Session 4

**System Testing:**

* It’s the actual testing of the software here we’re supposed to perform testing on the **overall functionality of the system** with respect to customer requirement
* It is performed after integration testing in a testing environment which is different than the development env.
* We could perform testing in such an env. Which is similar to customer env.
* It has diffn type of testing:

1. **GUI Testing:**

* It’s the process of testing **the UI of an app**.
* GUI includes elements like menus, checkbox, button, colors, content etc.
* We’ve a complete checklist for GUI Testing
* Testing size, position, height, width and to verify all these we use Design documents in that Y frames are used (Y frames are dummy screens i.e. wild frames)
* Testing of Error Messages that are being displayed for ex. If a textbox only allows alphabets and you enter number then it’ll Show an error message
* Testing of different sections of the screen like logo, element, footer, header etc.
* Testing of fonts like their styles and link colors.
* Testing of screen in **different resolutions by zoom in and zoom out Ex**. Like elements should not overlap.
* Testing **alignments** of different elements like buttons, textboxes etc.
* Testing of spelling, Scrollbars, disable fields.

1. **Usability Testing**

* It’s a testing which is concerned about the **easy usage of the product/application**
* It is carried out to learn user behavior and preference and opportunities to improve.
* It provides context sensitive help for **ex. In windows by using F1 button**
* It also might be in the form of User **manual**

1. **Functional Testing**

* Functionality is the **behavior** of an app.
* Functional Testing all about how the **features** should work

There are different types of Functional Testing:

1. Object Properties Testing

* Check **properties** of objects present in an application.
* Every **element** on the app we see is an object.
* It **ensures** that **visual** **elements** (like buttons, text boxes) in the application **have** the **right** **characteristics**
* For **ex**. we can **Enable and Disable certain things like textbox, radio button** while making a choice of gender, a single elements selection from a dropdown list, focus attribute, etc.
* UI Elements: Buttons, Text box, dropdown, checkbox, etc.
* Dynamic Elements: Popups, Dynamic Lists
* Custom Controls: Specially designed UI components.

1. Database Testing/ Backend Testing

* Checking db operations with respect to user operations.
* Here we mainly focus on **DML** (Data Manipulation Lang.) operations.
* Here we’ve to verify whether **select, insert, update & delete** operations are working properly or not.
* For ex. we could add/edit data into the db through UI and could verify it by checking the db. i.e. the communication between db and UI is working or not.
* The testing from **UI side is called as Black** box and from **db side is called White box**
* Since it consists of both type it is called as **grey box testing.**
* Other than this we could also perform other db related operations like relation bw tables, table and column level validations, etc.

1. Error Handling Testing

* Here tester verifies the error messages while performing incorrect operations on the app.
* And errors should be readable and understandable
* For ex. if I enter wrong Username and right password then error message shouldn’t be like Incorrect data but it should be like Invalid User which is more specific.

1. Calculatoins/Manipulation Testing

* Tester checks the calculations. For ex. Banking Apps

Below 2 are specifically for Web Apps:

1. Link Existence and Link Execution Testing

* Link Existence (where links are placed)
* Link Execution (links are navigating to proper page or not)
* 3 types of links
  + Internal Links (link which directs us on the same page)
  + External Links (link which directs to some other page)
  + Broken Links (link doesn’t having any functionality rn)

1. Cookies and Sessions

* Cookies are Temporary Files created by the browser while browsing the pages through Internet.
* Ex. sign in to your gmail and then close the app without sign-out and again when you come to the page you’ll be signed in automatically.
* Cookies Testing is to verify whether the browser is creating/storing the cookies for the app.
* 3 types of cookies:
  + **Persistent** **cookies** (“Remember Me” button then u get logged in even if you close the app until you logout)
  + **Third Party cookies** (for ex. ad of HP laptop on GFG while browsing the DSA) it is used to track your browsing habits
  + **Session** **cookies** (ex. like banking website because they’re stored only for short period of time while user is navigating but once you close the page then you have to give the credentials again i.e., they are temporary)
* Advantages of using Cookies:
  + Customize ads
  + Remember login username and password
  + Recognize devices
  + Track website
  + Streamline online shopping
* Session is a **time** **frame** which is noted at the **server** **side**.
* Ex. If you login to banking web page and stay idle for few times and then you try to do some activity on that then a message will appear “Your session is Expired”, because not activity was performed so server itself signed off that user.

