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Question #1

You have to make a personalized software for a consultancy firm. Some components of the software are those for which you already have code. Some parts of the software are such that you can find ready-to-be-used code from internet. If you want to embed both types of code into your product, and complete the software by coding the remaining part, what can you expect during this whole process? Will it be easy or hard? What problems you might face and how will you overcome those problems?

Answer:

Obtaining codes from the internet is known as code reuse. Using ready-made codes reduces the development time, resources and fewer development team. However, code reuse might bring some licensing concerns, replicate bugs from the borrowed code, etc. Software development is a field where one can choose to reuse codes from other developers. These codes might be readily available on the internet. However, the open code might not be able to accomplish all your needs, and hence you will need to code some parts to suit your needs. Code-reuse reduces the development time since the developer will not need to start developing a software system from scratch.
In my opinion, first of all we have to understand and gather all requirements from client, after that we will do a proper research that we can fulfill the project. I have the codes or I will get codes from the internet and can also get help from the experts. Will it be easy or hard?

We will have some codes to fulfill the requirements of the client. So, it is easy for a developer (us) but those codes which we got from the internet and connecting or adjusting with customer requirement effectively will be a bit difficult. What problems you might face and how will you overcome those problems: A person who is expert in coding and also know the basics of every language he/she could not face any problem in coding the requirements if the person will get help from the internet, friend and developers then they might face many problems in the coding and in development so the expert cannot face problem he/she can handle it.

The following are the benefits of using ready-made code from the internet.

- The development time will be shortened
- The process of development will require fewer people.
- The software will be developed at lower costs.
- However, code reuse might come with various challenges. The following are the challenges that you might encounter in the process.

- The bugs from the borrowed code might be replicated
- There might be some licensing concerns due to reusing other peoples' codes.
- It might take some time for the developers to familiarize themselves with the code obtained from the internet.

Question #2 (15 Marks)

You are working on coding of a software in which a lot of calculations are involved. The calculations are quite easy to be done, but you do expect some inconsistency in the calculations because of some inner problem with the software. Would you rather go for Fault Avoidance technique or Fault Detection technique in the Testing Phase? Explain your answer.

Answer:

Fault avoidance techniques try to detect faults statically, that is, without relying on the execution of any of the system models, in particular the code model. Fault avoidance tries to prevent the insertion of faults into the system before it is released. Fault avoidance includes development methodologies, configuration management, and verification.

Fault detection techniques, such as debugging and testing, are uncontrolled and controlled experiments, respectively, used during the development process to identify erroneous states and find the underlying faults before releasing the system. Fault detection techniques assist in finding faults in systems, but do not try to recover from the failures caused by them. In general, fault detection techniques are applied during development, but in some cases they are also used after the release of the system.

Firstly I will look at the software engineering model ,which type of model I am using, let suppose if I am using waterfall model and I am facing issue in calculations just because of missing some calculations or you can say some values and there comes some inner problem in software in testing phase .so
 i will prefer fault detection technique because if I choose fault avidness technique then my whole software will be collapse. Let suppose if choose agile model, here its all up to my choice.

if I choose detection or avidness technique. Because in this only problem comes in that specific phase.

I will use fault avoidance technique because the system is not executed yet so for expecting some inner problems, we will use this technique because fault avoidance technique try to detect faults statically, that is, without relying on the execution of any of the system models, in particular code model.

Fault avoidance aims to prevent faults from occurring within the operational system. It limits introduction of faults throughout system construction. It includes fault prevention, fault removal, and fault forecasting. Fault prevention makes an attempt to eliminate any risk of faults creeping into a system before it goes operational.

Fault removal tries to seek out and remove the causes of errors. Thus, fault avoidance helps to boost the quality of both the components and the systems. Approaches for software fault avoidance embody a collection of strategies and techniques intended both to decrease the presence and to avoid the introduction of faults (in number and severity).

When designing dependable systems we should deal with reliability problems from the start by addressing fault-tolerance mechanisms inside the system design and by employing acceptable fault-avoidance approaches within the design process. Adding dependability afterward can be both costly and may be not as effective as designing it in from the start.

