

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

CASE STUDY UNIT 3

SECTION : C

TEAM NUMBER:6

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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?

BUG : generally a software bug is an application causing it to return to an invalid result or to function incorrectly

- A bug can result from incorrectly written code
- Errors in compiler
- Hardware issues

In our project main area where Bugs can probably occur is in terms of code and implementation – code-specific bugs

Using print statements is one of the simplest way to debug the code written. In general the code would contain one or more variables which are used. Using the various print statements in the language of implementation(here in our project python) we can try to print the values of the variables in order to trace the code on how its working

So whenever there is a bug identified we can simply put an print statement and can examine the values in various variables and try to debug the code accordingly. This is one of the most primitive methods to debug the code especially in the initial stages

Other methods for debug includes :

- Error handling
- Commenting out certain parts of code
- Debugging tools
- Adding code tests
- Get it reviewed from other developers

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

Another way of debugging the code is by inducing the code tests into the code and running them on the code before adding the new code to the code repository

Main idea of these type of test code is to check if the application is running as per the expectations. the code is added to the repository only when there are no test code that fail which indicates that bugs have been cleared

Test cases scenario 1 : LOGIN functionality :

- Test Case 1 : examine the functioning on entering an invalid USER ID
- Test Case 2 : examine the functionality on entering the valid USER ID but the Password is incorrect
- Test Case 3 : examine the function on a success i.e. when there is correct USER ID and Password put into the software
- Test Case 4 : examine the functionality on pressing the button "LOGIN" if the above functions are executing in proper manner.

Test cases scenario 2 : :

- Test Case 1 : If the given rating is a negative value it should ask the grader to re-enter the value as it is invalid
- Test Case 2 : if the given rating is above the highest possible value (10 in our case) it should throw an error and ask to re-enter the value
- Test Case 3 : given rating is 0 then it should be accepted and prompt the user that grade has been stored in the database
- Test Case 4 : given rating is any positive value (between 1-10) then it should be accepted and prompt the user that grade has been stored in the database

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

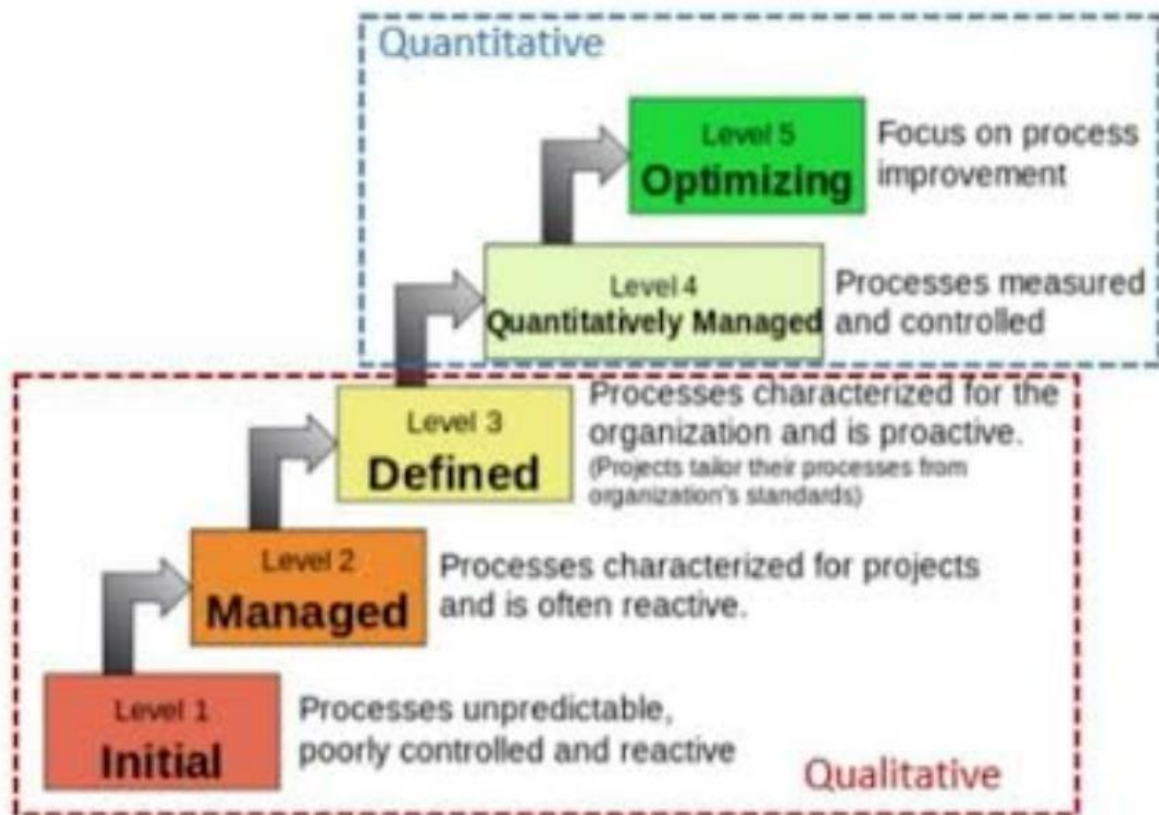
Problem Statement – 4:

