PROJECT DEVELOPMENT

Project: -

→A project is a set of inter-related modules integrated into a single platform/unit to be implemented on a particular field of application.

→A project is otherwise known as a software system or application or package.

Ex: -

A programme/project like logistic solution may contain the following modules.

1. Supplier/company information
2. Product category
3. Product information
4. Party/retailer information
5. Customer information
6. Order to supplier/company
7. Purchase of goals
8. Order from retailer
9. Issue of goods
10. Payment voucher
11. Receipt voucher
12. Supplier list report
13. Product category report
14. Product/stock report
15. Party information
16. Order to company register

17. Purchase register
18. Party order register
19. Issue register
20. Debtor ledger

Project types: -

A project can be divided into 2 types

- **Live project**
- **Dummy project**

1) Live project: - live project is one which is developed and is used by one/more than one organization.

2) Dummy project: - dummy project is one which is developed but not yet used by any organization.

Project category: -

Depending on it's implementation and used project is divided into 2 categories

a) **Desktop application**
b) **Web application**

1. Desktop application: - it is the application type which is loaded and executed on a desktop. such applications are usually **standalone application** i.e single user can use the application.

   Ex: - Microsoft word, excel, PowerPoint etc.

2. Web application: - This is the application type which is loaded in the web server located **locally/remotely** and are accessed by multiple users over the internet using browser.

ARCHITECTURE OF WEB APPLICATION: -

A web application implements client server model using the particular architecture

Architecture can be the following

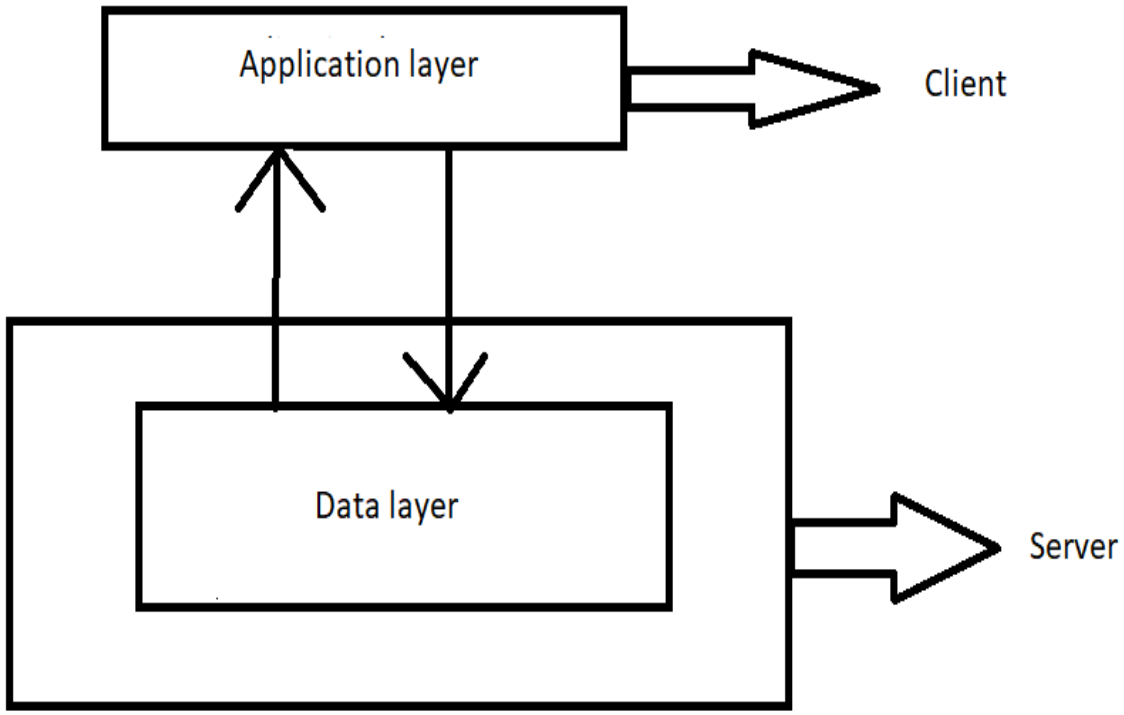
i. **2-Tier architecture**
ii. **3-Tier architecture**
iii. **N-Tier architecture**
iv. **Enterprise architecture**

1) 2-Tier architecture: - It is the architecture type where the application domain is divided into 2 layers

    a) **Application layer**
    b) **Data layer**

a) Application layer: - In this architecture application layer consist of whole application containing user interface and the application logic

b) Data layer: - In this layer it holds the database which is shared by all the user and it exsist on the server.



