TEEM

Non-Functional Testing

Version 1

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INDEX

1. Performance Testing

1.1. Introduction

Performance testing for the TEEM website aims to evaluate the responsiveness of the system under normal usage conditions.

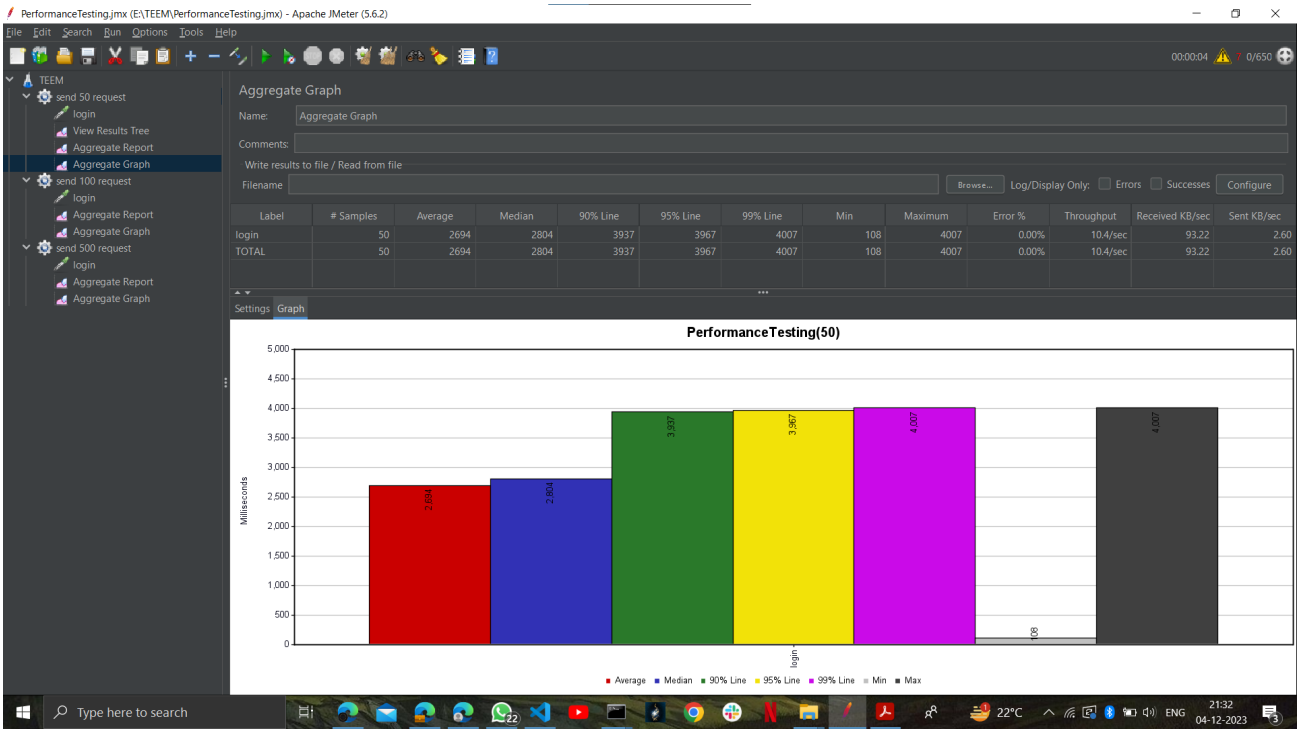
1.2. Objective

- Evaluate the website's performance under typical user loads.
- Assess response times and resource utilization.
- Assess the impact of technologies like Redis, serverless Drizzle ORM, and PostgreSQL on response times.

