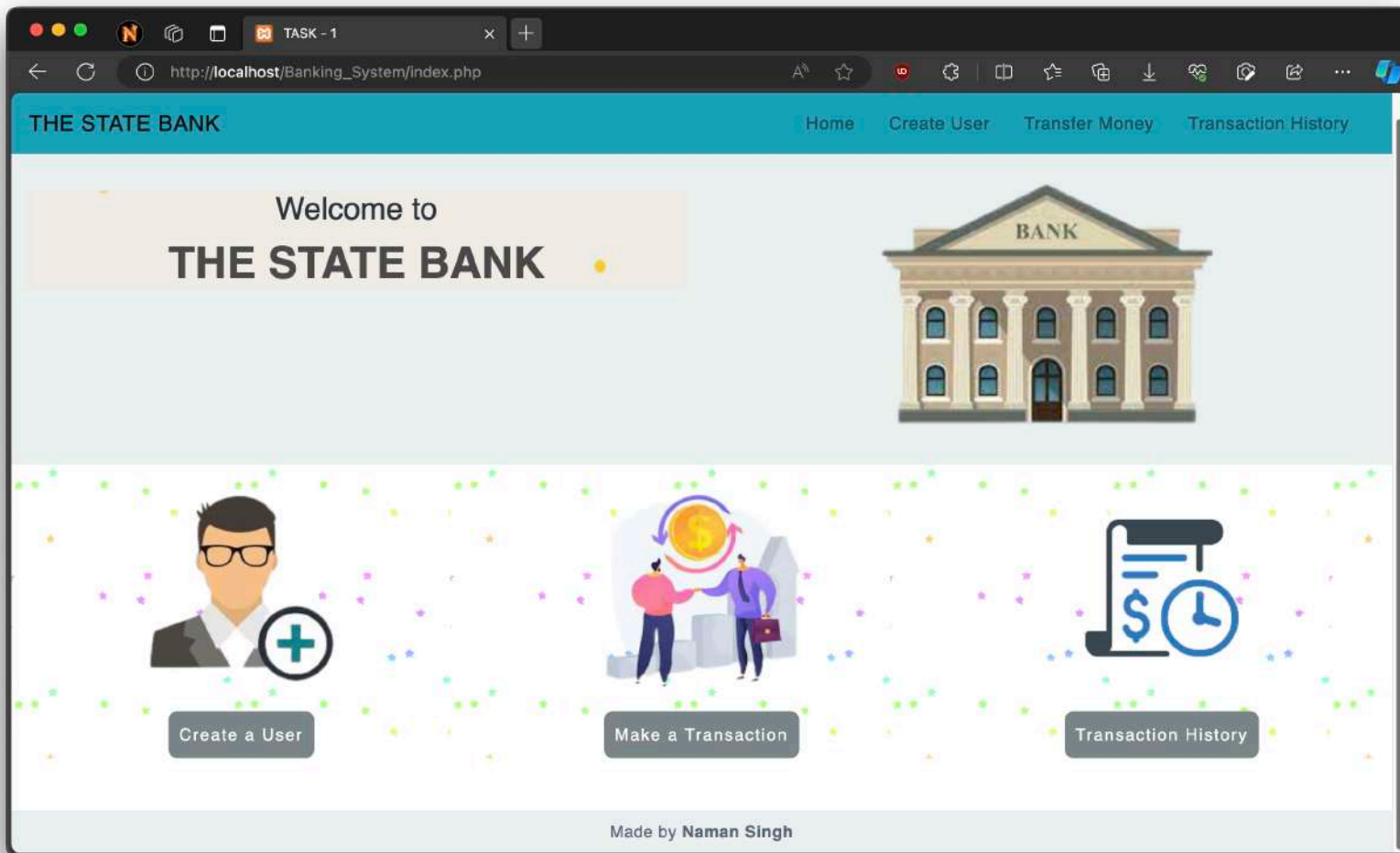# Web Testing: Online Banking System

Presented By:

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WEBSITE
Home Page

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FUNCTIONAL TESTING

Functional test cases of Online Banking System:

