

Guide for Exercise 3: Operator – For Selected Questions Only

1. Data variables x, y, z are declared as follows:

```
int x = 5, y = 6, z = 4;
```

```
double w = 3.5;
```

w should be of **int** data type as one of the operand of **modulus %** operator

Evaluate each of the following expression. State the reason.

a. $(x + z) \% y$

b. $(x + y) \% w$

The result of **division** with **two int** type of operands is **integer**. (e's value is 7.)

2. Do a walk-through to find the value assigned to e.

Assume that all variables are properly declared of int data type.

```
a = 3; b = 4; c = (a % b) * 6; d = c / b; e = (a + b + c + d) / 4;
```

3. Which of the following are valid C++ assignment statements?

Assume that i, x and percent are *double* type variables.

a. $i = i + 5$; b. $x + 2 = x$; c. $x = 2.5 * x$; d. $\text{percent} = 10\%$;



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- 4a. Determine the output of the following code segment.

```
int x, y, z=4;
```

```
y = (7+6) % 5 / 2; cout << y << "\n";
```

1 Precedence and int division

```
z *= 3 + 2; cout << z << "\n";
```

20

```
x=y==z; cout << x << "\n";
```

0 Precedence

- 4b. Determine the output of the following code segment.

```
char x, y; int z= 61;
```

```
x = 'a' + 10; cout << x << "\n";
```

k ASCII value: 107

```
y = z + 10; cout << y << "\n";
```

G ASCII value: 71

```
cout << (z+10) << "\n";
```

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5. Spot and correct the errors in the following code:

```
#include <iostream>
```

```
#include <iomanip>
```

```
using namespace std;
```

```
int main()
```

```
{
```

```
    int weight; int result;
```

```
    cout << "Enter your weight in lbs: ";
```

```
    cin >> "weight";
```

```
    result == weight x 2.2;
```

```
    cout << "\nYour weight is : " << fixed << setprecision (2) << result << endl;
```

```
    return 0;
```

```
}
```

To format floating point value, **iomanip** is to be included.

Both variables should be declared as **double** data type.

User input should be captured and stored in variable, variable name does **NOT** contains "

Multiplication is **NOT** x in c++, assignment operator is wrong

The io manipulator **setprecision** requires the **number of decimal places** to be displayed, and is used together with **fixed** manipulator.

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6a. The equivalent resistance of two resistors connected in parallel is given by the equation:

$$R = R1 * R2 / (R1 + R2)$$

Write a program that prompts the user to enter the value of the two resistors. The program then calculates and displays the equivalent resistance.



Any difficulty? How many input and output variables to be declared? With what name and data type?

6b. Write a program that calculates the equivalent resistances of two resistors connected in series and parallel. The user will be prompted to enter the values of the two resistors. A *sample run* of the code is shown below:

Program to calculate equivalent resistances in series and parallel.

Enter the value of the first resistor : 5

Enter the value of the second resistor: 20

The equivalent resistance in series is 25 Ohms.

The equivalent resistance in parallel is 4 Ohms.

Ex3 6b Sol : Refer to the following program -- only when in doubt

```
#include <iostream>
using namespace std;
int main()
{
    double R1, R2, Rs, Rp;    //declare input and output variables with proper data type.
    // Prompt user to Input two resistors values, one by one
    cout << "Program to calculate equivalent resistances in series and parallel. " << endl;
    cout << "\nPlease enter the value of the first resistor : ";
    cin >> R1;                //capture and store the input value into variable R1
    cout << "Please enter the value of the second resistor : ";
    cin >> R2;                //capture and store the input value into variable R2

    Rs = R1 + R2 ;            // perform series resistance calculation
    cout << "\nThe series resistance is " << Rs << " Ohms." << endl;    //display result

    Rp = R1 * R2 / (R1 + R2) ; // perform parallel resistance calculation
    cout << "The parallel resistance is " << Rp << " Ohms." << endl;    //display result

    return 0;
}
```

Refer to Ex3 Q6b_Resistance.mp4
for animated Sample Run

Mini Challenge of Exercise 3: Operator

Given the volume and length of a cylinder, find out its radius

- **Problem statement:**

- Given the volume and length of a cylinder, find out its radius.

- **Declare input and output variable:** volume, length, radius

- which data type is most suitable?

- **Prompt user to input value:**

- for volume and length one by one and store the value to its variable

- **Perform calculation:**

- The volume of a cylinder is given by the following equation:

volume = $\pi r^2 l$, where r is the radius, l is the length of the cylinder

- **radius= ?** either function **pow()** or **sqrt()** of **cmath** library could be used to calculate radius from given volume and length

- **Display the calculated value of radius**

- together with input values and proper description.
- Keep 3 decimal places.