
While(!foef(f2))
{
 fscanf(f2,”%d”,&x);
 fprintf(f1,”%d”,x);
}
fclose(f2);
f2=fopen(“input2.txt”,”r”);
{
 while(!foef(f2))
{
 fscanf(f2,”%d”,&x);
 fprintf(f1,”%d”,x);
 }
fclose(f2);
fclose(f1);
getch();
}
```

Output:

Input1.txt
5
input2.txt
4
output.txt
54

***** All the Best ******