In this Weekly Exercise 5, we shall discover yet another aspect of the Software Development Process, namely the tool called **test case** used in the **Testing** step.

For the purpose of this Weekly Exercise, we shall define a **test case** to be composed of:

- **input data** (called *Sample Input* in our labs) and
- **expected results** (called *Sample Output* in our labs)

First, make sure your Tasks 9 and 10 of Lab 2 have been successfully graded by the grading robot. Then ...
Our challenge:
- List all the test cases you would need in order to completely test
  - Your program `verticalgraph.c` (Task 9 of Lab 2) and
  - Your function `InRectangle.c` (Task 10 of Lab 2)
- “completely” means that all statements in your function/program have been exercised (executed), hence tested by the test cases!
- You will need 2 lists of test cases:
  - 1 list of test cases to test `verticalgraph.c` and
  - 1 list of test cases to test `InRectangle.c`
Weekly Exercise 5 - 3

OUR CHALLENGE (CONT’D):

Requirement:

- Your lists cannot contain 2 test cases that test exactly the same statements in your function/program
- This is to say that each list of test cases must be composed of distinct test cases
Weekly Exercise 5 - 4

- Our challenge (cont’d):
  - Here is an example of what we mean by **distinct test cases**:
    - If you were to test your function *scrambled.c* (Lab 2 Task 4), you could use the following test cases:
      - **Test Case A**
        - Input data: \( \text{arr1} = \{2,1,3,4,5\}, \text{arr2} = \{1,2,4,3,5\} \)
        - Expected result: 1
      - **Test Case B**
        - Input data: \( \text{arr1} = \{7,6,8,9,10\}, \text{arr2} = \{6,7,9,8,10\} \)
        - Expected result: 1
Our challenge (cont’d):

- But you would not be able to put both of these test cases in your list of test cases for scrambled.c because both are testing the same statements in your function, i.e., the statements that confirm arr1 is indeed a scrambled version of arr2.

- So, you would have to come up with another test case such as:

  Test Case C
  - Input data: arr1={6,8,9,10}, arr2 = {7,9,8,10}
  - Expected result: 0
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- **Our challenge (cont’d):**
  - You would now be able to include Test Case A (or Test Case B) and Test Case C in your list of test cases for scrambled.c because both are testing different statements in your function, i.e.,
    - **Test Case A** tests the statements that confirm arr1 is a scrambled version of arr2
    - **Test Case C** tests the statements that confirm arr1 is not a scrambled version of arr2
  - **Note that:**
    - There may be an overlap between these two groups of statements
    - You may have to include other test cases into the list of test cases for scrambled.c as Test Case A and Test Case C may not be the only two test cases needed to completely test scrambled.c
Submission:
Create a document in which you first copy the content of your `verticalgraph.c` function then you put your list of test cases for this function following this format:

Lab 2 – Task 9
- Test case 1 - input data: blah, expected result: blah
- Test case x - input data: blah, expected result: blah

Then copy the content of your `InRectangle.c` function then put your list of test cases for this function following the same format:

Lab 2 – Task 10
- Test case 1 - input data: blah, expected result: blah
- ...
- Test case y - input data: blah, expected result: blah
Weekly Exercise 5 - 8

Submission (cont’d):
- Convert this document into a pdf document called WE5.pdf and submit it on CourSys

Due date:
- TH Feb. 27 at 3pm (no late submission accepted)