Advantages: -

→ Simple design structure.
→Better resource utilization.
→No redundancy/duplicacy of data.

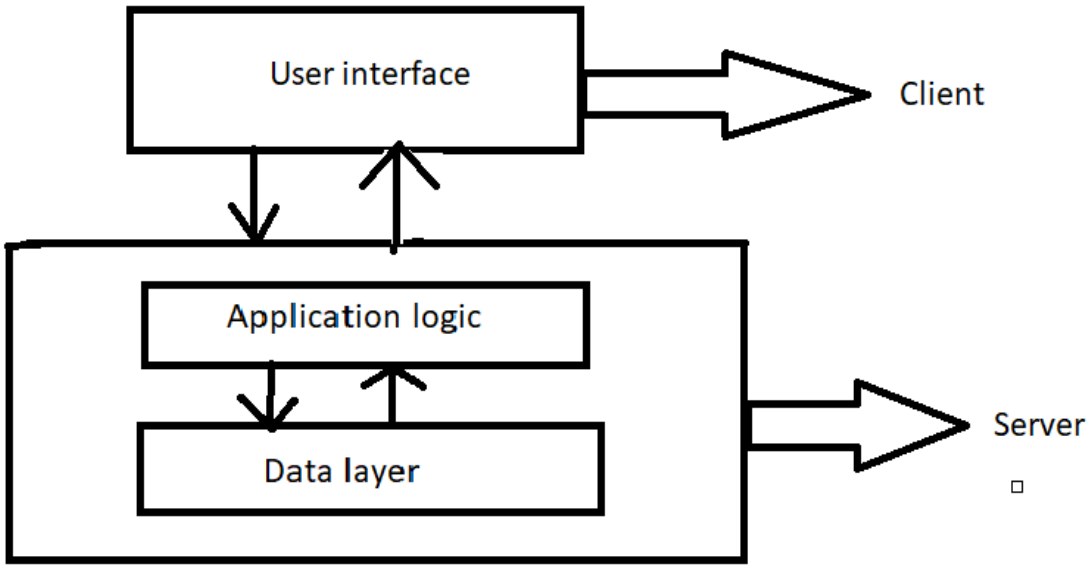
Disadvantages: -

→ High maintenance cost: - because the application is loaded on each user-side therefore when a change is required then it is to be carried out at every user level and it requires high maintenance cost.

→ Low performance: - because the application runs on the resource of PC (PERSONAL COMPUTER) of the user, therefore performance will be low as compared to the server.

2) 3-Tier architecture: -

it is the architecture type where the application domain is divided into 3 layers by separating application layer into a separate logic and moving it into the server.



Advantages: -

- ❖ This architecture overcome the limitation of 2-tier architecture by reducing the maintenance cost
- ❖ As because application logic/business logic became a single separate layer
- ❖ It also increases the performance of the application as because application logic moves to the server.

