Jadavpur Vidyapith

Subject : Computer Science

Name : Subhajit Mondal

Class : XI

Sec : A

Roll No : 41

Registration No : 4211102550

Contents

Programme 1

Question : A library charges a fine for every book returned late. Prior to 15 days the late charges for first 5 days is 50 paise/day, for 6 to 10 days fine is 1 rupee/day and above 10 days fine is 2 rupees/day. If you return the book after 30 days your membership will be cancelled. Write a program to accept the number of days the member is late to return the book and display the fine with appropriate message.

Algorithm :

Step1: Input Late Days: **x**

Step2: If **Days x > 0 and x <= 5** then
a. **fine y := (.50*x)**

Step3: If **Days x > 5 and x <= 10** then
a. **fine y := (1*x)**

Step4: If **Days x > 10 and x <= 30** then
a. **fine y := (2*x)**

Step5: If **Days x > 30** then
a.Print **Membership Cancelled.**

Step6: Else
a.Print **"Wrong Input"**

Step7: Print **fine y**

Code :

```
//Library Fine Calculation Programme//
#include<stdio.h>
main()
{
  int x;
  double y=0, z;
  printf("Enter The No. of Days You Are Late: ");
  scanf("%d",&x);
  if ((x>0)&&(x<=5))
  {
    y = (.50*x);
  }
  else if ((x>5)&&(x<=10))
  {
    y = (1*x);
  }
  else if ((x>10)&&(x<=30))
  {
    y = 2*x;
  }
  else if (x>30)
  {
    printf ("\nYour Membership is cancelled.");
  }
  else
  {
    printf("\nWrong Input.");
  }
  if(x>0 && x<=30){
  printf ("\nYour Fine is %lf Rs.",y );
  }
}
```

Output :

Output1 :

```
Enter The No. of Days You Are Late: 3
Your Fine is 1.500000 Rs.
```

Output2 :

```
Enter The No. of Days You Are Late: 6
Your Fine is 6.000000 Rs.
```

Output3 :

```
Enter The No. of Days You Are Late: 12
Your Fine is 24.000000 Rs.
```

Output4 :

```
Enter The No. of Days You Are Late: 31
Your Membership is cancelled.
```

Output5 :

```
Enter The No. of Days You Are Late: a
Wrong Input.
```

Output6 :

```
Enter The No. of Days You Are Late: -2
Wrong Input.
```

Programme 2

Question : A positive integer is entered through the keyboard. Write a program in C using function to obtain the prime factors of this number.

Algorithm :

Step1: Input Number: **num**

Step2: Call **factor** function

Step3: for **div=2; num>1; div++;**

while **num % div == 0**

print div
num=num/div

Step4: Print **new line**

Step5: function **factor return num to main**

Step6: Print **num at main function**

Code :

```
#include<stdio.h>
void factor(int);

main()
{
    int num;
    printf("Enter a positive integer number : ");
    scanf("%d", &num);
    printf("\nPrime Factors of %d is : \n", num);
    factor(num);
    return 0;
}

  //function factor//

void factor(int num)
{
    int div=2;

    for(div; (num > 1); div++)
    {
        while(num % div == 0)
        {
            printf("%d\n", div);
            num = num / div;
        }
    }
    printf("\n");
}
```

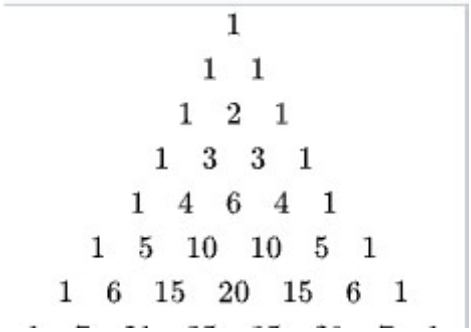
Output :

Output :

```
Enter a positive integer number : 10
Prime Factors of 10 is :
2
5
```

Programme 3

Question : write a program to create a pascal triangle.



