Programming Fundamentals and Unit Testing
Regular Exam – 7 July 2024

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3. Unit Test Method: Perfect Square Integers in Range

Test a given method which takes in **two integers** and returns all perfect square integers in the range.

Examples

Input	Output
10 1	Start number should be less than end number.
1 1	1
0 0	0
1 50	1 4 9 16 25 36 49
2 3	*Empty string*

The method is found in the **`PerfectSquareIntegers.cs`** file:

```
public class PerfectSquareIntegers
{
    0 references
    public static string FindPerfectSquares(int start, int end)
    {
        if (start > end)
        {
            return "Start number should be less than end number.";
        }

        StringBuilder result = new StringBuilder();

        for (int num = start; num <= end; num++)
        {
            if (IsPerfectSquare(num))
            {
                result.Append(num + " ");
            }
        }

        return result.ToString().Trim();
    }
```

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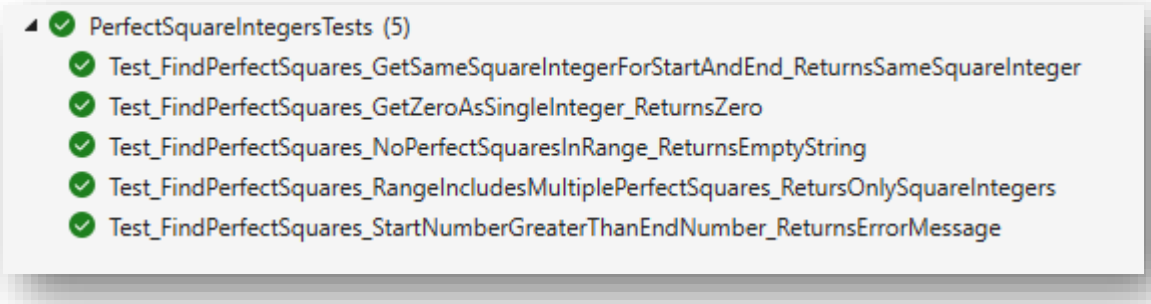
There is one **helper method** to verify if the number is a perfect square or not:

```
private static bool IsPerfectSquare(int number)
{
    if (number < 0)
    {
        return false;
    }

    int sqrt = (int)Math.Sqrt(number);
    return sqrt * sqrt == number;
}
```

You are given a **test file `PerfectSquareIntegersTests.cs`** containing **5 empty tests**. Implement all the unit tests:

```
public class PerfectSquareIntegersTests
{
    [Test]
    0 references
    public void Test_FindPerfectSquares_StartNumberGreaterThanEndNumber_ReturnsErrorMessage()...

    [Test]
    0 references
    public void Test_FindPerfectSquares_GetSameSquareIntegerForStartAndEnd_ReturnsSameSquareInteger()...

    [Test]
    0 references
    public void Test_FindPerfectSquares_GetZeroAsSingleInteger_ReturnsZero()...

    [Test]
    0 references
    public void Test_FindPerfectSquares_RangeIncludesMultiplePerfectSquares_RetursOnlySquareIntegers()...

    [Test]
    0 references
    public void Test_FindPerfectSquares_NoPerfectSquaresInRange_ReturnsEmptyString()...
}
```

When you are ready make sure your **tests run:**



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