Chapter-01

Programming Exercise

1.1 Write a program to display the ~~equipment~~ equation of a line in the form for a=5, b=8 and c=18.

Answer:

```
#include <stdio.h>
int main()
{
int a=5, b=8, c=18;
printf("%dx+%dy=%d", a,b,c);
return 0;
}
```

Output: 5x+8y=18

1.2 Write a program that will print your mailing address in the following form:

First line : Name

Second line : Door NO, Street

Third line : City, Pin code.

Answer:

```
#include <stdio.h>
int main()
{
printf( "Name : Mohidul Alam\n
        Door NO:24 Street: 01 \n
        City : Chattogram pincode:2424")

return 0;
}
```

Output:

First line : Mohidul Alam
Second line : 24, 01
Third line : Chattogram, 2424

1.3 Write a program to output the following multification table:

5X1 = 5
5X2 = 10
5X3 = 15

5X10 = 50

Answer:

```
#include <stdio.h>
int main ()
{
 int i=1;
 while (i<=10)
 {
  printf ("5*%d = %d\n", i, i*5);
  i++
 }
 return 0;
}
```

Output:

```
5*1 =5
5*2 =10
5*3 =15
5*4 =20
5*5 =25
5*6 =30
5*7 =35
5*8 =40
5*9 =45
5*10 =50
```

[3.4] Given the values of three variables a, b and c, write a program to compute and display the value of x, where

$$x = \frac{a}{b-c}$$

Execute your program for the following values:

a) a = 250, b = 85, c = 25

b) a = 300, b = 70, c = 70

(a) Answer:

```
#include <stdio.h>
int main()
{
float a=250, b=85, c=25, x;
x= a/(b-c)
printf("%f", x);
return 0;
}
```

Output: 4.166667.

(b) Answer:

```
#include <stdio.h>
int main ()
{ float a=300, b=70, c=70, x;
  x= a/(b-c);
  printf ("%f", x);
  return 0;
}
```

1.5 Relationship between Celcius and Farenheit is governed by the formula.

$$F = \frac{9C}{5} + 32.$$

(a) From Celcius to Farenheit:

Answer:

```
#include <stdio.h>
int main ()
{ float c, f;
  printf (" Enter temp in centigrade: ");
  Scanf ("%f", &c);
  f = (9* c/5) +32;
```

```
printf("\n Temperature in Farenheit: %.2f\n", f);
return 0;
}
```

Output:

Enter the temperature in centigrade : 100

Temperature in Farenheit : 212.00

(b) From farenheit to celcius:

```
#include <stdio.h>
float main()
{
  float c,f;
  printf("Enter temperature in Farenheit: ");
  scanf("%f,&f);
  c=(5*(f-32))/9;
  printf("\n Temperature in celcius : %.2f\n",c);
  return 0;
}
```

Output:

Enter temperature in Farenheit : 212

Temperature in celcius : 100.00

1.6 Given the radius of a circle. write a program to compute and display its area. Use a symbolic constant to define the π value and assume a value:

Answer:

```
#include<stdio.h>
#define PI 3.1416
int main (void)
{
  float r, area;
  scanf ("%f", &r);
  area = (PI * r * r);
  printf ("Area = %.2f", area);
  return 0;
}
```

Output:

```
2;
Area = 12.56
```

1.7 Given two integers 20 and 10. write a program that uses a function add() to add these two number and sub() to find the difference of these two number, and then display the sum and difference.

