

## Assignment 1

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Q.1 Architectural Design : Explain in detail each type with example.

- > Architectural design is backbone of any software system design and it is responsible for the overall system structure.

- In nearly all the models of software process, architectural design is considered as the first stage in the software design and development process.

- The output of the architectural design process is an architectural model that explains the overall structure of the system and also explains the working of the system and the communication among various components of the system.

- Normally software architecture can be designed into two levels of abstraction as follows:

o Small software design architecture

o Large software design architecture

- Architecture in the small is related to the architecture of individual programs which may be small in size.

- This program is decomposed into smaller functional components. This type of architecture is related to mostly program architecture.

- Architecture in the large is related to complex systems that includes overall system, the entire program and the

## 1. System Architecture

↳ Components of the program :-

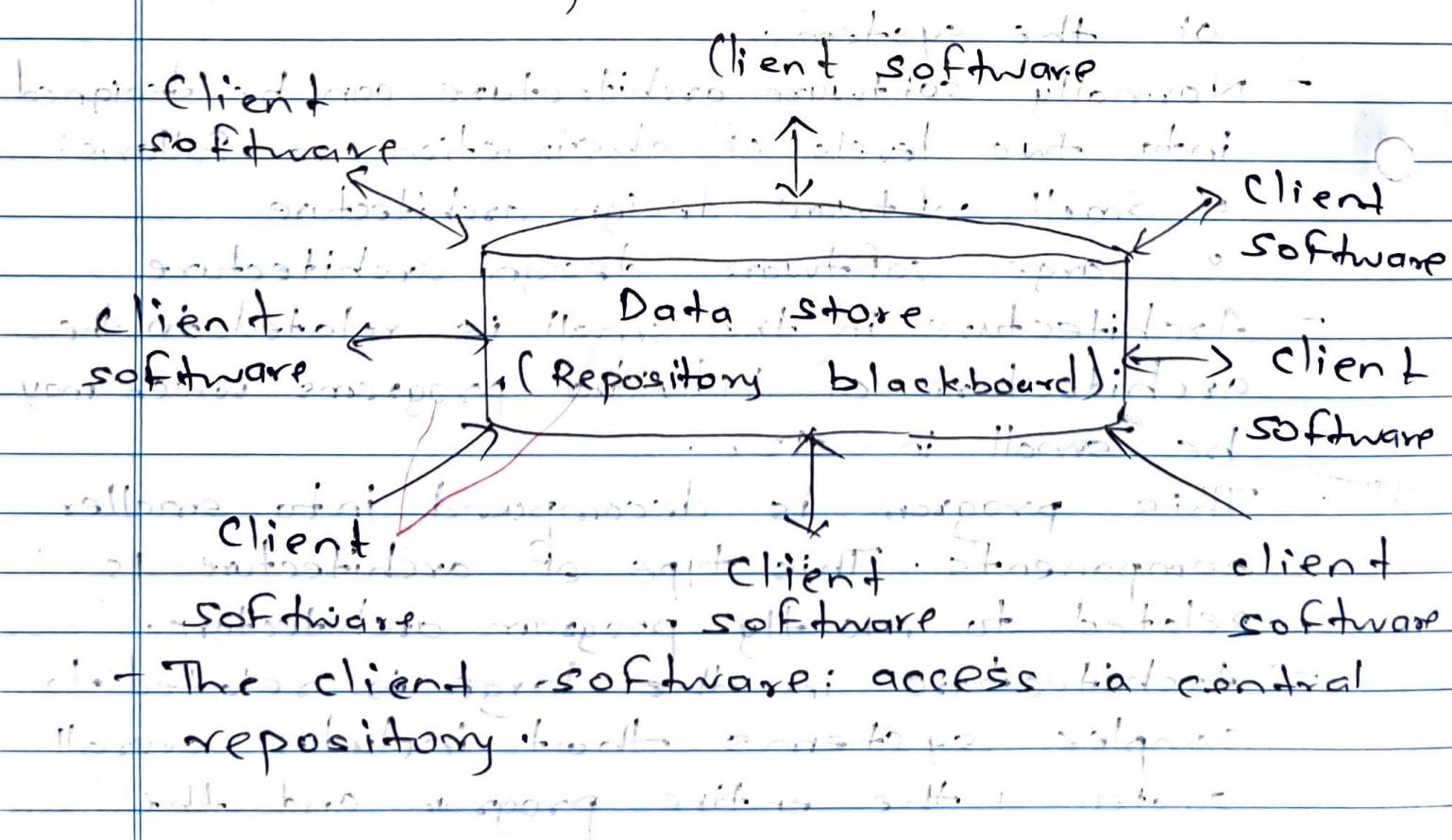
- The non-functional system requirements are totally depend on the system architecture whereas functional system requirements are dependent on the individual components.

