[C] Attempt the following:-

1) If cost price and selling price of an item are input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit he made or loss he incurred.

```c
#include<stdio.h>

int main(void)
{
    float cost_price,selling_price;

    printf("Enter A Cost Price:-");
    scanf("%f",&cost_price);

    printf("Enter A Selling Price:-");
    scanf("%f",&selling_price);


    if(selling_price>cost_price)
    {
        printf("Congratulations! You Made A Profit of Rs-%.2f /-\n",selling_price-cost_price);
    }

    else
    {
        printf("Opps! You Made A Loss of Rs-%.2f /-\n",cost_price-selling_price);
    }

    return 0;
}
```

2) Any integer is input through the keyboard. Write a program to find out whether it is an odd number or even number.

```c
#include<stdio.h>

int main(void)
{
    int number;

    printf("Enter A Number:-");
    scanf("%d",&number);


    if(number%2==0)
    {
        printf("%d Is A Even Number",number);
    }

    else
    {
        printf("%d Is A Odd Number",number);
    }

    return 0;
}
```

3) Any year is input through the keyboard. Write a program to deter mine whether the year is a leap year or not.

```c
#include<stdio.h>

int main(void)
{
    int year;

    printf("Enter A Year:-");
    scanf("%d",&year);

    if(year%100 != 0)
    {
        if(year%4 == 0)
        {
            printf("%d Is A Leap Year",year);
        }

        else
        {
            printf("%d Is Not A Leap Year",year);
        }
    }
```

```
    else
    {
        if(year%400 == 0)
        {
            printf("%d Is A Leap Year",year);
        }

        else
        {
            printf("%d Is Not A Leap Year",year);
        }
    }
    return 0;
}
```

4) According to the Gregorian calendar, it was Monday on the date 01/01/01. If any year is input through the keyboard write a program to find out what is the day on 1st January of this year.

```c
#include<stdio.h>

int main(void)
{
    int year,last_digit,day;

    printf("Enter A Year:-");
    scanf("%d",&year);

    last_digit=year%10;
    day=last_digit%7;

    if(day==1)
    {
        printf("On 1st January %d , It Is Monday",year);
    }

    else if(day==2)
    {
        printf("On 1st January %d , It Is Tuesday",year);
    }

    else if(day==3)
    {
        printf("On 1st January %d , It Is Wednesday",year);
    }

   else if(day==4)
   {
       printf("On 1st January %d , It Is Thursday",year);
   }
```

```
    else if(day==5)
    {
        printf("On 1st January %d , It Is Friday",year);
    }

    else if(day==6)
    {
        printf("On 1st January %d , It Is Saturday",year);
    }

    else
    {
        printf("On 1st January %d , It Is Sunday",year);
    }

    return 0;
}
```

5) A five-digit number is entered through the keyboard. Write a program to obtain the reversed number and to determine whether the original and reversed number s are equal or not.

```c
#include<stdio.h>

int main(void)
{

    int forward_number,reverse_number,n1,n2,n3,n4,n5;

    printf("Enter A Five Digit Number:-");
    scanf("%d",&forward_number);


    n1=forward_number%10;
    forward_number=forward_number/10;

    n2=forward_number%10;
    forward_number=forward_number/10;

    n3=forward_number%10;
    forward_number=forward_number/10;

    n4=forward_number%10;
    forward_number=forward_number/10;

    n5=forward_number%10;
    forward_number=forward_number/10;
```

```
    reverse_number=(n1*10000)+(n2*1000)+(n3*100)+(n4*10)+n5;

    printf("Reverse Number Is %d\n",reverse_number);

    if(forward_number==reverse_number)
    {
        printf("Number and It's Reverse Number Is Same");
    }
    else
    {
        printf("Number and It's Reverse Number Is  Not Same");
    }

    return 0;
}
```

6) If the ages of Ram, Shyam and Ajay are input through the keyboard, write a program to determine the youngest of the three.

```c
#include<stdio.h>

int main(void)
{
    int Ram_Age,Shyam_Age,Ajay_Age;

    printf("Enter A Ram's Age:-");
    scanf("%d",&Ram_Age);

    printf("Enter A Shyam's Age:-");
    scanf("%d",&Shyam_Age);

    printf("Enter A Ajay's Age:-");
    scanf("%d",&Ajay_Age);

    if(Ram_Age<Shyam_Age)
    {
        if(Ram_Age<Ajay_Age)
        {
            printf("Ram Is Youngest");
        }
        else
        {
            printf("Ajay Is Youngest");
        }
    }
```

```
    else
    {
        if(Shyam_Age<Ajay_Age)
        {
            printf("Shyam Is Youngest");
        }

        else
        {
            printf("Shyam Is Youngest");
        }
    }
    return 0;
}
```