20+10 = 30

20-10 = 10

Answer:

```
#include <stdio.h>
Void main ()
int sum (int num1, int num2)
{
 int sum;
 sum = num1 + num2;
 return (sum);
}
int sub (int num1, int num2)
{ int sub
 sub = num1 - num2;
 return (sub);
}
```

```
int main ()
{
int num1 = 20, int num2 = 10, add, sub;
add = Sum (num1, num2);
Sub = Sub (num1, num2);
printf ("Sum and subtraction of two numbers :
        Sum = %d \n \ sub = %d"; add, sub);
return 0;
}
```

1.9 Write a program using one print statement to print the patterns of asterisks as shown ~~bt~~ below:

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

Answer:

```
#include <stdio.h>
int main (void)
{ printf ("* \n *\t  *\n*\t*\t*\n*\t*\t*\t*");
return 0;
}
```

Output:

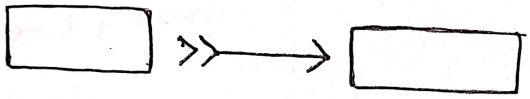
```
*
**
***
****
```

1.10 Write a program that will print the following figure using suitable character.

Answer:

```
#include <stdio.h>
void main()
{
printf("|''''''''''|      |''''''''''|\n");
printf("|          |>>--->|          |\n");
Printf("|__________|      |__________|\n");
return 0;
}
```

Output:



1.11 Area of a triangle is given by the formula $A = \sqrt{S(S-a)(S-b)(S-c)}$ where a, b and c are sides of the values of a, b and c

Answer:

```
#include <stdio.h>
#include <Math.h>
void main()
{
float a,b,c,A,S;
printf("enter value of a,b,c \n");
scanf("%f,%f,%f,&a,&b,&c");
```

```
S = (a+b+c)/2;
A = sqrt(S*(S-a)*(S-b)*(S-c));
printf("area of circle is %.3f", A);
return 0;
}
```

1.12 Write a program to display the following simple arithmetic Calculator.

X = [ ] Y = [ ]

Sum = [ ] Difference = [ ]

product = [ ] Division = [ ]

Answer:

```
#include <stdio.h>
Void main()
{printf("X = \t |""| \t  Y = \t \t |""| \n");
 printf("\t -------\t\t\t --------\n");
 printf("Sum = \t |""| \t  Difference = \t |""| \n");
 printf("\t -------\t\t\t --------\n");
 printf("product = |""| \t  Division = \t |""| \n");
 printf("\t -------\t\t\t --------\n");
 return 0;
}
```

1.13 Distance between two points (x_1, y_1) and (x_2, y_2) is governed by the formula $D^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$ write a program to computere D given the co-ordinates of points.

Answer:

```
#include <stdio.h>
#include <math.h>
int main()
{
  int x1, y1, x2, y2;
  float D;
  scanf("%d %d %d %d", &x1, &y1, &x2, &y2);
  D = sqrt((x2-x1)(x2-x1)+(y2-y1)(y2-y1));
  printf("%.2f", D);
  return 0;
}
```

Output:

(4,2) (4,2)

D = 2.82

1.14 A point on the circumference of a circle whose centre is (0,0) is (4,5). write a program to computer the perimeter and area of a circle.

Answer:

```
#include <stdio.h>
#include <math.h>
int main()
{
int X1=0, X2=0, Y1=4, Y2=5;
double D, d, red, area, peri, PI=3.14159;
d = (X2-X1)*(X2-X1)+(Y2-Y1)*(Y2-Y1);
D= sqrt(d);
red = D/2;
peri = 2*PI*red;
area = PI*red*red;
printf("area is %.2lf\n perimeter is %.2lf\n", area, peri);
return 0;
}
```

1.15 The line joining the points (2,2) and (5,6) which which lie on the circumference of a circle is the diameter of the circle. Write a programme to compute the area of the circle.

```
# include <stdio.h>
# include <math.h>
Void main ()
{ int X1=2, X2=2, Y1=5, Y2=6;
  double D, d, red, area, PI=3.1416;
  d = (X2-X1)*(X2-X1)+(Y2-Y1)*(Y2-Y1);
  D = Sqrt (d);
   red = D/2;
   area = PI * red * red;
   printf ("area is %.2lf\n", area);
   return 0;
}
```

Output: 0.78