Guide For Exercise 2b – For selected questions only

1. What are the characters that indicate the begin and end of instructions in C++ Program? (refer to notes)

Where is the error?

Create a new project and call it “prog4”

```
#include<iostream>
using namespace std;

int main()
{
        double radius, PI;
        int area;

        radius = 12.5;
        PI = 22 / 7;
        area = PI * radius * radius;
        cout << "Area of circle is " << area << "\n" ;
        return 0;
}
```

Build and run the program to see the result.
The correct value for the area is 491.071.

Where is/are the error(s)?

Is it an appropriate data type used?

Be aware of using integer / integer. One or both of them must be double in this case.

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2. What is the difference between variables and constants?

   Name two data items, which are best represented as constants and two that are best represented as variables.

Which can be changed?
Which cannot be changed?

3. How much memory (in bytes) is occupied in each of the following statements?

   double number;

   int count, index;

   char yesno;

Note: Each char variable requires 1 Byte
Each int variable requires 4 Bytes
Each double variable requires 8 Bytes

4. Which of the following variable declarations are correct? If a variable declaration is not correct, give the reason(s) and provide the correct variable declaration.

   a. n=12;

   b. char letter =;

   c. int one = 5, two;

   d. double x, y, z;

Syntax: dataType variableName;
Or
datatype variableName = initialisedValue;

Variables with the same datatype can be put in the same line with or without an initialised value, using a comma to separate them.

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

Try compiling these codes in Code::Blocks and see the error messages.
You can copy the codes from the pdf file, "Exercise 2a & 2b(Questions).pdf" in the same Chapter 2 folder

```
#include <iostream>
using namespace std;
#define PI=3.14;
int Main()
{
   int count;
   double colorVal

   cout << "Enter an integer number;
   cin << "count";
   colorVal = PI*count;
   cout << "\nThe color value is : "
      <<  colorVal;
   return 0;
}
```

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For the coding part, refer to Volume.mp4 for programming animation or test out the codes below in Code::Blocks

6. In the following questions, apply the design & development process. Give both the first and second level pseudocode and flowcharts.

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

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

   Write a program that will prompt the user to enter the radius and the length of the cylinder. The program will calculate and display the volume.

   b. Enhance the above program such that it also calculates and displays the total surface area of the cylinder.
   The total surface are of the cylinder is given by the following equation:

   total surface area = $2\pi r^2 + 2\pi rl$

```
#include <iostream>

using namespace std;

#define PI 3.142

int main()

{               double radius, length, volume, area;

                cout << "Enter radius: ";

                cin >> radius;

                cout << "Enter length: ";

                cin >> length;

                volume = PI * radius * radius * length;

                area = 2*PI*radius*(radius+length);

                cout << "Volume = " << volume << endl;

                cout << "Surface area = " << area << endl;


                 return 0;

}
```