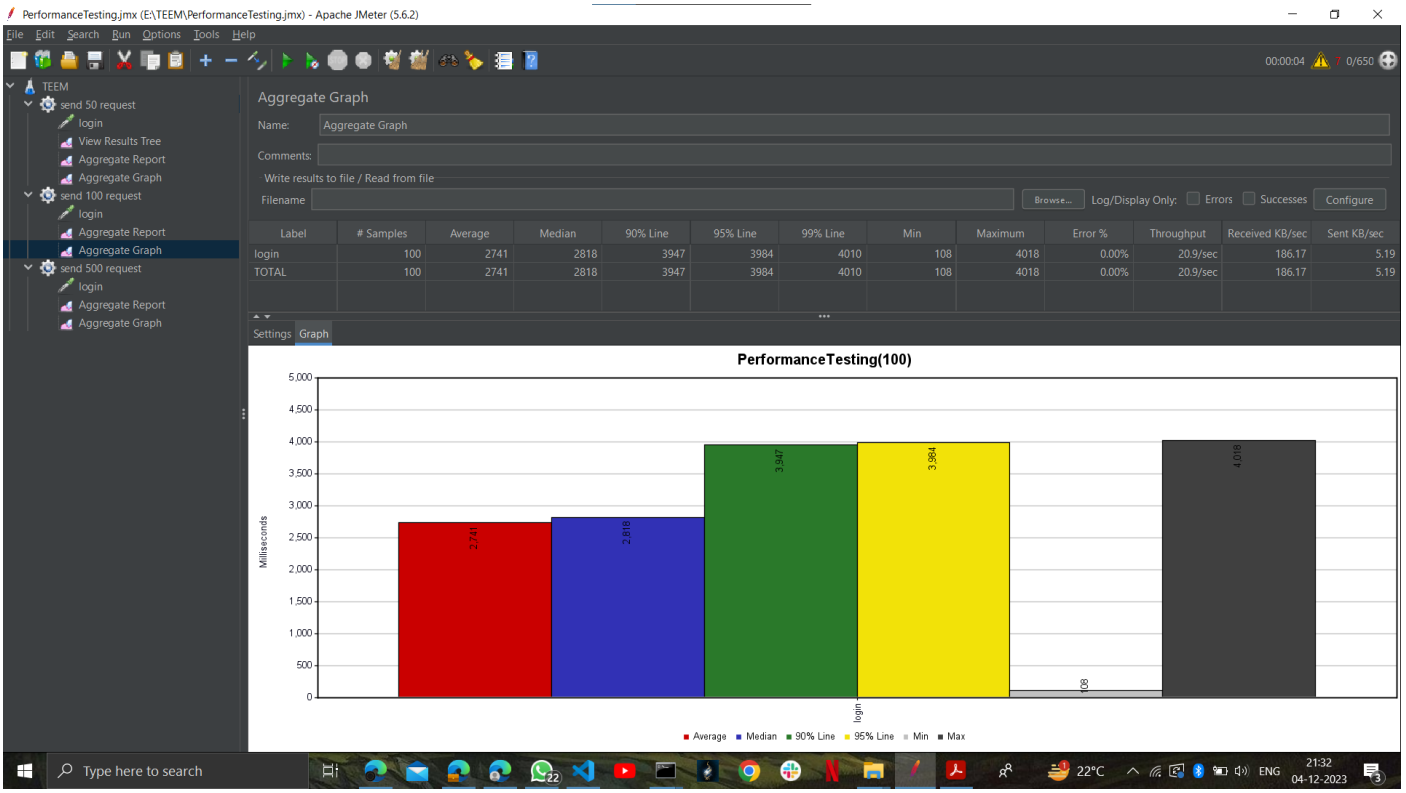
1.3. Test Plan and Result

1.3.1. Authentication and Authorization

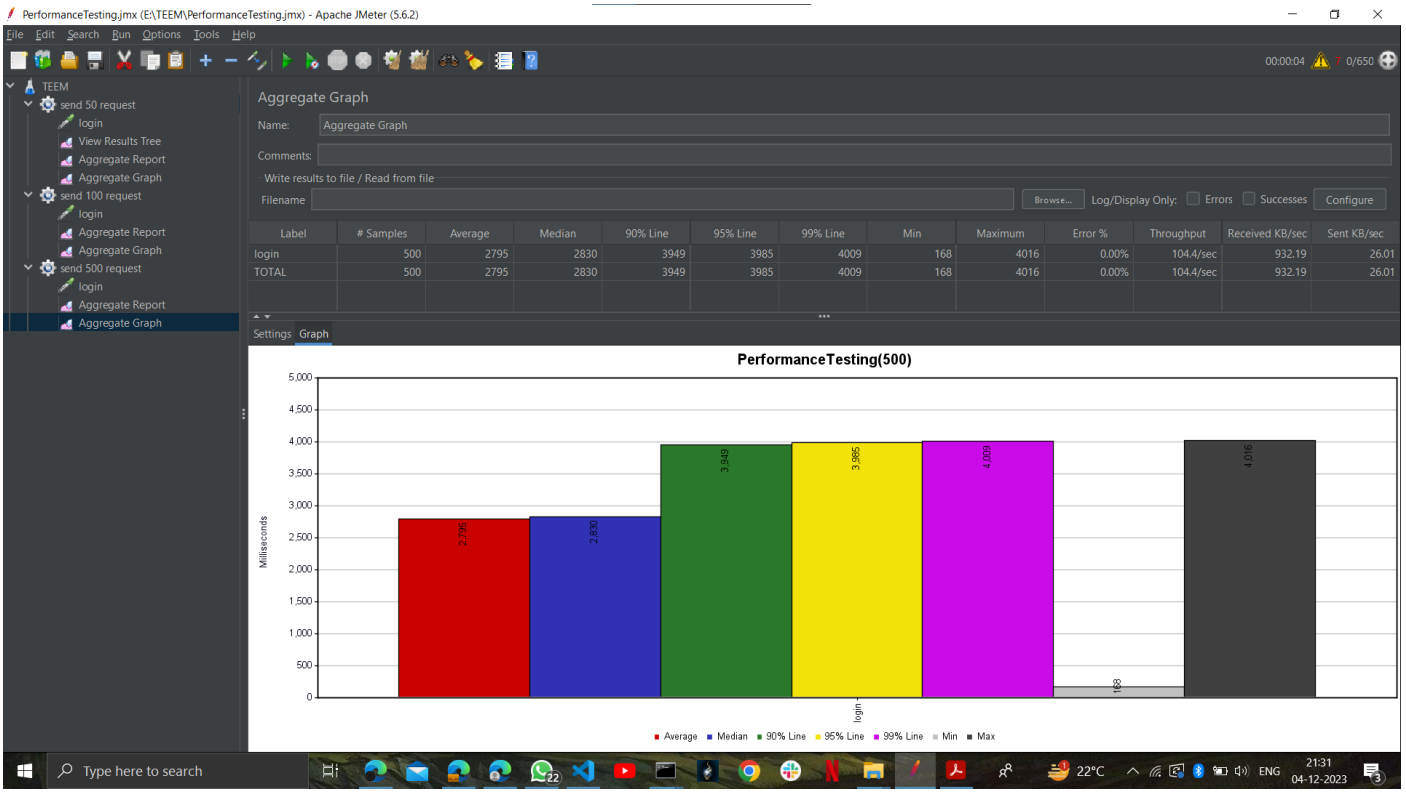
- *Objective*: Assess baseline performance under expected loads.
- *Procedure*: Used JMeter to simulate typical user activities with 100 and 500 hosts.
- *Results*: The website demonstrates satisfactory performance under normal usage conditions, with response times meeting expectations for the specified host counts.



Aggregate Report of login page while we have 50 concurrent user



Aggregate Report of login page while we have 100 concurrent user



Aggregate Report of login page while we have 500 concurrent user

1.4. Conclusion

Performance testing, conducted with 100 and 500 hosts, indicates that the TEEM website meets performance expectations during regular user interactions. This establishes a baseline for acceptable performance and it also confirms that the implementation of Redis, serverless Drizzle ORM, and PostgreSQL positively contributes to the TEEM website's performance, scalability, and efficiency in data management.

2. Load Testing

2.1. Introduction

Load testing for the TEEM website is conducted to determine the system's capacity and behaviour under heavy concurrent user loads.

