SNS COLLEGE OF ENGINEERING

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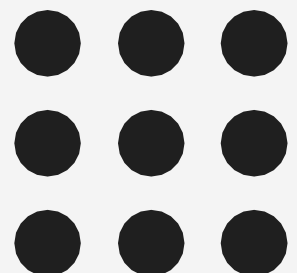
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Department of Information Technology

Course Name – Software Engineering

II Year / III Semester

DESIGN CONCEPTS AND PRINCIPLES

System Design

- **System design** is the process of designing the elements of a system such as the architecture, modules and components, the different interfaces of those components and the data that goes through that system.
- **System Analysis** is the process that decomposes a system into its component pieces for the purpose of defining how well those components interact to accomplish the set requirements.
- The purpose of the System Design process is to provide sufficient detailed data and information about the system and its system elements to enable the implementation consistent with architectural entities as defined in models and views of the system architecture.

Elements of a System

•**Architecture** - This is the conceptual model that defines the structure, behavior and more views of a system. We can use flowcharts to represent and illustrate the architecture.

•**Modules -** This are components that handle one specific tasks in a system. A combination of the modules make up the system.

•**Components -** This provides a particular function or group of related functions. They are made up of modules.

•**Interfaces -** This is the shared boundary across which the components of a the system exchange information and relate.

•**Data -** This the management of the information and data flow.

System Design

Major Tasks Performed During the System Design Process

1.Initialize design definition

•Plan for and Identify the technologies that will compose and implement the systems elements and their physical interfaces.

•Determine which technologies and system elements have a risk to become obsolete, or evolve during the operation stage of the system. Plan for their potential replacement.

•Document the design definition strategy, including the need for and requirements of any enabling systems, products, or services to perform the design.

2. Establish design characteristics

•Define the design characteristics relating to the architectural characteristics and check that they are implementable.

•Define the interfaces that were not defined by the System Architecture process or that need to be refined as the design details evolve.

•Define and document the design characteristics of each system element.

3. **Assess alternatives for obtaining system elements**

•Assess the design options
•Select the most appropriate alternatives.
•If the decision is made to develop the system element, rest of the design definition process and the implementation process are used. If the decision is to buy or reuse a system element, the acquisition process may be used to obtain the system element.

4. **Manage the design**

•Capture and maintain the rationale for all selections among alternatives and decisions for the design, architecture characteristics.
•Assess and control the evolution of the design characteristics.

THANK YOU