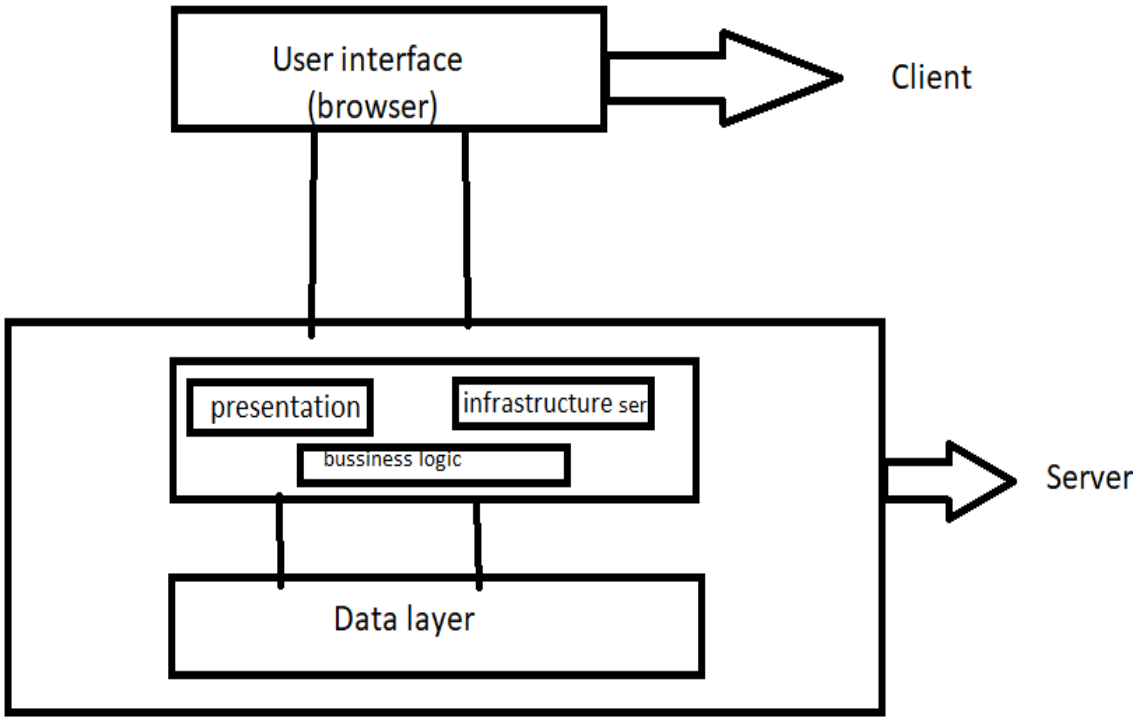
Disadvantages: -

- ❖ Because in this case all the functionalities are integrated into a single layer. therefore, it leads to difficulties to design the application when size of the application is large.

3)N-Tier architecture: -

It is the architecture type where the application is divided into N-no of layers by sub-dividing application logic layer into no of sub-layers where each sub layer carries out a particular functionality. The common layers are the following.

a) User-interface layer
b) Presentation logic layer
c) Infrastructure service layer
d) Business logic/application logic
e) Data layer



Advantages: -

N-Tier architecture allows to build application dividing into n-layers and thereby overcomes the limitations of 3-tier architecture.

Disadvantages: -

The limitation with this architecture is that although it supports N-Layers but works with a single application type logic, whereas the current business community requires multiple application types from a single platform.

Enterprise architecture: -

→It is the architecture type that divides the application domain into N-Layers and with the support of multiple application type from the same platform to fulfil the requirement of current business community.

→An enterprise architecture provides the following features.

- **Responsiveness**
- **Availability**
- **Security**
- **Extensibility**
- **Integration**
- **Productivity**

LIFE CYCLE OF WEB APPLICATION

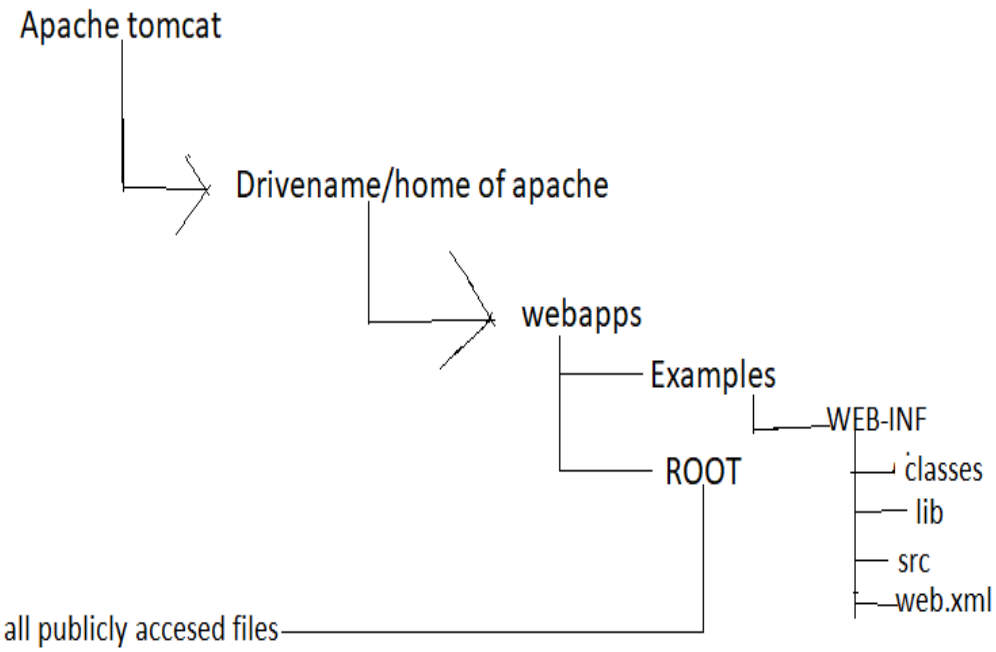
A web application is made up of a variety of file types and it's implementation passes through a set of phases constituting it's life cycle. These phases are the following.