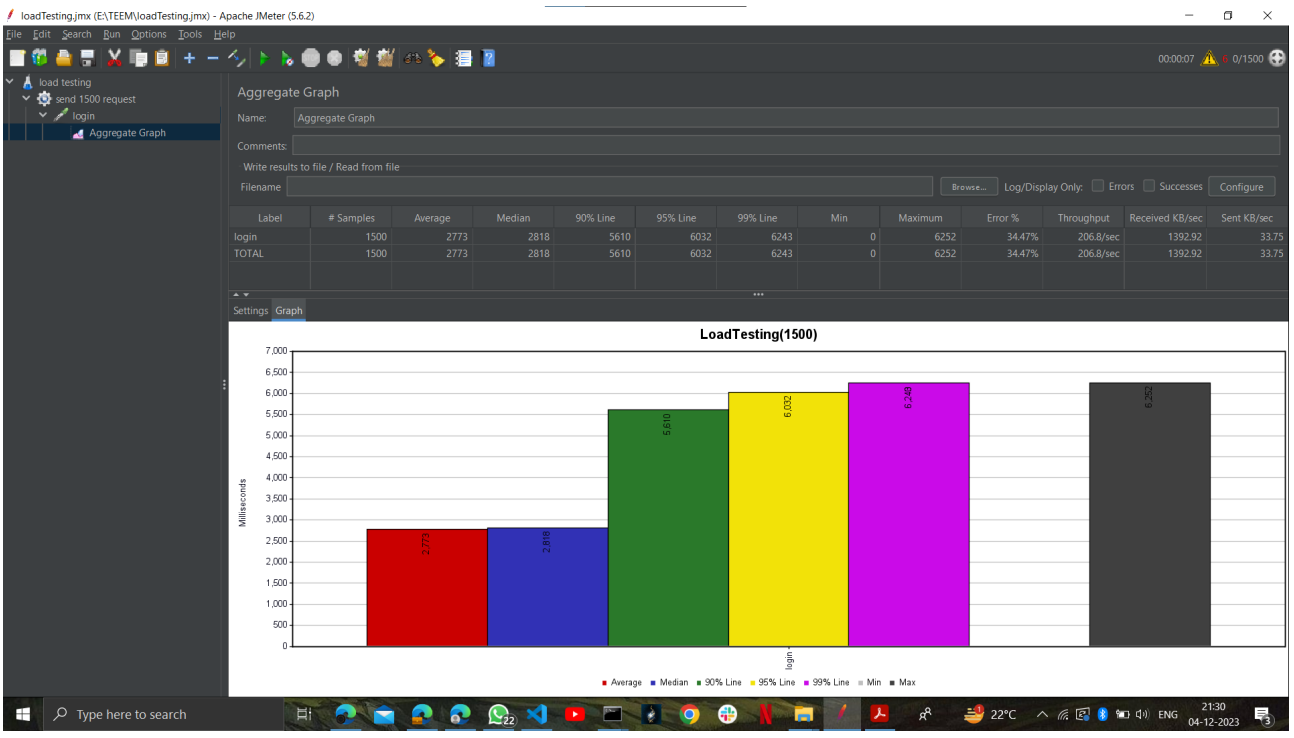
2.2. Objective

- Evaluate performance at peak load conditions.
- Identify the maximum capacity of the system.
- Monitor system behaviour and response times under heavy load.

