Tutorial 2

Question 1

Go through the codes below. If you want you can run them in Dev C++.

```
#include <iostream>
using namespace std;
int main()
{

   const int A_SCORE = 90,
             B_SCORE = 80,
             C_SCORE = 70,
             D_SCORE = 60,
             MIN_SCORE = 0,    // Minimum valid score
             MAX_SCORE = 100;  // Maximum valid score

   int testScore;

   cout << "Enter your numeric test score and I will\n"
        << "tell you the letter grade you earned: ";
   cin >> testScore;

   if (testScore >= MIN_SCORE && testScore <= MAX_SCORE)
   {
      // Determine the letter grade.
      if (testScore >= A_SCORE)
         cout << "Your grade is A.\n";
      else if (testScore >= B_SCORE)
         cout << "Your grade is B.\n";
      else if (testScore >= C_SCORE)
         cout << "Your grade is C.\n";
      else if (testScore >= D_SCORE)
         cout << "Your grade is D.\n";
```

```
      else
        cout << "Your grade is F.\n";
    }
    else
    {
      cout << "That is an invalid score. Run the program\n"
           << "again and enter a value in the range of\n"
           << MIN_SCORE << " through " << MAX_SCORE << ".\n";
    }

    return 0;
}
```

a) Write out the possible outputs you can drive from this program
b) Discuss areas that are highlighted in yellow. Each area in paragraphs

Question 2

Hand tracing is a debugging process where you pretend that you are the computer executing a program. You step through each of the program's statements one by one. As you look at a statement, you record the contents that each variable will have after the statement executes.

This process is often helpful in finding mathematical mistakes and other logic errors. To hand trace a program you construct a chart with a column for each variable. The rows in the chart correspond to the lines in the program. The program uses the following four variables: num1 , num2 , num3 , and avg . Notice that the hand trace chart has a column for each variable and a row for
each line of code in function main .

```
// This program asks for three numbers, then
// displays the average of the numbers.
#include <iostream>
using namespace std;

int main()
{
    double num1, num2, num3, avg;
    cout << "Enter the first number: ";
    cin >> num1;
    cout << "Enter the second number: ";
    cin >> num2;
    cout << "Enter the third number: ";
    cin >> num3;
    avg = num1 + num2 + num3 / 3;
    cout << "The average is " << avg << endl;
    return 0;
}
```

num1	num2	num3	avg

Question 3

List and discuss briefly the different types of software testing

Question 4

Indicate what types issues that can be discovered when software testing is done.