

Unit - 4 : Software Design

* Explain Quality Attributes of Software Design.

=> There are Five Quality Attributes of Software Design.

- (i) Functionality
- (ii) Reliability
- (iii) Supportability
- (iv) Usability
- (v) Performance

(i) Functionality:

In Software, All the functions and capabilities of the program is assessed by overall system.

(ii) Reliability:

Software is more reliable if any type of failures is occurs.

ciii) Supportability :

Software Design should be support compatibility, extend of Program, adapatability in software system.

civ) Usability :

Software Design should be Provides aesthetics, consistency and Documentations.

cv) Performance :

Software Design should be Provides Fast Processing speed, quick response time and efficiency.

* Explain Software Design Concepts

=> Design Concepts shows the logic behind the how you can make Software Design.

Design Concepts describes how you can plan a your software Design.

This are the basic Design Concepts.

(a) Abstraction:

Abstraction is used to show only required information to user and hide the implementation of data details of software.

(b) Architecture:

Architecture is used to show the structure of program module which interact with each other in software.

(c) Pattern:

Pattern is used to show the design structure to solve the particular design problem in software.

(d) Modularity:

In Modularity, we have to divided the software into the different part to reduce complexity of a software design.

(e) Information Hiding :

We have to show only necessary details of modules to the user. We do not need to show all the modules details to the user.

(f) Functional Independence :

In software, low coupling and high cohesion is necessary for good software.

(g) Refinement :

Refinement is a top-down design approach which established for refining levels of procedural details.

(h) Refactoring :

Refactoring is the way to change the software system in which external behavior of code is not change but its improve internal structure.

(ii) Design Classes :

Software is defined as a set of design classes which defines the elements of problem domain.

* Explain Software Design Principles.

=> This are the Basic Software Design Principles.

- 1 Design Process should be not suffer from tunnel vision.
- 2 Design Model should be traceable for analysis.
- 3 Design should not reinvent the wheel.
- 4 Design should be reduce between Software and Real world Problem.
- 5 Design should be present uniformity.
- 6 Design should be change according to user requirement.

7 Design should be structured to degrade gently.

8 Design is not coding and Coding is not Design.

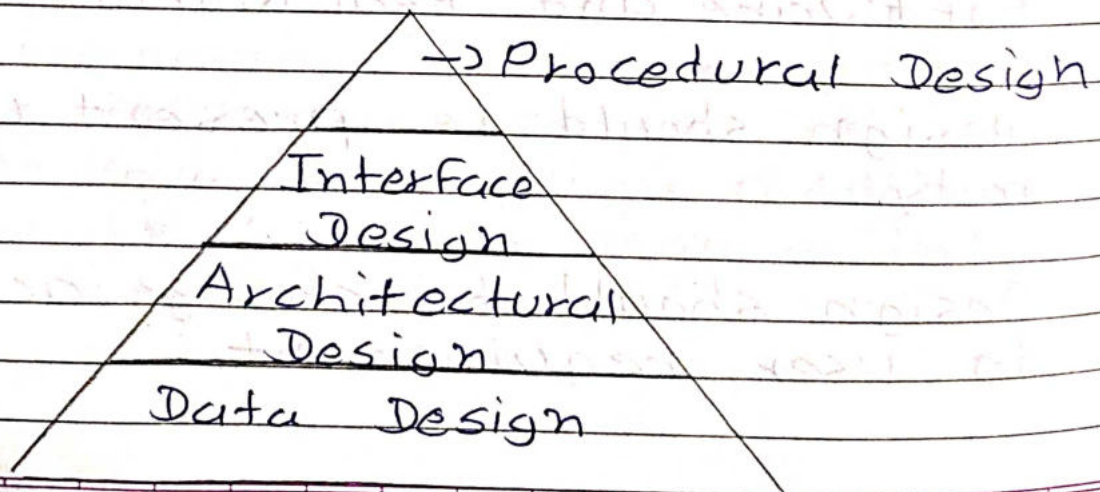
9 Design should be assessed for quality.

10 Design should be reviewed to minimize conceptual errors.

* Explain Software Design Models.

=> There are Four types of Software Design Models.

- 1) Procedural Design
- 2) Interface Design
- 3) Architectural Design
- 4) Data Design



1 Procedural Design :

Procedural Design is used to define Procedural Description of software components.

Procedural Design is also known as Component-Level Design.

It is used to define data structure, algorithm, interface or mechanism which is allocated to every component in software.

There are two types of Approach is used in this Model.

- (i) Function Oriented Approach
- (ii) Object Oriented Approach

2 Interface Design :

Interface Design is used to define communication process between system and users.

In this Design, we have to create User interface design which defines how system and

User communicate with each other.

We have to create User interface Design in such a way that User have to do only necessary actions.

We have to allow to user interaction without any unlocable time or interruptible with system.

3 Architectural Design:

Architecture is used to show the structure of program module which interact with each other in software.

Architectural Design is defines the relationship between the elements of software.

It is represents the structure of data and program components in software system.

4 Data Design:

Data Design is used to describe the how data is manipulate in the software system.

In this model, we have to defines structure of data in the software.

In this model, we have to create class models to prepares the data structure.

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