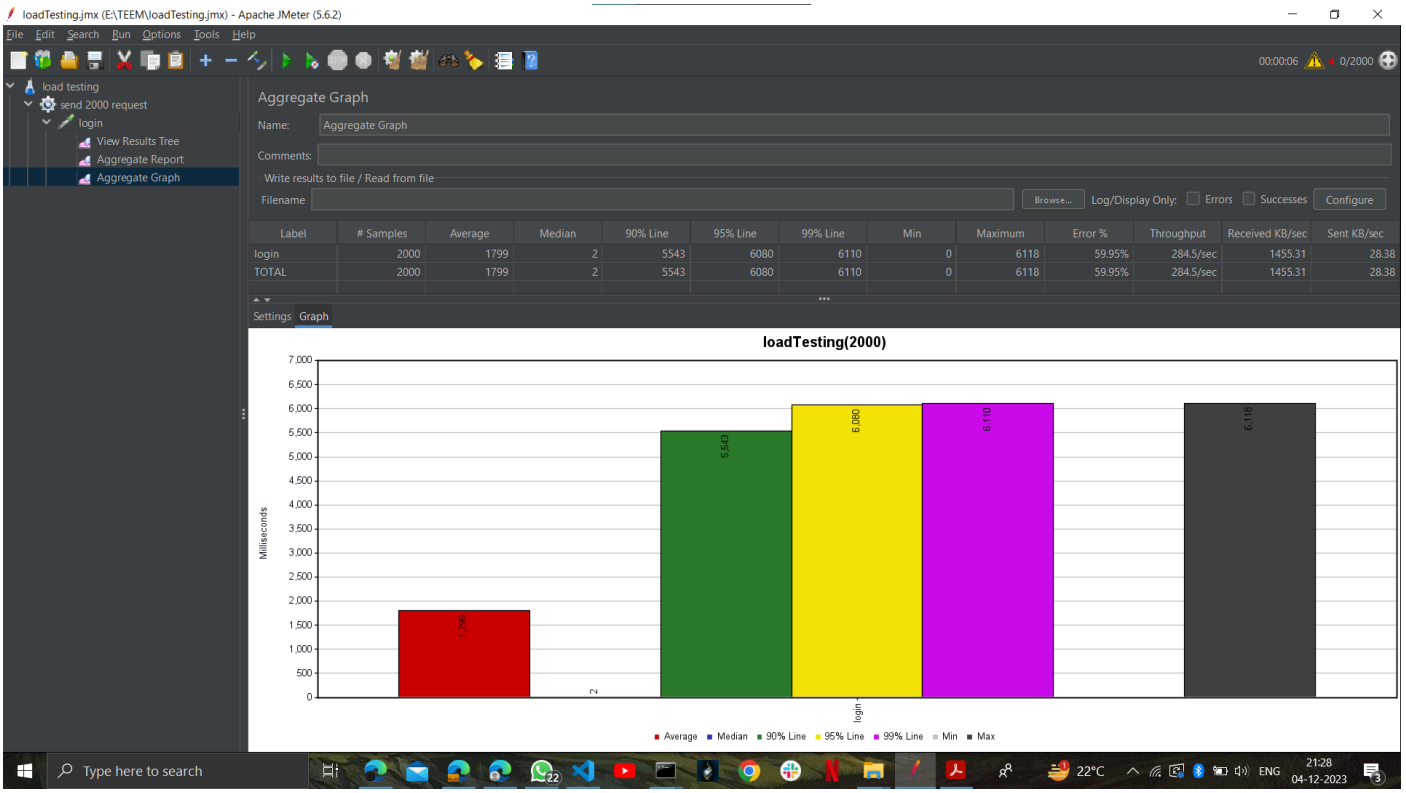
2.3. Test Plan and Result

2.3.1. Authentication and Authorization

- *Objective*: Assess performance under heavy concurrent user loads.
- *Procedure*: Used JMeter to simulate load with 1500 and 2000 concerent hosts.
- *Results*: The website handles the load well, and response times remain within acceptable limits for the specified host count.



Aggregate Report of login page while we have 1500 concurrent user



Aggregate Report of login page while we have 2000 concurrent user

2.4. Conclusion

Load testing with 1500 or 2000 hosts provides insights into the website's capacity, ensuring it can handle expected user traffic without significant performance degradation.

As we can see from the JMeter report, load testing with 1500 hosts resulted in an average response time of 2773 milliseconds and a throughput of 206.8 requests per second, with a relatively high error rate of 34.47%. Scaling up to 2000 hosts showed a reduced average response time of 1799 milliseconds and an increased throughput of 284.5 requests per second, but with a higher error rate of 59.95%. These findings suggest that while the system's throughput improved with increased load, there was also a substantial increase in errors, indicating potential capacity limitations or performance issues that need further investigation and optimization.

3. Stress Testing

3.1. Introduction

Stress testing for the TEEM website is conducted to evaluate the system's stability and robustness under extreme conditions.