1) **Loading**
2) **Instantiation**
3) **Initialization**
4) **Service**
5) **Destroy**
6) **Unavailable**

1)loading: -

In this phase all the components constituting the web application are uploaded to the web server. All the files of the application are placed into the particular directory structure of the web server. The web server may be located locally/remotely.

For example, when a web server such as **apache tomcat** is implemented then it has the following directory structure



DIRECTORY STRUCTURE OF APACHE TOMCAT SERVER

- classes contains all files with extension **.class** extension.
- lib contains library files with **.jar** extension.
- src contains all source files of **java, php etc.**
- **web.xml** is the configuration file.

Every web application has a special file with the name **index.html(primary name index)** which is opened as home page when the application is accesed.

2)Instantiation: -

In this phase when the application is accesed, the server creates an instance of the application and allots to the particular use. This process is carried out by the server automatically when a request is submitted by the user to access the application.

3) Initialization: -

In this phase the particular instance of th application allotted to the user is initialized with some parameter of the user to identify the user uniquely over the network. This process is carried out implicitly by the web server or explicitly by the developer using certain initialize method like **init()**

4)service: -

In this phase the particular application prepares the response by processing the request information and forwards the response to the particular user.

This phase is carried out by the developer using certain service methods like **doGet ()** and **doPost().**

5)destroy: -

After utilizing the service of the application when the user logs out of the application then it goes to the destroy phase. in this phase the particular application releases/free the resources reserved by the application. it is carried out implicitly by the web server or explicitly by the web server or

explicitly by the developer/programmer by redefining certain methods such as destroy().

An application may contain the following methods

```
public void init( )
{
Codes inside the method
}
public void doGet()
{
Codes inside the method
}
public void doPost()
{
Codes inside the method;
}
```

6)unavailable: -

In this phase the particular instance becomes unavailable for a particular user and goes to the free instance pool to be used by another request.

DEVELOPMENT OF WEB APPLICATION

→Component development
→Comparison of component into module
→Composition of module into application
→Deployment into application

1. Component development→ in this phase, the different components in the form of different file types are developed. These files/components can be divided into 2 categories
    a. Client-side component
    b. Server-side component

a) Client-side component: -

These are the components representing the interfaces using which the user can submit the request information/the server page can represent the response. When search components are accesed it is downloaded to the user system and is interpreted by the browser. These components may be static page using simple server-side technologies with client side.

Ex: - HTML, CSS, Javascript etc

b) server side componenet: -

The server-side components are the components responsible to process the request and prepare the response as required.

Ex: - PHP, Python, ASP.NET etc

2)composition of component into module: -

In this step, the different components are integrated to form one/more modules. The modules are represented using the same file types such as .jar (java archive files).

3)composition of module into application: -

In this phase, the different modules are integrated into application that may be in the form of .war (web archive files).this file is uploaded on the server.

4)deployment of application: -

In this phase, the application or all the files constituting the application are deployed or uploaded on the server to be available over a network for the user.

SOFTWARE DEVELOPMENT LIFE CYCLE(SDLC)

Development of a software passes through a set of phases constituting its life cycle. The phases it passes through the following

- problem identification
- system analysis and study
- system design
- system development
- system testing

- system implementation
- system maintenance

ELEMENTS OF PROJECT: -

A Project is made up of following elements

- project category:
- project title:
- technology used

    i)front end:

    ii)back end:

        a) database:

        b) server-side technology:

- client
- end user

THANK YOU