Subject: 473 CSM- 3 Software Engineering – 2

Activity From : Chapter 1

Given Date: 6th October Last date :15 th October

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Note :

* answer all the questions clearly and Elaborately .
* you can refer lecture notes or prescribed textbook to find the answer .
* Read the question carefully and given your own answers . Simply don’t do cut copy paste .
* If I find any answers are copied from friends marks will be deducted for both the students.
* All your answers should be in A4 paper.
* Use this same file to give your answers . Save this file in your name .in English only .
* Send one copy in course mail and one print out.

Assignment Questions

1. Why and what is the importance of designing and documenting the software architecture ?

**Software architecture is important because it affects the performance, robustness, distributability, and maintainability of a system**

**When starting to work on a new project, we need to design software. Software design can be done with several different ways, one of this way is software architecture .**

**Design and documentation in architecture Model :- A common image of architect’s work, consisting in drawing and describing blocks, puts two activities of design and documentation in one pot.software architecture represents a common abstraction of a system that most if not all of the system's stakeholders can use as a basis for mutual understanding, negotiation, consensus, and communication. Early design decisions**.

***there are fundamentally three reasons for software architecture's importantance***.

***Communication among stakeholders***. Software architecture represents a common abstraction of a system that most if not all of the system's stakeholders can use as a basis for mutual understanding, negotiation, consensus, and communication.

***Early design decisions***. Software architecture manifests the earliest design decisions about a system, and these early bindings carry weight far out of proportion to their individual gravity with respect to the system's remaining development, its deployment, and its maintenance life. It is also the earliest point at which design decisions governing the system to be built can be analyzed.

***Transferable abstraction of a system***. Software architecture constitutes a relatively small, intellectually graspable model for how a system is structured and how its elements work together, and this model is transferable across systems.

1. What are the different representation of Architectural models?\*\*

**Usually, presentation model is being made to the scale which required by the clients**. **These models are usually made in detail to give the clients or decision making bodies a true reflection of the architectural design.**

**Simple, informal block diagrams showing entities and relationships are the most frequently used method for documenting software architectures**

1. What is the main purpose of architected designs?

**The purpose is to: - Arched designs in construction play an important role and are responsible for the visual appearance of buildings and structures before the final structural design.** **involves identifying major system components and their communications**

**Arched designs develop the idea of ​​design into a coherent proposal, to communicate ideas and concepts, to convince customers of the advantages of design, and to communicate with stakeholders in the system and project planning because it is not crowded with details. Stakeholders can communicate with them and understand the abstract vision of the system. They can then discuss the system as a whole without confusing it in detail.**

***In short, the main purpose is to give a preliminary view of the project to communicate the main ideas of the stakeholder, before the actual start of implementation.***

1. Do you think the architectural designs can be reused ? how ?

**Yes, systems in the same domain often have similar structures that reflect the concepts of the domain. There are some systems that have the same system infrastructure, which enables us to reuse the previous system with some minor modifications, and this saves us money, time and effort. For example, a university staff system, we can reuse this system to become a hospital staff management system because the staff management infrastructure is very similar.**

1. What does the architectural model shows?

**Very abstract - they do not show the nature of component relationships nor the externally visible properties of the sub-systems.**

**However, useful for communication with stakeholders and for project planning.**

**Depends on the squares and shares represented by the line. The boxes represent the objects, requirements and arrows represent the direction of the project**

1. What do you mean by architectural pattern ? what is the use of this patterns ?

***Patterns*** are a means of representing, sharing and reusing knowledge.

***An architectural pattern*** is a stylized description of good design practice, which has been tried and tested in different environments. *Architectural Patterns* are high-level strategies that concern large-scale components, the global properties and mechanisms of a system.

***Use of this pattern:-***

* Used to model the interfacing of sub-systems.
* an architectural pattern should describe a system organization that has been successful in previous systems. It should include information of when it is and is not appropriate to use that pattern, and the pattern’s strengths and weaknesses.
* the model represents architectural ideas, and can be used at all stages of design. An architectural model shows the scale and physical presence of a proposed design. The model is a 3 dimensional replica or expression of the design, usually at a scale much smaller than full size

1. In which case or situation each pattern of architectural model can be used?

Or

Explain each patter and explain when and where it can be used ?

|  |  |
| --- | --- |
| Name | Layered architecture |
| **Description** | Organizes the system into layers with related functionality associated with each layer. A layer provides services to the layer above it so the lowest-level layers represent core services that are likely to be used throughout the system. |
| **Example** | A layered model of a system for sharing copyright documents held in different libraries. |
| **When used** | Used when building new facilities on top of existing systems; when the development is spread across several teams with each team responsibility for a layer of functionality; when there is a requirement for multi-level security. |
| **Advantages** | Allows replacement of entire layers so long as the interface is maintained. Redundant facilities (e.g., authentication) can be provided in each layer to increase the dependability of the system. |
| **Disadvantages** | In practice, providing a clean separation between layers is often difficult and a high-level layer may have to interact directly with lower-level layers rather than through the layer immediately below it. Performance can be a problem because of multiple levels of interpretation of a service request as it is processed at each layer. |