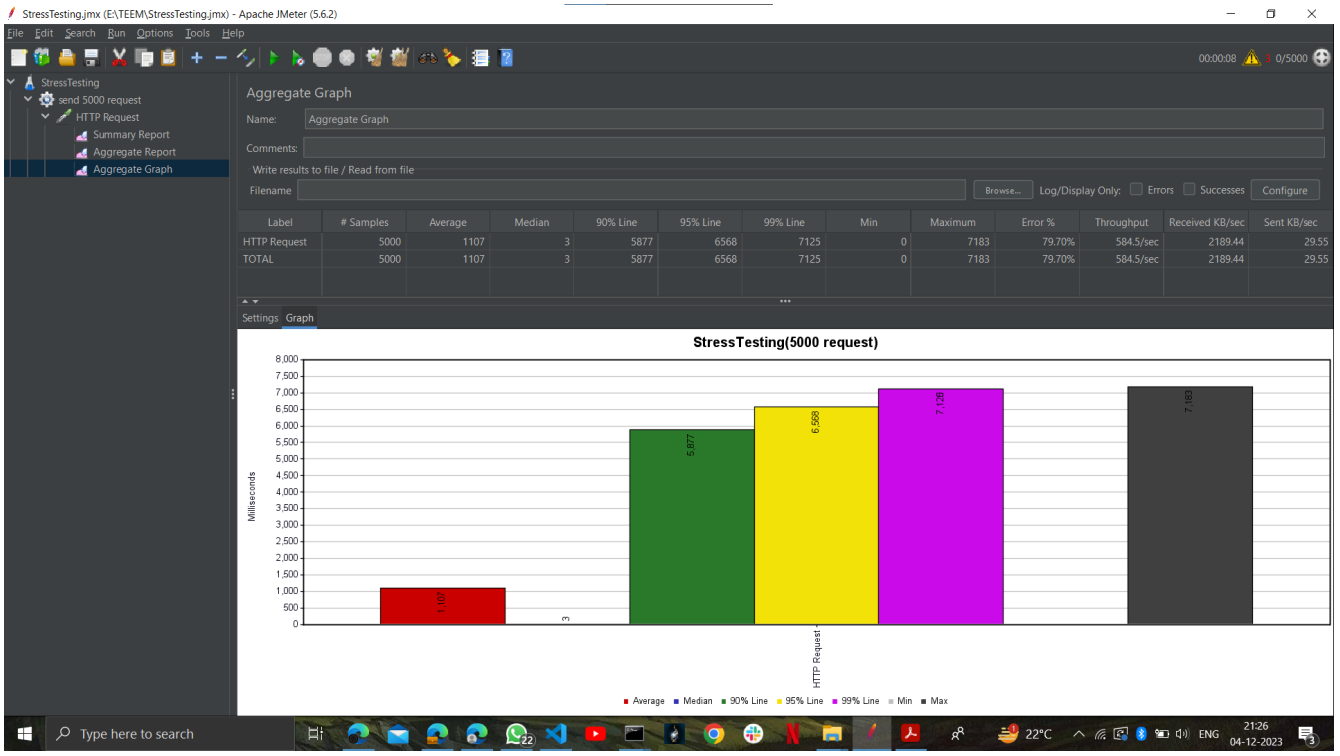
3.2. Objective

- Determine the system's breaking points.
- Assess stability and graceful degradation under stress.
- Identify potential weaknesses in the system.

3.3. Test Plan and Result

3.3.1. Authentication and Authorization

- *Objective*: Apply stress to the website using JMeter to simulate extreme conditions with 5000 hosts.
- *Procedure*: Evaluate how the system behaves under stress and identify breaking points.
- *Results*: The website demonstrates stability and graceful degradation under the extreme stress conditions of 5000 hosts.



Aggregate Report of login page while we have 5000 concurrent user

3.4. Conclusion

Stress testing with 5000 hosts ensures the TEEM website can handle unexpected loads without critical failures, providing a robust user experience.

In the stress testing scenario, the average response time of 1107 milliseconds, a throughput of 584 requests per second, and a high error rate of 79.70% indicate that the system is under significant stress. The increased error rate suggests that the system is reaching or exceeding its capacity limits, leading to performance degradation. Further investigation and optimization are necessary to address the high error rate and ensure the system can handle stress conditions more effectively.

4. Security Testing

4.1. Introduction

Security testing for the TEEM website focuses on evaluating the effectiveness of implemented security measures to protect user data, ensure secure authentication and authorization, and prevent unauthorized access.

