

## Secure Software development: Project 2

Points Possible: 100

Deadline: 11:59pm Tuesday October 22 2024

### Goals:

- To learn about access rights and access control.
- To write a very simple python program

### Description:

A company requires you to develop a system. In this system, login is required using “username” and “password”. There are a total of five users (Alice, Bob, Charlie, Daniel, and Emily). Each user serves a different role in the system. Your goal is to implement access control of four roles (Root, Admin, Developer, and Customer). In the table below, √ represents a user that maps to a role.

|         | Root | Admin | Developer | Customer |
|---------|------|-------|-----------|----------|
| Alice   |      |       | √         |          |
| Bob     |      |       |           | √        |
| Charlie | √    |       |           |          |
| Daniel  |      | √     |           |          |
| Emily   |      |       |           | √        |

As each role serves a different purpose, there are 4 important documents in the system “a.txt”, “b.txt”, “c.txt”, and “d.txt” that can only be read or write from a role. In the table below, “R” represents read access and “W” represents write access to a file.

|           | a.txt | b.txt | c.txt | d.txt |
|-----------|-------|-------|-------|-------|
| Root      | R, W  | R, W  | R, W  | R, W  |
| Admin     |       | R, W  | R, W  | R, W  |
| Developer |       | R     | R, W  | R, W  |
| Customer  |       |       | R     | R     |

Throughout this course you will learn how to conduct unit test. But there is no need for you to provide the test cases yet. In this project, your code must satisfy all the test cases provided in the file. The function `self.assertEqual(A, B)` means that the return value of A must equal to B. Note that a.txt, b.txt, c.txt, d.txt should be created under the same directory as the python file. All a.txt, b.txt, c.txt, d.txt should be empty before running the code.

**Programming Environment:**

Python 3.

**Requirements:**

1. (5 points) **Use comments to provide a heading at the top of your code** containing your name, NCU UserID, and e-mail.
2. (5 points) Your source code file should be named as **“project1\_LastName\_UserID.py”**. (e.g. project1\_Harn\_982001510.py)
3. (80 points) No unit test errors.
4. (10 points) Usability of your program (Good Comment Practices).

You will **lose points** if you: do not use the specific program file name, or do not have a comment block on **EVERY** program you hand in. You will lose **at least 40 points** if there are compilation errors or warning messages when we compile your source code.

**Deliverables:**

- A heading at the top of your code contains your name, NCU UserID, and e-mail., and how to compile your code.
- Submit your **source code file** named as “project1\_LastName\_UserID.py” through the **eeClass** system.

**Late Submission Penalty:**

- After the 11:59pm on the due day, you can't submit your assignment anymore. Late assignments through e-mail will receive a 20% deduction per day penalty.

**Rebuttal period:**

- You will be given a period of 2 business days to read and respond to the comments and grades of your homework or project assignments. The TA may use this opportunity to address any concern and question you have. The TA also may ask for additional information from you regarding your homework or project.