Test Case ID	Description (Steps Followed)	Inputs	Expected Output
TC001	Navigate to "Create User" page from homepage	Click "Create User" link in the navbar	Successfully land on the "Create User" page
TC002	Fill and submit user creation form	Enter valid user details, click "Create" button	Redirected to "Transfer Money" page with success message
TC003	View transaction history from homepage	Click "Transaction History" link in the navbar	Successfully land on the "Transaction History" page
TC004	Initiate a transaction from "Transfer Money" page	Click "Transact" button next to a transaction	Redirected to the transfer form with selected transaction
TC005	Submit a valid transaction form	Select a user, enter amount, click "Transfer" button	Success message displayed, redirected to "Transaction History" page
TC006	Attempt to submit an empty transaction form	Leave user and amount fields blank, click "Transfer" button	Appropriate error message displayed
TC007	View homepage from any page	Click "Home" link in the navbar	Successfully land on the homepage
TC008	Navigate to "Create User" page from homepage	Click "Create User" button at the bottom of the page	Successfully land on the "Create User" page
TC009	Attempt to create a user with an existing email	Enter details with an email that already exists, click "Create"	Appropriate error message displayed
TC010	Attempt to make a transaction with insufficient balance	Enter an amount greater than the user's balance, click "Transfer"	Appropriate error message displayed

Functional testing involves checking of the specified functionality of a web application.
Functional test cases for web applications may be generated using boundary value analysis, equivalence class testing, decision table testing and many other techniques.

TC011	Reset the "Create User" form	Fill the form, click "Reset" icon	Form fields are cleared
TC012	Access the website with an invalid URL	Enter a non-existent URL	404 Not Found page displayed
TC013	Attempt to submit the "Transfer Money" form without selecting a user	Leave the user field blank, enter an amount, click "Transfer"	Appropriate error message displayed
TC014	View "Transfer Money" page without any transactions	Navigate to the page without any transactions	Message indicating no transactions are displayed
TC015	Click the "Home" button after a successful transaction	Click "Home" link in the success message page	Successfully land on the homepage

Navigation testing test cases for the Online Banking System

Test Case	Description	Inputs	Expected Output
TC001	Navigate to "Create User" page from homepage	Click "Create User" link in the navbar	Successfully land on the "Create User" page
TC002	Navigate to "Transaction History" page from homepage	Click "Transaction History" link in the navbar	Successfully land on the "Transaction History" page
TC003	Navigate to "Transfer Money" page from homepage	Click "Transfer Money" link in the navbar	Successfully land on the "Transfer Money" page
TC004	Navigate back to homepage from "Create User" page	Click "Home" link in the navbar	Successfully land on the homepage
TC005	Navigate back to homepage from "Transaction History" page	Click "Home" link in the navbar	Successfully land on the homepage
TC006	Navigate back to homepage from "Transfer Money" page	Click "Home" link in the navbar	Successfully land on the homepage
TC007	Navigate to "Transaction History" from "Transfer Money" page	Click "Transaction History" link in the navbar	Successfully land on the "Transaction History" page
TC008	Navigate to "Create User" from "Transaction History" page	Click "Create User" link in the navbar	Successfully land on the "Create User" page
TC009	Navigate to "Create User" from "Transfer Money" page	Click "Create User" link in the navbar	Successfully land on the "Create User" page
TC010	Navigate to "Transfer Money" from "Create User" page	Click "Transfer Money" link in the navbar	Successfully land on the "Transfer Money" page

NAVIGATION TESTING

Navigation testing investigates the proper functioning of all the internal and external links. Navigation testing must ensure that websites provide consistent, well-organized links and should also provide alternative navigation schemes such as search options and site maps.

TC011	Navigate to "Transaction History" from "Create User" page	Click "Transaction History" link in the navbar	Successfully land on the "Transaction History" page
TC012	Navigate to "Create User" from "Transaction Details" page	Click "Create User" link in the navbar	Successfully land on the "Create User" page
TC013	Navigate to "Transaction History" from "Transaction Details" page	Click "Transaction History" link in the navbar	Successfully land on the "Transaction History" page
TC014	Navigate to "Transfer Money" from "Transaction Details" page	Click "Transfer Money" link in the navbar	Successfully land on the "Transfer Money" page
TC015	Navigate back to homepage from "Transaction Details" page	Click "Home" link in the navbar	Successfully land on the homepage