↳ Types of Architecture Design :-

↳ Data Centered architecture :-

⇒ A data store will reside at the center of this architecture and is accessed frequently by other components that update, add, delete or modify the data present within the store.

↳ The figure illustrates a typical data centered style.



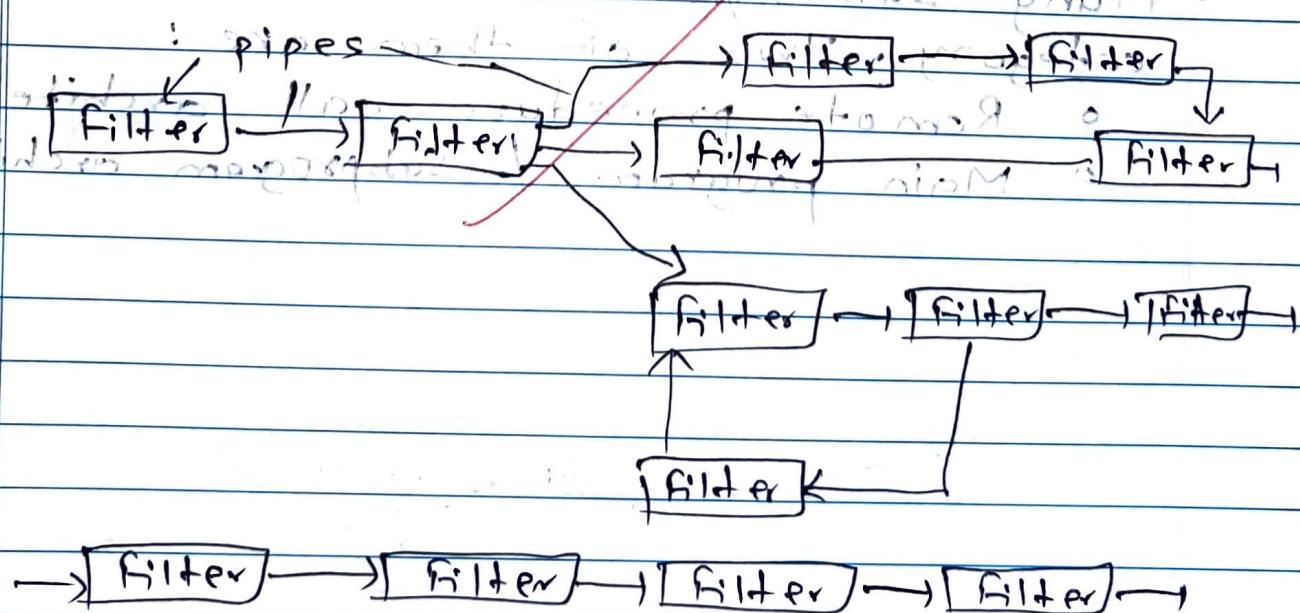
- Variations of this approach are used to transform the repository into a blackboard when data related to client or data of interest for the client change the notification to client software.

- This data-centered architecture will promote integrability.

## 2) Data Flow Architecture

⇒ This kind of architecture is used when input data is transformed into output data through a series of computational manipulative components.

The figure represents pipe-and-filter architecture since it uses both pipe and filter and it has a set of components called filters connected by lines.

