**Department of Information and Communication Technology**

**M.Tech - Software Engineering**

**Subject: Testing and Analysis of Software System**

**Assignment Task**

This is the Team activity. Each team can have a maximum of two members. It's permitted if anyone is willing to do it alone.

For the assignment, we chose the Task Management Application. The original source code and its documentation are in a separate file.

The task is to experiment with different techniques to test a software system. The detailed task list is given below.

1. Derive the test cases based on black box-based techniques to cover all the functionalities. You need to group (test suite) the test cases functionally**. [Deliverable**: test suites to cover all functionalities)
2. Use the test suites designed in Step 1 to compute structural coverage (statement coverage/branch coverage) of the given project. [TOOL Required: EclEmma]. In this level, the test case designed in step 1, may not be adequate to cover all the branches and statements. So, you may again need to refine your test suites to get 100% coverage) . **[Deliverable**: refined test suites to achieve 100% coverage & Tool output of both the test suites)
3. Inject a fault into the provided code and generate mutants. Based on these generated mutants, refine your test suite to strongly kill all the mutants. You are encouraged to use the ¬µJava Tool to automate mutation testing. If you are unable to use the tool, you can also perform this process manually. **[Deliverables**: Refined test suites to strongly kill all mutants, Generated mutants (at least 10), Report containing the mutation operator used and mutation score]

**Information about Tool:**

**EclEmma:** to measure structural coverage *(You can also use other tool)*

Description: EclEmma is an Eclipse plugin that computes structural coverage.

Input: A set of JUnit test cases.   
Output: An HTML report with both statement and branch coverage.  
Link: http://www.eclemma.org

**µJava:** For mutation testing

Link: https://cs.gmu.edu/~offutt/mujava/

**Other deliverables expected:**

Contribution of individual to complete this task. (Question will be raised based on his/her contribution for validation)

You are requested to give your team details to the faculty.

For queries related to this assignment, Please contact

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