

Classwork questions -

1. Print the larger and smaller of the two numbers.

Answer -

INPUT -

//q1)Program to print the larger and smaller of two numbers

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

```
int main(){
```

```
    int a,b;
```

```
    printf("Enter the first number: ");
```

```
    scanf("%d",&a);
```

```
    printf("Enter the second number: ");
```

```
    scanf("%d",&b);
```

```
    if(a>b){
```

```
        printf("The larger number is %d and smaller number is %d\n",a,b);
```

```
    }
```

```
    else{
```

```
        printf("The larger number is %d and smaller number is %d\n",b,a);
```

```
    }
```

```
}
```

OUTPUT -

Enter the first number: 2

Enter the second number: 3

The larger number is 3 and smaller number is 2.

2. Print whether the number is even or odd.

Answer -

INPUT -

```
//q2)Print whether number is even or odd
```

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

```
int main(){
```

```
    int a,b;
```

```
    printf("Enter the number: ");
```

```
    scanf("%d",&a);
```

```
    if(a%2==0){
```

```
        printf("The number is even");
```

```
    }
```

```
    else{
```

```
        printf("The number is odd");
```

```
    }
```

```
}
```

OUTPUT -

Enter the number: 1

The number is odd

3. Find the largest of three given numbers.

Answer -

INPUT -

```
//q3)Print larger of three numbers
#include<stdio.h>
int main(){
    int a,b,c;
    printf("Enter the first number: ");
    scanf("%d",&a);
    printf("Enter the second number: ");
    scanf("%d",&b);
    printf("Enter the third number: ");
    scanf("%d",&c);
    if(a>b && a>c){
        printf("Largest Number is: %d\n",a);
    }
    else if(b>c && b>a){
        printf("Largest Number is: %d\n",b);
    }
    else{
        printf("Largest Number is: %d\n",c);
    }
}
```

OUTPUT -

Enter the first number: 3

Enter the second number: 4

Enter the third number: 2

Largest Number is: 4

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4. Check whether a year is a leap or not.

Answer -

INPUT -

```
//q4)Find Leap Year or not
#include<stdio.h>

int main(){
    int year;
    printf("Enter the year: ");
    scanf("%d",&year);
    if(year%4==0 && year%100!=0 || year%400==0){
        printf("Leap Year\n");
    }
    else
        printf("Not a Leap Year\n");
}
```

OUTPUT -

Enter the year: 2034

Not a Leap Year

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5. Find the grade of a student based on the marks obtained.

Answer -

INPUT -

```
//q5)Grade of student
#include<stdio.h>

int main(){
    float m1,m2,m3,m4,total,per;
    char grade;
    printf("Enter the marks of the subjects: ");
    scanf("%f%f%f%f",&m1,&m2,&m3,&m4);
    total=m1+m2+m3+m4;
    per=total/4;
    if(per>=85)
        grade='A';
    else if(per>=70)
        grade='B';
    else if(per>=55)
        grade='C';
    else if(per>=40){
        grade='D';
    }
    else
        grade='E';
    printf("The percentage is %f\n Grade is %c\n",per,grade);
}
```

OUTPUT -

Enter the marks of the subjects:

23

4

54

32

The percentage is 28.250000

Grade is E

Homework Questions -

1. Calculates the user's body mass index (BMI) and categorizes it as underweight, normal, overweight, or obese, based on the following table from the United States Centers for Disease Control. Prompt the user to enter weight in pounds and height in inches.

BMI	Weight Status
Below 18.5	Underweight
18.5–24.9	Normal
25.0–29.9	Overweight
30.0 and above	Obese

To calculate BMI based on weight in pounds (*wt_lb*) and height in inches (*ht_in*), use this formula (rounded to tenths):

$$\frac{703 \times wt_lb}{ht_in^2}$$

Answer -

INPUT -

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

```
int main(){
```

```
    float height,weight,bmi;
```

```
    printf("Enter the weight in lb: ");
```

```
    scanf("%f",&weight);
```

```
    printf("Enter the height in inches: ");
```

```
    scanf("%f",&height);
```

```
    bmi=(703*weight)/(height*height);
```

```
    if(bmi>=30){
```

```
        printf("Obese");
    }
    else if(bmi>=25){
        printf("Overweight");
    }
    else if(bmi>=18.5){
        printf("Normal");
    }
    else{
        printf("Underweight");
    }
}
```

OUTPUT -

Enter the weight in lb: 234

Enter the height in inches: 2

Obese

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2. Write a program that reports the contents of a compressed-gas cylinder based on the first letter of the cylinder's color. The program input is a character representing the observed color of the cylinder: 'Y' or 'y' for yellow, 'O' or 'o' for orange, and so on. Cylinder colors and associated contents are as follows. Your program should respond to input of a letter other than the first letters of the given colors with the message: "Contents Unknown" .

orange	ammonia
brown	carbon monoxide
yellow	hydrogen
green	oxygen

Answer -

INPUT -

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

```
int main()
```

```
{
```

```
    char c;
```

```
    printf("Enter the colour code:\n");
```

```
    scanf("%c", &c);
```

```
    if (c == 'O' || c == 'o')
```

```
    {
```

```
        printf("Ammonia");
```

```
    }
```

```
    else if (c == 'B' || c == 'b')
```

```
    {
```

```
        printf("Carbon Monoxide");
    }
    else if (c == 'Y' || c == 'y')
    {
        printf("Hydrogen");
    }
    else if (c == 'G' || c == 'g')
    {
        printf("Oxygen");
    }
    else
    {
        printf("Contents Unknown");
    }
}
```

OUTPUT -

Enter the colour code:

y

Hydrogen

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3. The National Earthquake Information Center has asked you to write a program implementing the following decision table to characterize an earthquake based on its Richter scale number.