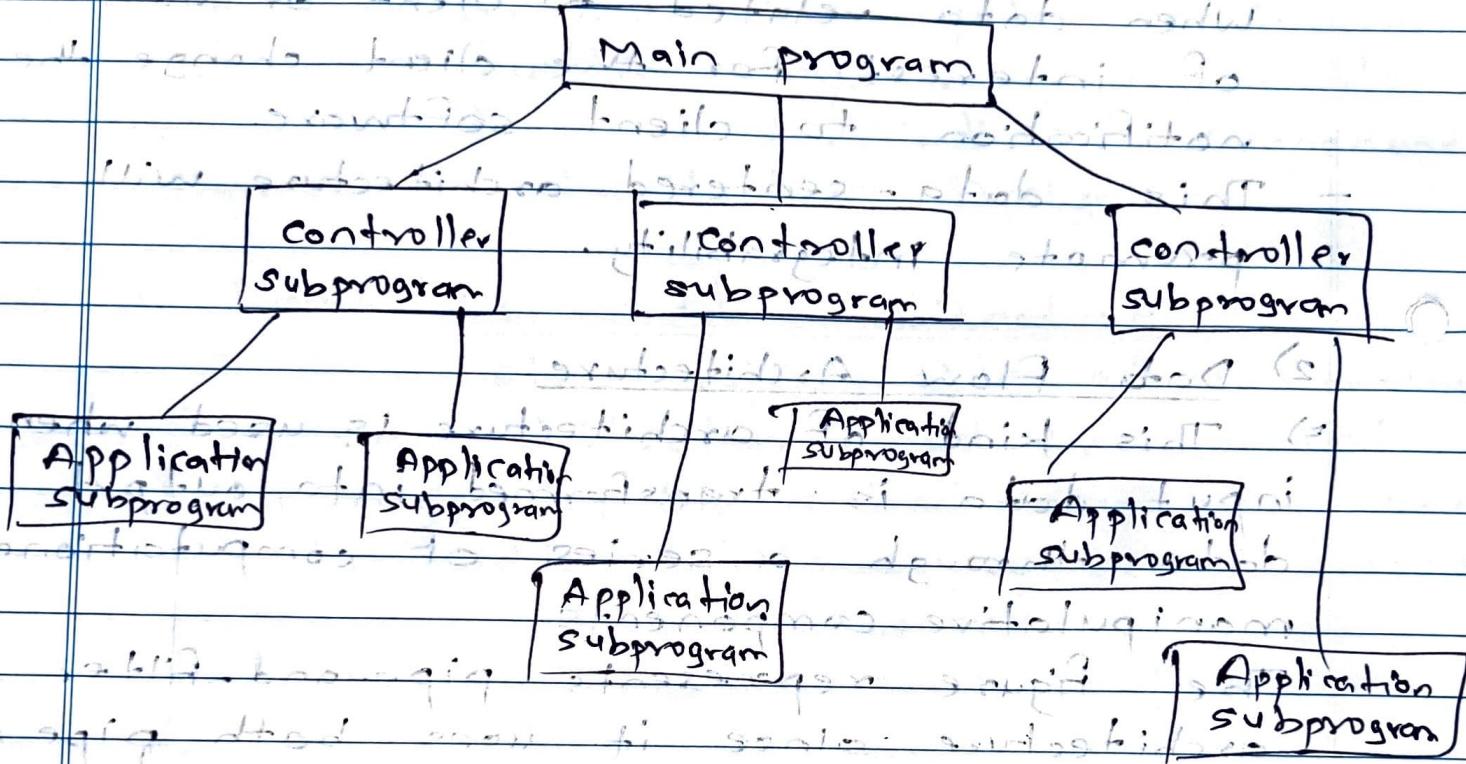


### 3) Call and return architecture

↳ In this architecture, code can be written

↳ In a single file and it can be used

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It is used to create a program that is easy to scale and modify.

Many sub-style exists within this category. Two of them are:

- o Remote procedure call architecture
- o Main program / Subprogram architecture

#### 4) Object-oriented architecture

- ⇒ The components of a system encapsulates data and the operations that must be applied to manipulate the data.
- The co-ordination and communication between the components are establish via the message passing.

#### 5) Layered architecture

- ⇒ A number of different layers are defined with each layer performing a well-defined set of operation.
- Each layer will do some operations that becomes closer to machine instruction set progressively.