Algorithm :

Step1: Int **n, r, row=7, space, ncr**

Step2: for **n=0; n<row; n++;**

for **space=1; space<row-n; space++;**

print blank Space

for **r=0; r<=n; r++;**

if n==0 or r==0

ncr=1 and print ncr
else ncr=ncr*(n-r+1)/r and print ncr

Step3: print new line

Code :

```
#include <stdio.h>
int main()
{
    int n,r,row=7,space,ncr;
    for (n=0;n<row;n++)
    {
        for (space=1;space<row-n;space++)
        {
        printf(" ");
        }
        for (r=0;r<=n;r++)
        {
            if (n==0||r==0)
            {
                ncr=1;
                printf("%d ",ncr);
            }
            else
            {
                ncr=ncr*(n-r+1)/r;
                printf("%d ",ncr);
            }
        }
        printf("\n");
    }
    return 0;
}
```

Output :

Output :

```
         1
       1  1
      1  2  1
     1  3  3  1
    1  4  6  4  1
  1  5  10  10  5  1
1  6  15  20  15  6  1
```

Programme 4

Question : write a program to add first 10 terms of the following series.

$$\frac{1}{1!}+\frac{2}{2!}+\frac{3}{3!}+\cdots$$

Algorithm :

Step1: Int **i**; Float **a=1.0, res1, res2=0**

Step2: for **i=1; i<=10; i++;**

a= a*i

res1= i/a
res2=res2+res1

Step3: Print **res2**

Code :

```c
#include<stdio.h>
int main()
{
    int i;
    float a=1.0, res1, res2=0;


    for (i=1;i<=10;i++)
    {

        a = a * i;

        res1 = i/a;

        res2 = res2 + res1;
    }

    printf("The Addition of the seris is : %f", res2);
    return 0;
}
```

Output :

Output :

```
The Addition of the seris is : 2.718282
```

Programme 5

Question : Write a c program to find the first 20 number of Fibonacci series.

0,1,1,2,3,5,8,13..... And so on

Algorithm :

Step1: Int **a=0, b=1,n,i=1,v=10;**

Step2: Print **a and b**

Step3: while **i<=v-2**

n= a+b

print n

a=b

b=n

i++

Code :

```
#include<stdio.h>
int main()
{
    int a=0,b=1,n,i=1,v=10;
    printf("\n%d\t%d",a,b);
    while(i<=v-2)
    {
        n=a+b;
        printf("\t%d",n);
        a=b;
        b=n;
        i++;
    }

    return 0;
}
```

Output :

Output :

```
0 1 1 2 3 5 8 13 21 34
```

Programme 6

Question : Write a c program to receive an integer and find its equivalent binary number.

Algorithm :

Step1: Int **n,r,a[10],i=0**

Step2: Input the Integer Value: **n**

Step3: if **n==0 then**
print 0

Step4: else

while (n)

r= n%2

n=n/2

a[i]=r

i++

for (int x=i-1; x>=0; x- -)
print **a[x]**

Code :

```c
#include<stdio.h>
int main()
{
    int n,r,a[10],i=0;
    printf("Enter The Integer value:");
  scanf("%d",&n);
    if (n==0)
    {
        printf("0");
    }
    else
    {
        while (n){
            r =n%2;
            n=n/2;
            a[i] =r;
            i++;
        }
        for (int x=i-1; x >=0; x--)
        {
            printf("%d",a[x]);
        }
    }
    return 0;
}
```

Output :

Output :

```
Enter The Integer value: 121
1111001
```

Programme 7

Question : If the three sides of a triangle are entered through the keyboard, write a program to check whether the triangle is isosceles, equilateral or right-angled triangle.

Algorithm :

Step1: Input Three Sides of Triangle **a,b,c**

Step2: If **a == b and b == c** then
Print Equilateral Triangle

Step3: If **a == b or b == c or c == a** then
Print Isosceles

Step4: Else
Print Scalene

Code :

```
#include<stdio.h>
int main()
{
   int a, b, c;
   printf("Enter First side of triangle: ");
   scanf("%d",&a);
   printf("Enter Second side of triangle: ");
   scanf("%d",&b);
   printf("Enter Third side of triangle: ");
   scanf("%d",&c);
   if(a == b && b == c)
      printf("The Triangle is equilateral\n");
   else if(a == b || b == c || c == a)
      printf("The Triangle is isosceles\n");
   else
      printf("The Triangle is scalene\n");
   return 0;
}
```

Output :

Output1 :

```
Enter First side of triangle: 10
Enter Second side of triangle: 10
Enter Third side of triangle: 10
The Triangle is equilateral
```

Output2 :

```
Enter First side of triangle: 5
Enter Second side of triangle: 5
Enter Third side of triangle: 10
The Triangle is isosceles
```

Output3 :

```
Enter First side of triangle: 5
Enter Second side of triangle: 6
Enter Third side of triangle: 10
The Triangle is scalene
```

Programme 8

Question : write a program to generate all combination of A,B,C,D.