FORM BASED TESTING

Form based testing test cases for the Online Banking System

Test Case	Description	Inputs	Expected Output
TC001	Create User Form Validation	User Name: [Special characters, numbers] Email: [Invalid email format] Balance: [Negative balance]	Appropriate error messages, form not submitted
TC002	Successful User Creation	User Name: [Valid user name] Email: [Valid email format] Balance: [Valid positive balance]	Redirected to "Transfer Money" with success message
TC003	Transaction Form Validation	User (Recipient): [Not selected] Amount: [Negative amount, non-numeric characters]	Appropriate error messages, form not submitted
TC004	Successful Transaction	User (Recipient): [Select a valid user] Amount: [Valid positive amount within balance]	Redirected to "Transaction History" with success message
TC005	Check for Input Limits	User Name: [Input within character limits] Email: [Input within character limits] Balance: [Maximum allowed balance]	No errors, form submitted successfully

Websites that include forms need to ensure that all the fields in the form are working properly. Form-based testing involves the following issues:
1. Proper navigation from one field of the form to another using the tab key.
2. Ensures that the data entered in the form is in a valid format.
3. Checks that all the mandatory fields are entered in the form.

Usability Testing Questionnaire

Question Number	Question	Yes/No	Rating (1-5)
1	Is the homepage navigation intuitive and easy to use?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [✓] 5
2	Are the buttons on the homepage (Create User, Make a Transaction, Transaction History) easily identifiable?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [✓] 5
3	Is the information on the Create User page clear and easy to understand?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [✓] 5
4	Are the icons for Create and Reset on the Create User form self-explanatory?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [✓] 4 [ ] 5
5	Does the website successfully add user information to the database upon clicking the 'Create' button?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [✓] 5
6	Is the Transfer Money page layout clear and easy to follow?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [✓] 5

USABILITY TESTING

Usability is concerned with the degree to which the software fulfils the user's specifications and expectations. It is the measurement of the amount of satisfaction of the user. Usability testing refers to the procedure employed to evaluate the degree to which the software satisfies the specified usability criteria.

7	Are the transaction details presented on the Transaction History page organized and easy to read?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [✓] 4 [ ] 5
8	Is the process of initiating a transaction smooth and straightforward?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [✓] 5
9	Does the system provide a clear success message after a successful transaction?	[✓] Yes [ ] No	[ ] 1 [ ] 2 [ ] 3 [✓] 4 [ ] 5
10	Overall, how satisfied are you with the usability of the website?	[ ] Very Dissatisfied [ ] Dissatisfied [ ] Neutral [✓] Satisfied [ ] Very Satisfied	[ ] 1 [ ] 2 [ ] 3 [ ] 4 [✓] 5

CONFIGURATION AND COMPATIBILITY TESTING

Browser Compatibility Matrix

Browser	Versions	Operating System	Compatibility
Google Chrome	Latest	Windows, macOS, Linux	Fully Compatible
Mozilla Firefox	Latest	Windows, macOS, Linux	Fully Compatible
Microsoft Edge	Latest	Windows, macOS	Fully Compatible
Safari	Latest	macOS	Fully Compatible
Internet Explorer	Not supported	Windows	Not Supported

One of the significant challenges of web testing is that it must ensure the proper functioning of a web application on all the supported platforms and suitable environments.

The goal of configuration and compatibility testing is to detect faults in the application while it is tested on varied platforms and environments.

Load Testing Test Cases

Test Number	Test Objective	Steps	Expected Result	Pass/Fail
1	Assess homepage load time under normal conditions	Open the homepage URL and measure the time taken to fully load	Load time < 3 seconds	[✓] Pass [ ] Fail
2	Evaluate Create User page response time	Access the Create User page and submit multiple user creation requests simultaneously	Pages load without errors, and response time < 5 seconds	[✓] Pass [ ] Fail
3	Test transaction processing on the Transfer Money page	Simulate multiple users making transactions simultaneously	Transactions are processed successfully without errors, and response time < 7 seconds	[✓] Pass [ ] Fail
4	Assess the impact of concurrent users on Transaction History page	Simulate multiple users accessing the Transaction History page simultaneously	Page loads within a reasonable time frame (< 8 seconds) and displays accurate information	[✓] Pass [ ] Fail

LOAD TESTING

Load testing involves testing the web application under real world scenarios by simulating numerous users accessing the web application simultaneously. It tests the web application by providing it maximum load.