1. Nonfunctional Testing

* It is performed after the Functional testing
* It mainly focuses on customer expectations.
* It’s notable that a different type of env. Is required to perform it.

Types of Nonfunctional Testing:

1. Performance Testing

* It is concerned about the speed of the application
* It’s mainly performed for web apps.
* Concerned about response time, throughput, etc.
  + Load Testing
    - Increasing the load (no. of users) on application gradually and then check the speed of the application
  + Stress Testing
    - A sudden change in load and then check the speed.
  + Volume Testing
    - Check how much data the application could handle.

1. Security Testing

* How secure our application is.
* Here we are concerned about Authentication and Authorization.
* Authentication (User is valid or not) (ex. Login)
* Authorization/Access Control (Permission of the valid user.) (ex. User can’t access features same as admin)
* And much more by the security specialists.

1. Recovery Testing

* Whether app is able to provide the recovery or not.
* Ex. like Drafts in Gmail

1. Compatibility Testing

* Forward Testing
* Backward Testing
* Hardware Testing (Configuration Testing)

1. Installation Testing

* To check whether Screens are clear or not and are simple
* Also checking for the proper uninstallation.

1. Sanitation/Garbage Testing

* If any app provides extra feature or functionality then we consider it as a bug.

Functional vs Nonfunctional Testing

**Functional Testing**

* Concerned about features.
* Concentrates on user requirement.
* It is performed before Nonfunctional Testing.

**Nonfunctional Testing**

* Concerned about performance.
* Concentrates on user expectations.
* It is performed after Functional Testing.

Which **tools** are used to evaluate the **performance** of a software?

* Apache JMeter (Free)
* Load Runner
* Gatling (Free)
* WebLOAD

Smoke and Sanity Testing:

Smoke Testing is used for

* Critical Functionality,
* for Initial rejection by QA,
* it’s kinda general checkup of the build.
* It could be done by both QA and Dev.

Sanity Testing

* Verifies new functionality
* To check bugs ‘ve been fixed after build.
* It’s a part of Regression Testing
* Specialize Testing

User flows for E-Commerce Website

1. A Logged in user buys a product from Flipkart
   1. Open the [www.flipkart.com](http://www.flipkart.com) in your browser.
   2. Click the Search box.
   3. Type the product name you want to search.
   4. Select the Product name from the dropdown list
   5. Select the most relevant product out of all the results.
   6. Scroll below to see the reviews.
   7. Click on Buy Now button.
   8. Click Continue.
   9. Select the payment method.
   10. Click on Place Order
2. Creating Amazon Business Account
   1. Open [www.amazon.in](http://www.amazon.in) in the browser.
   2. Select the, All button on the left most side of menu.
   3. Scroll down and now Click Amazon Business under Program and Features section.
   4. Enter the email add in the given box and click ‘Get Started’ .
   5. Fill the required text boxes namely, Your Name, Email, Password, Password again and click Next Step.
   6. A new page will appear where OTP is supposed to be filled which is received on the register email address and after filling that field press enter.
   7. Fill out all the details appearing on ‘Enter your business details’ page
   8. At last click on ‘Create business Account’ button and account will be created.
3. Sending Parcel from current address to address of different country through DHL
   1. Navigate to [www.dhl.com](http://www.dhl.com)
   2. Select the Ship Now Button.
   3. Fill out the details like From address and To Address and click ‘Describe Your Shipment’ button.
   4. Add dimensions of Parcel and click ‘Ship Now’ button.
   5. Select the shipment details like date and time and click on ‘Continue Booking’.
   6. A popup will appear in which tick ‘Agree All’.
   7. And now add sender and Receivers information and click ‘Next’
   8. Click the payment button and pay the fee.
   9. At last click ‘Done’ button.