4.2. Objective

- Assess the robustness of authentication mechanisms using “JWT tokens”.
- Verify the strength of password encryption through “bcrypt” implementation.
- Evaluate the effectiveness of session management using access and refresh tokens.
- Ensure role-based access controls to prevent unauthorized access to sensitive information

4.3. Test Plan and Result

5.3.1. Authentication and Authorization

- *Objective*: Evaluate the security of user authentication and authorization processes using JWT tokens such as access and refresh tokens.
- *Procedure*: Attempt to access various paths without proper authentication and ensure authorized access with valid JWT tokens.
- *Results*: The use of JWT tokens successfully authorizes users and restricts access to unauthorized paths.

5.3.2. Password Encryption

- *Objective*: Assess the strength of password encryption using the “bcrypt” library.
- *Procedure*: Analyze the encrypted passwords in the database to ensure the strength of the bcrypt encryption.
- *Findings*: Passwords are securely encrypted, and even database administrators cannot view the original passwords.

userID	name	emailId	password	organization	jobTitle	country	createdAt
35	dummy 4	temp0@gmail.c…	$2b$10$OcIeH1UAlFK86SMLA5.…	abc	abc	abc	2023-11-29T12…
36	dummy 4	temp1@gmail.c…	$2b$10$jiIeCgddixe80Gqp5pi…	abc	abc	abc	2023-11-29T12…
37	dummy 4	temp2@gmail.c…	$2b$10$TEJzBDtx4ffiBLJXRtF…	abc	abc	abc	2023-11-29T12…
38	dummy 4	temp3@gmail.c…	$2b$10$zIKx2td984cbWrTL3PX…	abc	abc	abc	2023-11-29T12…
40	dummy 4	temp4@gmail.c…	$2b$10$/mSO05h1D7loKMvjTA5…	abc	abc	abc	2023-11-29T14…
41	dummy 4	temp5@gmail.c…	$2b$10$wznmIhJuL0IBjaUg5o0…	abc	abc	abc	2023-11-29T14…
42	dummy 4	new0@gmail.com	$2b$10$TCPbUeGe5GRy6.Q3wRk…	abc	abc	abc	2023-11-29T14…
43	dummy 4	new1@gmail.com	$2b$10$ZL6wUuJjeXwlAfXabRo…	abc	abc	abc	2023-11-29T14…
16	dummy 1	dummy1@gmail.…	$2b$10$cYoUVSKk5YJeLe9QG5h…				2023-11-29T16…
17	dummy 2	dummy2@gmail.…	$2b$10$585XVdPE7pnJzEZBjI5…				2023-11-29T16…
18	dummy 3	dummy3@gmail.…	$2b$10$1gvqqQLe1dEIBaEHJzd…				2023-11-29T16…
47	priyesh	pt@gmail.com	$2b$10$uDFyWCS6VcdTB3HFJTQ…	DAIICT	Student	India	2023-11-29T17…
48	dummy 4	new3@gmail.com	$2b$10$fEJ968ryHCZwRaqeXSO…	abc	abc	abc	2023-11-29T17…
49	dummy 4	new4@gmail.com	$2b$10$uIsL12E64E4rR2N3q44…	abc	abc	abc	2023-11-29T18…
52	Noah	krishrupapara…	$2b$10$JWbomESOQUKHIuFSxSR…	DAIICT	Software Deve…	India	2023-12-01T10…
15	mihir_paija	mihirpaija21@…	$2b$10$zbl52XzDWRWMJtVjOb0…	DA-IICT	Student	India	2023-11-29T13…
61	dummy 4	new11@gmail.c…	$2b$10$DkA8HxAT/k5vaoRGsxS…	abc	abc	abc	2023-12-01T18…
59	dummy 4	new10@gmail.c…	$2b$10$8CUH99ZwcbfFbCTX/R/…	abc	abc	abc	2023-12-01T17…

5.3.2. Session Management

- *Objective*: Evaluate the effectiveness of session management through access and refresh tokens.
- *Procedure*: Login, close the browser, and attempt to re-login after 24 hours to verify session management.
- *Findings*: Cookies are effectively used for session management, allowing users to re-login within the specified time frame.