Algorithm :

Step1: char st[6]= **abcd**; int **n**

Step2: n= **strlen(st)**

Step3: call **permudation function**

Step4: Int g;

If a==n then

print s

else

for **g=a; g<=n; g++;**
Call **Swaping Function**

Step5: char **temp**

temp=*c1;

*c1=*c2;
*c2=temp

Step6: Swaping **(s+a),(s+g)**

permudation (s,a+1,n)
swaping (s+a),(s+g)

Step7: Print **s of permudation at main function**

Code :

```
#include<stdio.h>
#include<string.h>
void permudation();
void swaping();
int main()
{
    char st[6] ="abcd";
    int n;
    n=strlen(st);
    printf("All Possible combination of ABCD is : \n");
    permudation(st,0,n-1);
    return 0;
}

//function permudation//
void permudation(char *s, int a, int n)         //s=abcd , a=0, n=3
{
    int g;
    if (a==n)
    printf("%s\n",s);
    else{
        for(g=a; g<=n; g++)
        {
            swaping((s+a),(s+g));
            permudation(s,a+1,n);
            swaping((s+a),(s+g));
        }
    }

}

//function swap//
void swaping(char *c1,char *c2)
{
    char temp;
    temp=*c1;
    *c1=*c2;
    *c2=temp;
}
```

Output :

Output :

```
All Possible combination of ABCD is :
abcd
abdc
acbd
acdb
adcb
adbc
bacd
badc
bcad
bcda
bdca
bdac
cbad
cbda
cabd
cadb
cdab
cdba
dbca
dbac
dcba
dcab
dacb
dabc
```

Programme 9

Question : Write a C program to reverse a number which is entered by the user and check weather it is same or different.

Algorithm :

Step1: Int **num, inp, rev=0, rm**

Step2: Input **num**

Step3: **inp=num**

Step4: while **num > 0**

rm = num%10

rev = (rev*10)+rm
num = num/10

Step5: If **inp == rev** then
Print This is Equal to It's Reverse

Step6: Else
Print This is not Equal to It's Reverse

Code :

```c
#include<stdio.h>
int main()
{
    int num, inp, rev=0, rm;
    printf("Enter a Number: ");
    scanf("%d", &num);
    inp = num;
    while(num>0)
    {
        rm = num%10;
        rev = (rev*10)+rm;
        num = num/10;
    }
    if(inp==rev){
        printf("\nThis number is equal to it's Reverse Number");
    }
    else{
        printf("\nThis number is not equal to it's Reverse Number");
    }
    return 0;
}
```

Output :

Output1 :

```
Enter a Number: 525
This number is equal to it's Reverse Number.
```

Output2 :

```
Enter a Number: 7895
This number is not equal to it's Reverse Number.
```

Programme 10

Question : Write a C program to find first 5 Armstrong number.

Armstrong number: $153 = 1^3+5^3+3^3$

Algorithm :

Step1: Int **n=5, c, num, sum, r, i=1, a=1;**

Step2: While **(a<=n)**

num=i;

c=0

while(num!=0)

c++

num=num/10

num =i

sum =0

while(num!=0)

r=num%10

sum=sum+pow(r,c)

num=num/10

Step3: If **sum==i** then

Print **i**

a++

Step4: i++

Code :

```
#include<stdio.h>
#include<math.h>
int main()
{
   int n=5, c, num, sum, r, i=1, a=1;
   while(a <= n)
   {
      num = i;
      c = 0;
      while(num != 0)
      {
         c++;
         num = num/10;
      }
      num = i;
      sum = 0;
      while(num != 0)
      {
         r = num%10;
         sum = sum + pow(r, c);
         num = num/10;
      }
      if(sum == i)
      {
         printf("%d\n", i);
         a++;
      }
      i++;
   }
   return(0);
}
```

Output :

Output :

```
1
2
3
4
5
```