5	Evaluate the website's performance under peak load	Simulate a high number of concurrent users accessing various pages and making transactions	Pages load within an acceptable time frame, and transactions are processed successfully	[✓] Pass [ ] Fail
6	Test the website's scalability	Gradually increase the number of concurrent users to assess the system's scalability	System can handle increased load without significant degradation in performance	[✓] Pass [ ] Fail
7	Evaluate the impact of sustained load on user sessions	Simulate a continuous load for an extended period	User sessions remain stable, and there are no unexpected crashes or errors	[✓] Pass [ ] Fail
8	Assess the website's recovery after a sudden increase in load	Simulate a sudden surge in traffic and monitor how the system recovers	System recovers gracefully without prolonged downtime or errors	[✓] Pass [ ] Fail

Stress Testing Test Cases

Test Number	Test Objective	Steps	Expected Result	Pass/Fail
1	Evaluate the website's behavior under maximum load	Simulate a load beyond the expected peak traffic	System remains stable without critical failures	[✓] Pass [ ] Fail
2	Assess the website's response to rapid traffic spikes	Simulate sudden, significant increases in user traffic	System maintains stability without crashing or significantly slowing down	[✓] Pass [ ] Fail
3	Test the system's performance under sustained heavy load	Apply a continuous and high load to the system for an extended duration	System remains stable without memory leaks, performance degradation, or crashes	[✓] Pass [ ] Fail
4	Evaluate the impact of resource exhaustion on critical functionalities	Simulate scenarios where system resources (CPU, memory, etc.) are exhausted	Critical functionalities continue to work, and the system recovers gracefully after resource replenishment	[✓] Pass [ ] Fail

STRESS TESTING

Stress testing involves execution of a web application with more than maximum and varying loads for long periods. Unlike performance and load testing, stress testing evaluates the response of the system when the system is given a load beyond its specified limits. It is also used to monitor and check the reliability of a web application when available resources are on beyond maximum usage.

5	Assess the website's behavior during a sudden traffic drop	Simulate a sudden decrease in user traffic	System remains stable, and resource utilization decreases accordingly	[✓] Pass [ ] Fail
6	Test the system's recovery after temporary resource unavailability	Intentionally reduce available resources and then restore them	System recovers without prolonged downtime or errors	[✓] Pass [ ] Fail
7	Evaluate the system's behavior during network interruptions	Simulate network failures or interruptions	System handles network interruptions gracefully and recovers when the network is restored	[✓] Pass [ ] Fail
8	Assess the website's performance during unexpected events (e.g., server restarts)	Simulate unexpected events and monitor the system's response	System recovers without data loss or critical failures	[✓] Pass [ ] Fail

DATABASE TESTING

Database testing test cases for the Online Banking System

Test Case Number	Test Case	Expected Result	Pass/Fail
1	Create a new user	The user details (name, email, balance) are successfully added to the database	[✓] Pass [ ] Fail
2	Attempt to create a user with duplicate email	The system prevents the creation of a user with an existing email address	[✓] Pass [ ] Fail
3	Make a transfer between two existing users	The database reflects the updated balances for both the sender and the recipient	[✓] Pass [ ] Fail
4	Attempt to make a transfer with insufficient funds	The system prevents the transaction and provides an appropriate error message, and the database remains unchanged	[✓] Pass [ ] Fail
5	View transaction history for a specific user	The transaction history is accurately retrieved from the database and displayed to the user	[✓] Pass [ ] Fail

A database must be tested for administrative level operations such as adding, deleting and updating an item in the database, and user operations such as searching an item from the database or providing personal details.

6	Attempt to view transaction history for a non-existing user	The system handles the request gracefully, providing an appropriate response without errors	[✓] Pass [ ] Fail
7	Update user details (e.g., change email address)	The user details are successfully updated in the database	[✓] Pass [ ] Fail
8	Attempt to update user details with invalid information	The system prevents the update and provides an appropriate error message, and the database remains unchanged	[✓] Pass [ ] Fail
9	Delete a user account	The user account is successfully removed from the database	[✓] Pass [ ] Fail
10	Attempt to delete a non-existing user account	The system handles the request gracefully, providing an appropriate response without errors	[✓] Pass [ ] Fail

EXECUTION OF QUERIES

BEFORE

AFTER

Id	Name	E-Mail	Balance
1	Naman	naman@gmail.com	100000
2	Kartik	kartik@gmail.com	2000