Suppose you want to buy a certain software product and you have kept a purchase precondition that the vendor must install the software, train your manpower on that, and maintain the product for at least one year, only then you would release the payment. Also, you do not foresee any maintenance requirement for the product once it works satisfactorily. Now, you receive bids from three vendors. Two of the vendors quote Rs.3 Lakhs and Rs. 4 Lakhs whereas the third vendor quotes Rs. 10 Lakhs saying that the prices would be high because they would be following a good development process as they have been assessed at the Level 5 of SEI CMM. Discuss how would you decide whom to award the contract

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 at least 2-3 new functionality or ways to improve the quality of your project and attain higher levels of maturity according to the CMM model.

The CMM model has 5 levels as depicted in the diagram below:



Level 1 : Initial Stage

Level 2: Managed Stage

Level 3: Defined stage

Level 4: Quantitatively managed

Level 5: Optimised

Since we are in the nascent stage of development processes and have been tagged under “INITIAL MATURITY ” level ,that means to say that being at level 1 our processes are still unpredictable.They are poorly controlled and are in ad-hoc mode. Thus ,it is important to improve the quality in order to help stakeholders garner extensive support from our side and develop products in the longer run.

The ways to improve the quality of the project/products could be:

A. PROJECT MANAGEMENT

- There should be proper assignment of roles for various tasks and jobs not only for the teams working directly for them but also the other supporting teams which may not directly be involved.

- These roles need not be hierarchical or based on designation but only specialised for a project in order to facilitate better job distribution and also makes further integration process easy.
- Also, the responsibility management and identification becomes elaborate yet simple.

B. ORGANISATION OF FUNDS AND ASSETS

- There should be an initial meeting involving the stakeholders and all the leads of various domains with their subordinates in order to determine the distribution of funds.
- This allows a proper utilisation and allocation of funds and the organisational assets to various teams across various locations.
- The organisation of funds help in determining the ground reality and achievability of the objectives of the project.

C. QUANTITATIVE CONTROL OVER ANALYSIS AND IMPROVEMENT

- Small scale meetings like scrum meetings facilitate progress tracking and bug tracking as well.
- A common guiding entity like a workbench can be initiated to allow easy communication between teams across locations, synchronous integration, a better efficiency in error identification and equal distribution of resources.

D. CONTINUOUS OPTIMISATION

- This can be ensured by adopting befitting testing strategies and plans that can improve the quality of the throughput of all the teams.
- Cyclic or periodic analysis of products or backlogs and their debugging can be carried out.
- A risk analysis must be performed to interpolate and predict future issues.
- This also helps in anticipating funds thus allowing further expansion of goals or deviating to other alternative directions to achieve the goals or change them when necessary.
- There should be fixed checkpoints so that it acts as an impetus to future endeavors, higher throughput and improved quality.