



**Bachelor Of Technology**  
**Information and Communication Technology**  
Introduction to Computer Programming  
(01CT0101)



**[D] Attempt the following:-**

- 1) Any year is entered through the keyboard, write a program to determine whether the year is leap or not. Use the logical operators && and ||.

```
#include<stdio.h>

int main(void)
{
    int year;

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

    if(year%100 != 0 && year%4 == 0)
    {
        printf("%d Is 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;
}
```



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2) A certain grade of steel is graded according to the following conditions:-

- (i) Hardness must be greater than 50
- (ii) Carbon content must be less than 0.7
- (iii) Tensile strength must be greater than 5600

The grades are as follows:-

- a) Grade is 10 if all three conditions are met.
- b) Grade is 9 if conditions (i) and (ii) are met.
- c) Grade is 8 if conditions (ii) and (iii) are met.
- d) Grade is 7 if conditions (i) and (iii) are met.
- e) Grade is 6 if only one condition is met.
- f) Grade is 5 if none of the conditions are met.

Write a program, which will require the user to give values of hardness, carbon content and tensile strength of the steel under consideration and output the grade of the steel

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

```
int main(void)  
{
```

```
    int hardness,carbon,tensile,grade;
```

```
    printf("Enter The Hardness Of Steel:-");  
    scanf("%d",&hardness);
```

```
    printf("Enter The Carbon content Of Steel:-");  
    scanf("%d",&carbon);
```

```
    printf("Enter The Tensile strength Of Steel:-");  
    scanf("%d",&tensile);
```



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```
if(hardness>50 && carbon<0.7 && tensile>5600)
{
    grade=10 ;
}

else if(hardness>50 && carbon<0.7)
{
    grade=9 ;
}

else if(carbon<0.7 && tensile>5600)
{
    grade=8 ;
}

else if(hardness>50 && tensile>5600)
{
    grade=7 ;
}

else if(hardness>50 || carbon<0.7 || tensile>5600)
{
    grade=6 ;
}

else
{
    grade=5;
}

printf("Grade Of Steel Is %d",grade);

return 0;
```



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- 3) If the three sides of a triangle are entered through the keyboard, write a program to check whether the triangle is valid or not. The triangle is valid if the sum of two sides is greater than the largest of the three sides.

```
#include<stdio.h>

int main(void)
{
    int side1,side2,side3;

    printf("Enter The Length Side-1:-");
    scanf("%d",&side1);

    printf("Enter The Length Side-2:-");
    scanf("%d",&side2);

    printf("Enter The Length Side-3:-");
    scanf("%d",&side3);

    if(side3<=(side1 + side2) || side2<=(side1 + side3) || side1<=(side2 + side3))
    {
        printf("Triangle Is Valid");
    }

    else
    {
        printf("Triangle Is Not Valid");
    }

    return 0;
}
```



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

```
#include<stdio.h>

int main(void)
{
    int side1,side2,side3;

    printf("Enter The Length Side-1:-");
    scanf("%d",&side1);

    printf("Enter The Length Side-2:-");
    scanf("%d",&side2);

    printf("Enter The Length Side-3:-");
    scanf("%d",&side3);

    if(side1 == side2 == side3)
    {
        printf("Triangle Is Equilateral");
    }

    else if((side1 == side2) || (side2 == side3) || (side1 == side3))
    {
        printf("Triangle Is Isosceles");
    }

    else
    {
        printf("Triangle Is Scalene");
    }

    return 0;
}
```



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- 5) In boxing the weight class of a boxer is decided as per the following table. Write a program that receives weight as input and prints out the boxer's weight class.

Boxer Class	Weight in Pounds
Flyweight	< 115
Bantamweight	115 - 121
Featherweight	122 - 153
Middleweight	154 – 189
Heavyweight	>= 190

```
#include<stdio.h>

int main(void)
{
    int weight;

    printf("Enter The Weight Of Boxer:-");
    scanf("%d",&weight);

    if(weight<115)
    {
        printf("Boxer Class Is Flyweight");
    }

    else if(115<weight && weight<121)
    {
        printf("Boxer Class Is Bantamweight");
    }
}
```



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```
else if(122<weight && weight<153)
{
    printf("Boxer Class Is Featherweight");
}

else if(154<weight && weight<189)
{
    printf("Boxer Class Is Middleweight");
}

else if(weight >= 190)
{
    printf("Boxer Class Is Heavyweight");
}

return 0;
}
```



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- 6) The Body Mass Index (BMI) is defined as ratio of the weight of a person (in kilograms) to the square of the height (in meters). Write a program that receives weight and height, calculates the BMI, and reports the BMI category as per the following table:-

BMI Category	BMI
Starvation	< 15
Anorexic	15.1 to 17.5
Underweight	17.6 to 18.5
Ideal	18.6 to 24.9
Overweight	25 to 25.9
Obese	30 to 30.9
Morbidly Obese	>= 40

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

```
int main(void)  
{
```

```
    float BMI;
```

```
    printf("Enter Your BMI:-");  
    scanf("%f",&BMI);
```

```
    if(BMI<15)  
    {  
        printf("You Are Starvation");  
    }
```

```
    else if(BMI>=15.1 && BMI<=17.5)  
    {  
        printf("You Are Anorexic");  
    }
```





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```
else if(BMI>=17.6 && BMI<=18.5)
{
    printf("You Are Underweight");
}

else if(BMI>=18.6 && BMI<=24.9)
{
    printf("You Are Ideal");
}

else if(BMI>=25.0 && BMI<=25.9)
{
    printf("You Are Overweight");
}

else if(BMI>=30.0 && BMI<=30.9)
{
    printf("You Are Obese");
}

else if(BMI>=40.0 )
{
    printf("You Are Morbidly Obese");
}

return 0;
}
```