Richter Scale Number (n)	Characterization
$n < 5.0$	Little or no damage
$5.0 \leq n < 5.5$	Some damage
$5.5 \leq n < 6.5$	Serious damage: walls may crack or fall
$6.5 \leq n < 7.5$	Disaster: houses and buildings may collapse
higher	Catastrophe: most buildings destroyed

Answer -

INPUT -

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

```
int main()
```

```
{
```

```
    float n;
```

```
    printf("Type the value of earthquake displayed on Richter's Scale:\n");
```

```
    scanf("%f", &n);
```

```
    if(n<5.0)
```

```
    {
```

```
        printf("Little or no damage");
```

```
    }
```

```
else if(n>=5.0&& n<5.5)
{
    printf("Some Damage");
}
else if(n>=5.5&& n<6.5)
{
    printf("Serious Damage: walls may crack or fall");
}
else if(n>=6.5&& n<7.5)
{
    printf("Disaster:house and building may collapse");
}
else
    printf("Catastrophe:most building destroyed");
return 0;
}
```

OUTPUT -

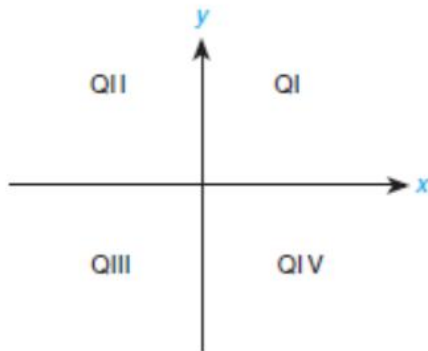
Type the value of earthquake displayed on Richter's Scale:

6

Serious Damage: walls may crack or fall

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4. Write a program that takes the (x, y) coordinates of a point in the Cartesian plane and prints a message telling either an axis on which the point lies or the quadrant in which it is found. Sample lines of output:
(-1.0, -2.5) is in quadrant III
(0.0, 4.8) is on the y-axis



Answer - #include <stdio.h>

INPUT -

```
int main()
{
    float x, y;

    printf("Enter the x-coordinate: ");
    scanf("%f", &x);
    printf("Enter the y-coordinate: ");
    scanf("%f", &y);

    if (x == 0 && y == 0) {
        printf("The point is at the origin\n");
```

```
} else if (x == 0) {  
    printf("The point is on the y-axis\n");  
} else if (y == 0) {  
    printf("The point is on the x-axis\n");  
} else if (x > 0 && y > 0) {  
    printf("The point is in quadrant I\n");  
} else if (x < 0 && y > 0) {  
    printf("The point is in quadrant II\n");  
} else if (x < 0 && y < 0) {  
    printf("The point is in quadrant III\n");  
} else {  
    printf("The point is in quadrant IV\n");  
}  
  
return 0;  
}
```

OUTPUT -

Enter the x-coordinate: 5

Enter the y-coordinate: 6

The point is in quadrant I

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5. Write a program that interacts with the user like this:

(1) Carbon monoxide

(2) Hydrocarbons

(3) Nitrogen oxides

(4) Non-methane hydrocarbons

Enter pollutant number >> 2

Enter number of grams emitted per mile >> 0.35

Enter odometer reading >> 40112

Emissions exceed the permitted level of 0.31 grams/mile.

Use the table of emissions limits below to determine the appropriate message.

	First 50,000 Miles	Second 50,000 Miles
carbon monoxide	3.4 grams/mile	4.2 grams/mile
hydrocarbons	0.31 grams/mile	0.39 grams/mile
nitrogen oxides	0.4 grams/mile	0.5 grams/mile
nonmethane hydrocarbons	0.25 grams/mile	0.31 grams/mile

Answer –

INPUT -

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

```
int main()
```

```
{
```

```
    int pollutant;
```

```
    float gramsPerMile, odometerReading, limit;
```

```
    printf("(1) Carbon monoxide\n");
```

```
    printf("(2) Hydrocarbons\n");
```

```
printf("(3) Nitrogen oxides\n");
printf("(4) Non-methane hydrocarbons\n");
printf("Enter pollutant number >> ");
scanf("%d", &pollutant);

printf("Enter number of grams emitted per mile >> ");
scanf("%f", &gramsPerMile);

printf("Enter odometer reading >> ");
scanf("%f", &odometerReading);

if (pollutant == 1) {
    limit = 3.4;
} else if (pollutant == 2) {
    limit = 0.31;
} else if (pollutant == 3) {
    limit = 0.4;
} else if (pollutant == 4) {
    limit = 0.25;
} else {
    printf("Invalid pollutant number\n");
    return 1;
}

float emissions = gramsPerMile * odometerReading;
if (emissions > limit) {
    printf("Emissions exceed the permitted level of %.2f grams/mile.\n", limit);
} else {
    printf("Emissions are within the permitted level of %.2f grams/mile.\n", limit);
}
```



```
    return 0;  
}
```

OUTPUT -

(1) Carbon monoxide

(2) Hydrocarbons

(3) Nitrogen oxides

(4) Non-methane hydrocarbons

Enter pollutant number >> 2

Enter number of grams emitted per mile >> 4

Enter odometer reading >> 3

Emissions exceed the permitted level of 0.31 grams/mile.