

SE 322 - SE 318 Software Verification and Validation

SPRING 2023-24

LAB WORK - A JUnit Application

26th of April, 2024

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1 Task Description

In this LAB, you are going to implement a small application and perform unit testing after you have done with the implementation. I assume each group is using IntelliJ IDEA for their projects. Please start your IDE and follow the steps below:

- First, create a new Java Project.
- Now create two packages: **test** and **apps**
- Add a new class and call it as **JUnitApplication**.
- Now, write 4 functions in this class:
 - Write a function called *perfectNumber* that finds whether a given number is a perfect number. A perfect number is a positive integer that is equal to the sum of its proper divisors (excluding itself).
 - Write a function called *sumOdds* that takes an integer between 1-100 and returns the sum of odd integers from 1 to the given integer. For example; if the input is 10, the function will return $1 + 3 + 5 + 7 + 9 = 25$.
 - Write a function called *concatText* that takes two strings, concatenates them, adds a third string called *testingisgood* at the end of it, and returns that string.
 - Write a function called *fibonacci* that takes an integer and returns the corresponding fibonacci number.
- The next step is to write **unit tests**. You are going to have four different test case classes:
 - Create a new Test Case, rename it to testPerfect, and perform two unit tests by using assertEquals and assertNotEquals functions.
 - Create a new Test Case, rename it to testSumOdds, and perform two unit tests by using assertEquals and assertNotEquals functions.
 - Create a new Test Case, rename it to testConcatText, and perform two unit tests by using assertEquals and assertNotEquals functions.
 - Create a new Test Case, rename it to testFibonacci, and perform two unit tests by using assertEquals and assertNotEquals functions.
- Lastly, you need to do is to combine these tests to a **Test Suite**. Write this class and run all tests at the same time.