Transfer Money

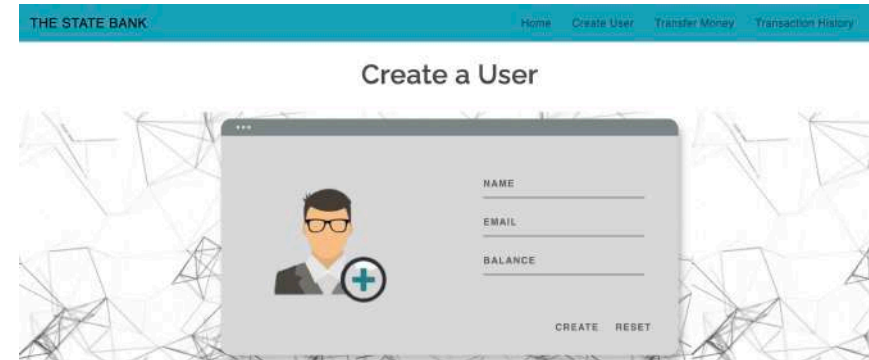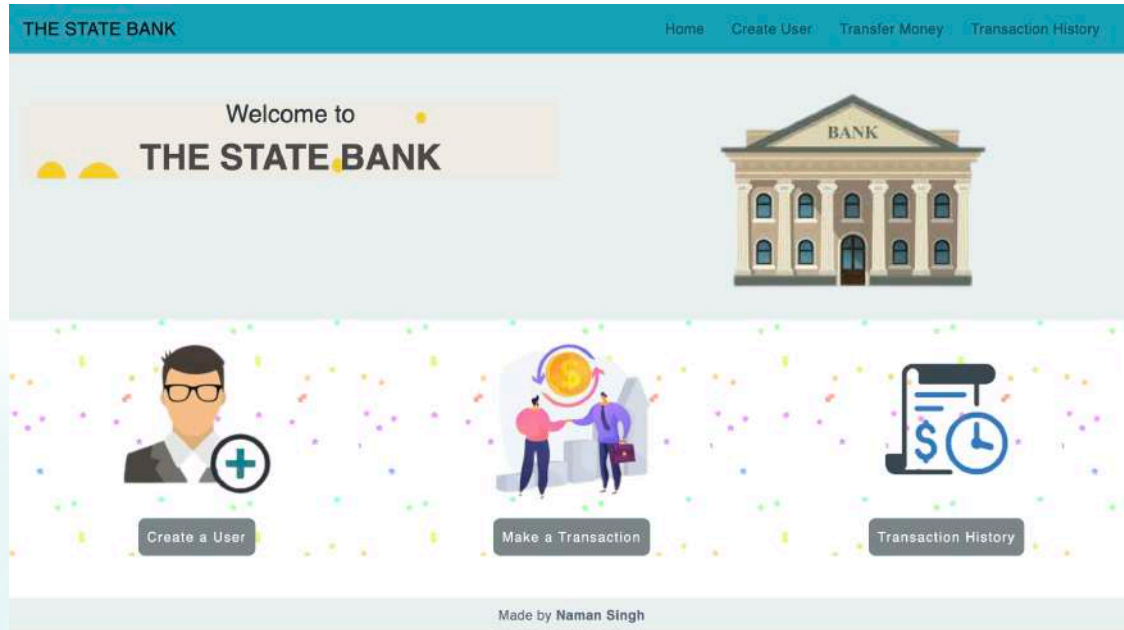| Id	Name	E-Mail	Balance
1	Naman	naman@gmail.com	101000
2	Kartik	kartik@gmail.com	1000

THE STATE BANK   Home   Create User   Transfer Money   Transaction History

Transaction History

S.No.	Sender	Receiver	Amount	Date & Time
1	Vineet	Pranad	40	2023-09-03 12:03:13
2	Mikael	Zubin	100	2023-09-04 14:13:36
3	Dheeman	xyz	50	2023-11-17 16:43:42

THE STATE BANK   Home   Create User   Transfer Money   Transaction History

Transaction History

S.No.	Sender	Receiver	Amount	Date & Time
1	Vineet	Pranad	40	2023-09-03 12:03:13
2	Mikael	Zubin	100	2023-09-04 14:13:36
3	Dheeman	xyz	50	2023-11-17 16:43:42
4	Kartik	Naman	1000	2023-11-17 18:18:21

WEBSITE SCREENSHOTS

THANK YOU