7) Write a program to check whether a triangle is valid or not, when the three angles of the triangle are entered through the keyboard. A triangle is valid if the sum of all the three angles is equal to 180 degrees.

```c
#include<stdio.h>

int main(void)
{
    int angle_A,angle_B,angle_C;

    printf("Enter A Value Of Angle-A:-");
    scanf("%d",&angle_A);

    printf("Enter A Value Of Angle-B:-");
    scanf("%d",&angle_B);

    printf("Enter A Value Of Angle-C:-");
    scanf("%d",&angle_C);

    if(angle_A+angle_B+angle_C == 180)
    {
        printf("Triangle Is Valid");
    }
    else
    {
        printf("Triangle Is In-valid");
    }
    return 0;
}
```

8) Write a program to find the absolute value of a number entered through the keyboard.

```c
#include<stdio.h>

int main(void)
{
    int num,absolute_num;

    printf("Enter A Number:-");
    scanf("%d",&num);

    if(num>=0)
    {
        absolute_num=num*1;
    }
    else
    {
        absolute_num=num*(-1);
    }

    printf("The Absolute Value of %d is %d",num,absolute_num);

    return 0;
}
```

9) Given the length and breadth of a rectangle, write a program to find whether the area of the rectangle is greater than its perimeter. For example, the area of the rectangle with length = 5 and breadth = 4 is greater than its perimeter.

```c
#include<stdio.h>

int main(void)
{
    int length,breadth,area,perimeter;

    printf("Enter The Length of Rectangle:-");
    scanf("%d",&length);

    printf("Enter The Breadth of Rectangle:-");
    scanf("%d",&breadth);

    area=length*breadth;
    perimeter=2*(length + breadth);

    printf("Area Of Rectangle is %d Sq.m\n",area);
    printf("Perimeter Of Rectangle is %d m\n",perimeter);

    if(area>perimeter)
    {
        printf("Area is Greater Than Perimeter");
    }

    else
    {
        printf("Perimeter is Greater Than Area");
    }

    return 0;
}
```

10) Given three points (x1, y1), (x2, y2) and (x3, y3), write a program to check if all the three points fall on one straight line.

```
#include<stdio.h>
#include<math.h>

int main(void)
{
    int x1,y1,x2,y2,x3,y3,x12,y12,x23,y23,x13,y13;
    float d12,d23,d13;

    printf("Enter The Cordinates Of Point-1:-");
    scanf("%d %d",&x1,&y1);

    printf("Enter The Cordinates Of Point-2:-");
    scanf("%d %d",&x2,&y2);

    printf("Enter The Cordinates Of Point-3:-");
    scanf("%d %d",&x3,&y3);

    printf("Point-1 = (%d , %d)\n",x1,y1);
    printf("Point-2 = (%d , %d)\n",x2,y2);
    printf("Point-1 = (%d , %d)\n",x3,y3);

    x12=pow((x1-x2),2);
    y12=pow((y1-y2),2);
    x23=pow((x2-x3),2);
    y23=pow((y2-y3),2);
    x13=pow((x1-x3),2);
    y13=pow((y1-y3),2);

    d12=pow((x12 + y12),0.5);
    d23=pow((x23 + y23),0.5);
    d13=pow((x13 + y13),0.5);
```

```
    if(d13==(d12+d23) || d12==(d23 + d13) || d23==(d12 + d13))
    {
        printf("All Points Are On Same Line");
    }
    else
    {
        printf("All Points Are Not On Same Line");
    }

    return 0;
}
```

11) Given the coordinates (x, y) of center of a circle and its radius, write a program that will determine whether a point lies inside the circle, on the circle or outside the circle. (Hint: Use sqrt( ) and pow( ) functions)

```c
#include<stdio.h>
#include<math.h>

int main(void)
{
    int x0,y0,x1,y1;
    float d01,x01,y01,radius;

    printf("Enter The Co-ordinates Of Circle:-");
    scanf("%d %d",&x0,&y0);

    printf("Enter A Radius Of a Circle:-");
    scanf("%f",&radius);

    printf("Enter The Co-ordinates Of Point:-");
    scanf("%d %d",&x1,&y1);

   printf("Center = (%d , %d)\n",x0,y0);
   printf("Radius = %.2f cm\n",radius);
   printf("Point = (%d , %d)\n",x1,y1);

   x01=pow((x0-x1),2);
   y01=pow((y0-y1),2);

   d01=pow((x01 + y01),0.5);

   printf("Distance Of Point From The Center is %.2f cm\n",d01);
```

```
    if(d01<radius)
    {
        printf("Point Lies Inside  Of The Circle");
    }

    else if(d01==radius)
    {
        printf("Point Lies On The Circle");
    }
    else
    {
        printf("Point Lies Outside Of The Circle");
    }

    return 0;
}
```

12) Given a point (x, y), write a program to find out if it lies on the X-axis, Y-axis or on the origin.

```c
#include<stdio.h>
#include<math.h>

int main(void)
{
    int x,y;

    printf("Enter The Co-ordinates Of Point-A:-");
    scanf("%d %d",&x,&y);

    printf("Point-A = (%d , %d)\n",x,y);

    if(x==0 && y==0)
    {
        printf("Point-A Lies On Origin");
    }

    else if(x != 0)
    {
        printf("Point-A Lies On X-Axis");
    }

    else
    {
        printf("Point-A Lies On Y-Axis");
    }

    return 0;
}
```