

PES UNIVERSITY
AUGUST – DECEMBER 2022 SEMESTER 5
SOFTWARE ENGINEERING LAB TASKS

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We hope at this point in your semester you have achieved considerable progress in your Software Engineering Project. The first three exercises focus on you using the topics thought in class to improve your project.

Problem Statement – 1a: For non Scrum - Agile projects

Programming standards give your code a more uniform approach and enhance its testability. Keeping your project in mind, attempt the below questions:

Do you think Defensive Programming is applicable to your project?

- Follow up: is Redundancy not applicable in the case where a single system is executing the program?

As a developer, should we rely entirely on the user providing correct input?

- In your project, include statements to ensure that the program only continues with data is of the expected type

While working on your project, the go to approach to debug is using print statements. Could you include these statements to highlight the location and values at the current point in the project?

Could you build two valid and invalid test cases for any two functions in your project?

Note: Projects have extensive blocks of code making it hard to debug with print statements, you could experiment with pdb, jdb or gdb for python, java and c language respectively

Problem Statement – 1b: For Scrum - Agile projects

Assess the quality of your project by maintaining a sprint burndown, calculating the team velocity metric, throughput and cycle time. Further, answer the following questions:

- 1) While working on your project, the go to approach to debug is using print statements. Could you include these statements to highlight the location and values at the current point in the project?
- 2) Could you build two valid and invalid test cases for any two functions in your project?

Note: Projects have extensive blocks of code making it hard to debug with print statements, you could experiment with pdb, jdb or gdb for python, java and c language respectively

Problem Statement – 2:

Construction quality is of utmost importance when developing projects. With respect to your project, you are expected to document and attempt the below mentioned quality activities.

Evaluate your project according to the measures and metrics in "Proceeding as planned" and "Technical quality". Your team is also expected to evaluate and document the quality of the project according to FLURPS+.

Pick a function from your project with significant computations, use a pen and paper to statically analyze the flow of execution and the value of the variables for a specified input

Problem Statement – 3:

Configuration management helps maintain various versions of the project and eases promotion of new releases. With respect to your project, answer the below questions and explore the mentioned scenarios with git

Build a table to separate all of your files on the project repository into configuration items

Each team member should add/modify any of the configuration items on a separate branch

Assuming your main branch to be the baseline, make further modifications on a different branch to indicate version of the project

Promote a branch to the baseline by merging

Problem Statement – 4:

Let's assume you have received funding to launch your project as a start-up. Being at the nascent stage of development processes, you have been tagged under the "Initial" maturity level. Your task is to brainstorm and come up with atleast 2-3 new functionality or ways to improve the quality of your project and attain higher levels of maturity according to the CMM model.