



Attempt the following questions.

**№ of Questions:** 5 in 5 page(s)  
**Total Mark:** 10

**Question 1:**

**(2 Marks)**

Each of the following programs has some errors. Locate as many as you can.

a)	b)
<pre>#include &lt;iostream&gt;; using namespace std; main {     double number, half;     cout &lt;&lt; "Enter a number to be divided\n"     cout &lt;&lt; "in half.\n"     cin &gt;&gt; number1;     half =/ 2;     cout &lt;&lt; fixedpoint &lt;&lt; showpoint &lt;&lt; half &lt;&lt; endl;     return 0; }</pre>	<pre>using namespace std; int main () {     double number1, number2, sum;     Cout &lt;&lt; "Enter a number: ";     Cin &lt;&lt; number1;     Cout &lt;&lt; "Enter another number: ";     Cin &lt;&lt; number2;     number1 + number2 = sum;     Cout "The sum is " &lt;&lt; sum     return 0; }</pre>

**Solution:**

a)	b)
<pre>#include &lt;iostream&gt;_ using namespace std; int main () {     double number, half;     cout &lt;&lt; "Enter a number to be divided\n";     cout &lt;&lt; "in half.\n";     cin &gt;&gt; number;     half = number / 2;     cout &lt;&lt; fixed &lt;&lt; showpoint &lt;&lt; half &lt;&lt; endl;     return 0; }</pre>	<pre>#include &lt;iostream&gt; using namespace std; int main () {     double number1, number2, sum;     cout &lt;&lt; "Enter a number: ";     cin &gt;&gt; number1;     cout &lt;&lt; "Enter another number: ";     cin &gt;&gt; number2;     sum = number1 + number2;     cout &lt;&lt; "The sum is " &lt;&lt; sum;     return 0; }</pre>



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**Question 2:**

**(2 Marks)**

Convert the following if/else if statement into a switch statement:

```
if (choice == 1)
{
    cout << fixed << showpoint << setprecision(2);
}
else if (choice == 2 || choice == 3)
{
    cout << fixed << showpoint << setprecision(4);
}
else if (choice == 4)
{
    cout << fixed << showpoint << setprecision(6);
}
else
{
    cout << fixed << showpoint << setprecision(8);
}
```

**Solution:**

```
switch (choice) {
    case 1:
        cout << fixed << showpoint << setprecision(2);
        break;
    case 2:
    case 3:
        cout << fixed << showpoint << setprecision(4);
        break;
    case 4:
        cout << fixed << showpoint << setprecision(6);
        break;
    default:
        cout << fixed << showpoint << setprecision(8);
        break;
}
```



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**Question 3:**

(2 Marks)

Write a program that calculates a car's gas mileage. The program should ask the user to enter the number of gallons of gas the car can hold and the number of miles it can be driven on a full tank. It should then display the number of miles that may be driven per gallon of gas.

**Solution:**

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

int main()
{
    double mileage,    // To hold the calculated miles per gallon
          gallons,    // To hold the gas tank capacity (in gallons)
          miles;      // To hold the miles the car can go on 1 tank of gas

    // Get the gas tank capacity.
    cout << "How many gallons of gas can the car hold? ";
    cin >> gallons;

    // Get the miles the car can travel on a full tank.
    cout << "How many miles can you drive on a full tank? ";
    cin >> miles;

    // Calculate the miles per gallon
    mileage = miles/gallons;

    // Display the result
    cout << "\nThis car gets " << mileage << " miles per "
          << "gallon.\n";
    return 0;
}
```



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**Question 4:**

**(2 Marks)**

Write a program that asks the user to enter two numbers. The program should use the conditional operator to determine which number is the smaller and which is the larger.

**Solution:**

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

int main()
{
    int num1;    // To hold the 1st number
    int num2;    // To hold the 2nd number

    // Get the 1st number.
    cout << "Enter the 1st number: ";
    cin >> num1;

    // Get the 2nd number.
    cout << "Enter the 2nd number: ";
    cin >> num2;

    // Determine which number is the smaller and which is the larger.
    cout << num1 << " is "
         << (num1 > num2 ? "larger than " : "smaller than ")
         << num2 << ".\n";

    return 0;
}
```



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**Question 5:**

(2 Marks)

Write a program that asks the user for a positive integer value. The program should use a loop to get the sum of all the integers from 1 up to the number entered. For example, if the user enters 50, the loop will find the sum of 1, 2, 3, 4, ... 50.

*Input Validation: Do not accept a negative starting number.*

**Solution:**

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

int main()
{
    int value = -1; // To hold the value
    int sum = 0;   // The sum, initialized to 0.

    // Get the value as input from the user.
    // Do not accept negative values.
    while (value < 0)
    {
        cout << "Enter a positive integer value: ";
        cin >> value;
    }

    // Calculate the sum of numbers from 1
    // up to the value entered by the user.
    int count = 1;
    while(count <= value)
    {
        // Increment the sum by the count.
        sum += count++;
    }

    // Display the sum.
    cout << "\nThe sum of numbers 1 - "
        << value << " is " << sum << ".\n";
    return 0;
}
```

Good Luck  
Dr. Islam ElShaarawy