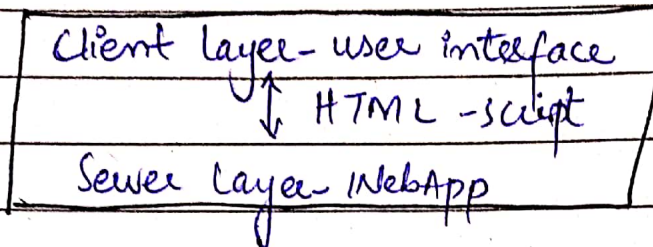


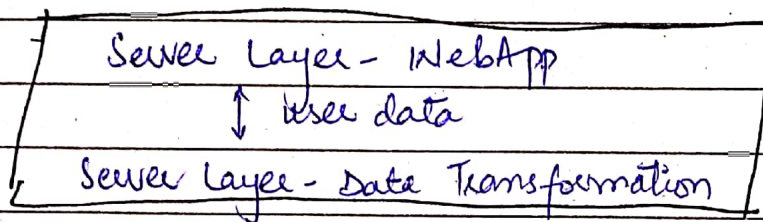
Testing

Date: _____

Content Testing - Database (diagram)



These two layers interact with HTML & some script, HTML presents the form or some other structure to the user and when user submits the form or clicks button then the data is transmitted to server layer using script and at server layer, web application is running.



From the part of server layer where the ^{app} ~~data~~ is residing, the data is transformed to the part of server part where data transformation will take place.

Server layer - Data Transformation
↓ user data ↔ SQL

Server layer - Data Management

Data Transformation which transform the user data into SQL form and then transfer those SQL queries to data management, (and when data is to be sent from database to user then this

layer transforms the SQL result into the user data (the form which user will view))

Date: _____

Server layer- data management

Raw data \uparrow SQL

Database layer- data access

Now the data (SQL format) will be sent to data access layer of Database layer which ensures that the access policies are not violated.

(In case of data to be sent to user from database, the raw format data is being sent to data management layer).

Database layer- data access



Database

When the data could be accessed (It satisfied the access policies) then the data is accessed from database or is sent to database.

For testing:

It is to ensure that at user interface layer, the data transmitted to server layer is valid data and the scripts are working properly and extracts the correct user data to transfer.

The Server layer is tested to ensure that the data to be transmitted to database is extracted properly from the ~~database~~ script and is properly transformed to SQL queries and then passed to appropriate data management function.

Load/Stress Testing

Date: _____

P = throughput that needs to be calculated

↓
amount of work accomplished in given time period

N = no. of users

T = transactions

D = data transfer per transaction

Consider a popular sports news site. At any given time, 4000 concurrent users submit a request (a transaction T) once every 30 sec on average. Each transaction requires webApp to download news Article that averages 12 kbytes in length.

$N = 4000$ users

$T = 30 \text{ sec} = 1 \text{ transaction}$

$1 \text{ sec} = \frac{1}{30} = 0.0333 \text{ transactions per sec per user}$

$D = 12 \text{ kbytes per transaction.}$

$P = 4000 \times 0.033 \times 12 = 1600 \text{ kbyte/s}$

network connection for the server would therefore have to support this average data rate & should be tested to ensure that it does.

Past paper que

Date: _____

$$N = 5000 \text{ user}$$

$$T = 20 \text{ sec} = 1 \text{ transaction}$$

$$1 \text{ sec} = \frac{1}{20} = 0.05 \text{ transaction}$$

$$T = 0.05 \text{ transaction per user per sec}$$

$$D = 15 \text{ kbyte}$$

$$\begin{aligned} P (\text{Throughput}) &= N \times T \times P \\ &= 5000 \times 0.05 \times 15 \\ &= 3750 \text{ kbyte/s} \end{aligned}$$