

C# Exercise Questions

Question 1

The definitions of the functions $f(x, y)$ and $g(x)$ are as below:

$$f(x, y) = \frac{-2x^2 + xy - 4}{-x}$$

$$g(x) = -x^2 + 5$$

Write a C# program that declares and initializes two integer variables $x = 5$ and $y = 3$ and evaluates the outputs of $f(x, y)$ and $g(x)$ functions. Analyze the program output for $f(5, 3)$ and $g(5)$ and implement the program printing as the same format. Please note that the outputs of the functions will be stored as of type double.

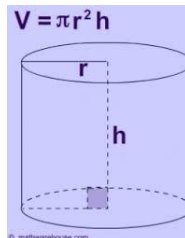
Output:

Here are the declared and initialized variables: $x = 5$, $y = 3$
Here are the output values of the functions: $f(5, 3) = 7.8$, $g(5) = -20.0$

Question 2

Write a C# program that declares and initializes two double variables, radius (r) and height (h) of a cylinder and calculates the volume using given formula below. (You should define π as a constant of value 3.14.)

$$V = \pi r^2 h$$



Output:

If the radius is 2.5 and the height is 9.4 then
The volume of the cylinder is 184.475

Question 3

Write a C# program that receives distance (d) and time (t) of a moving car and calculates its speed (S) using the formula given below.

$$S = \frac{d}{t}$$

Sample Output:

```
Please enter distance of the car moved in km:  
157.8  
Please enter time of the car moved in hour:  
2.2  
Speed of the car is around 72 kilometers per hour.
```

Note 1: Assume that both of the inputs will be floating point numbers.

Note 2: Print the result as an integer. Use Math.round function to find the integer value nearest to the computed result.

Question 4

Write a simple C# program that reads three integer variables x , y , and z from the user and evaluates the outputs of $g(y, z)$ and $f(x, y, z)$ for given values. The definitions of functions $g(y, z)$ and $f(x, y, z)$ are as follows:

$$g(y, z) = 2yz + \frac{y^3 + z}{z^2 - 2y}$$

$$f(x, y, z) = \frac{x + y + z}{x + y - z} + \frac{y^2 - z^2}{y - x}$$

Sample Output:

```
Enter integer x: 3  
Enter integer y: 4  
Enter integer z: 5  
g(4,5) = 44  
f(4,5,6) = -3
```

Note 1: Print the result as an integer. Use Math.round function to find the integer value nearest to the computed result.

Question 5

Write a C# program which

- Reads number of month, week, and day.
- Computes and prints total days.
- Displays the total days in terms of number of weeks and the remaining number of days.

Sample Output:

```
Number of months: 7
Number of weeks: 3
Number of days: 5
Total days: 236
Total days consists of 33 weeks and 5 days.
```

Note 1: Assume that each month consists of 30 days.

Question 6

Write a Java program that inputs type of a project (small, medium, and large) and the quantities of a project, calculate the total charge based on the rates shown below:

- Small Project 1000 TL per project
- Medium Project 2000 TL per project
- Large Project 3500 TL per project

You need to input project type and quantities and calculate total money to be paid.

Sample Outputs:

```
Please enter the project type:
small
How many small projects do you want?
5
Total cost is 5000 TL.
```

```
Please enter the project type:
MeDiUM
How many medium projects do you want?
3
Total cost is 6000 TL.
```

```
Please enter the project type:
LARGE
How many large projects do you want?
5
Total cost is 17500 TL.
```

```
Please enter the project type:
huge
Invalid project type!
```