Question #3 (20 Marks)

Consider your University Attendance Marking System in a class. Keeping in mind all the activities, both the start and end of the class, come up with the following:

1.   A Use Case Diagram
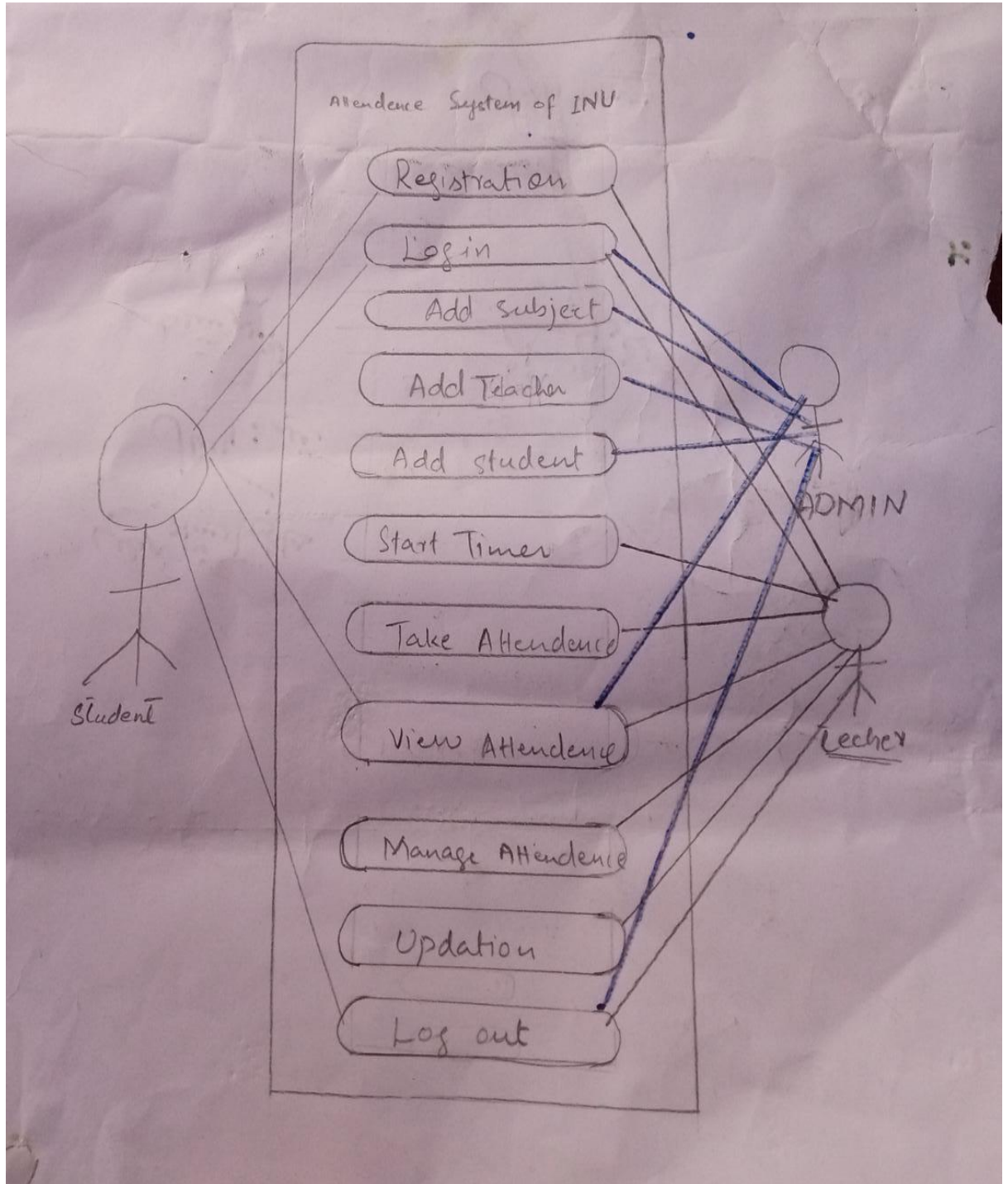
2. A Textual Use Case Diagram

In the existing system attendance is maintained using the attendance register for students. Teachers take attendance of students manually, due to which it increases paperwork, maintaining records and calculating attendance of each student become tedious. The intention of developing Attendance Management System is to computerize the traditional way of taking attendance. Attendance Management System is a platform for daily student attendance in schools, colleges and institutes. It facilitates to access the attendance information of a particular student in a particular class. It also avoids proxy attendance. Data accuracy is maintained, within a short span of time. As the attendance is maintained in registers it is very cumbersome to manage, track and update the data. Having backup is also very difficult in this method. This system will also help in evaluating attendance eligibility criteria of a student. The proposed system requires very less paper work. All the data is feted into the computer immediately and reports can be generated through computers. More-over work becomes very easy because there is no need to keep data on papers.

Goals or Objectives

 To automate the attendance system

To provide accuracy in calculation

To provide reliable record maintenance

To generate desired reports

In above use case diagram figure shows there are three actors of a system

- ➢ Admin
- ➢ Staff
- ➢ Student

Explanation:

The first step is for student to register our subjects , then staff is registered the subject relevant teacher, teacher login in the system

 teacher start the class attendance timer , and take attendance of all class students

after completion attendance of the class teacher logout

teacher can view , change , manage and update the attendance of the student

and student can view his attendance from system