5.3.2. Role-Based Access Controls

- *Objective*: Ensure that role-based access controls prevent unauthorized access to specific functionalities.
- *Procedure*: Attempt to access functionalities outside the assigned role for example try to edit details and participate in the workspace, and task and meet and verify access restrictions.
- *Findings*: Role-based functionality is working from the backend but not properly implemented in the UI or frontend.

4.4. Conclusion

Security testing confirms that the TEEM website implements robust security measures. The use of JWT tokens for authentication, bcrypt for password encryption, and session management through access and refresh tokens contributes to a secure user experience. Role-based access controls effectively prevent unauthorized access to sensitive information, ensuring data confidentiality and system integrity.

5. Compatibility Testing

5.1. Introduction

Compatibility testing for the TEEM website focuses on ensuring a consistent and functional user experience across different environments, devices, and browsers. Note that the TEEM website is not designed to be responsive.

5.2. Objective

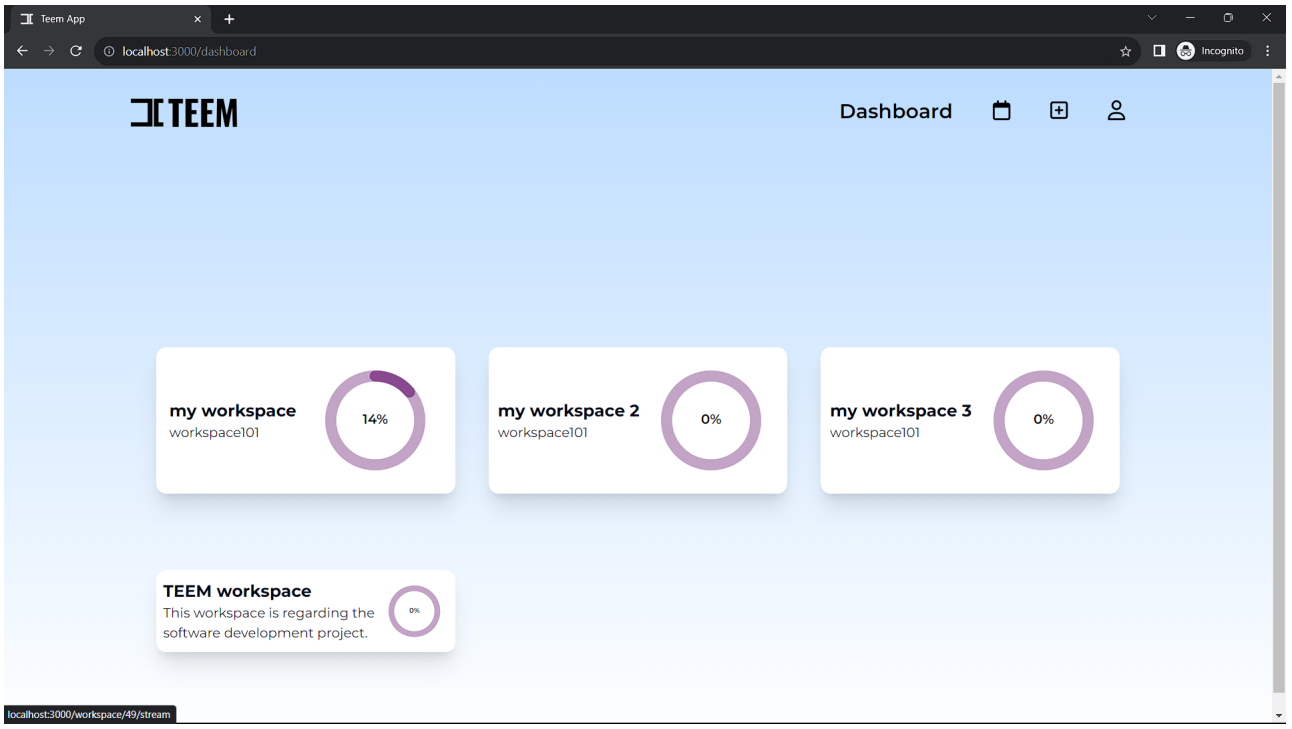
- Evaluate the TEEM website's compatibility across different browsers.
- Assess the functionality and user experience on different devices.

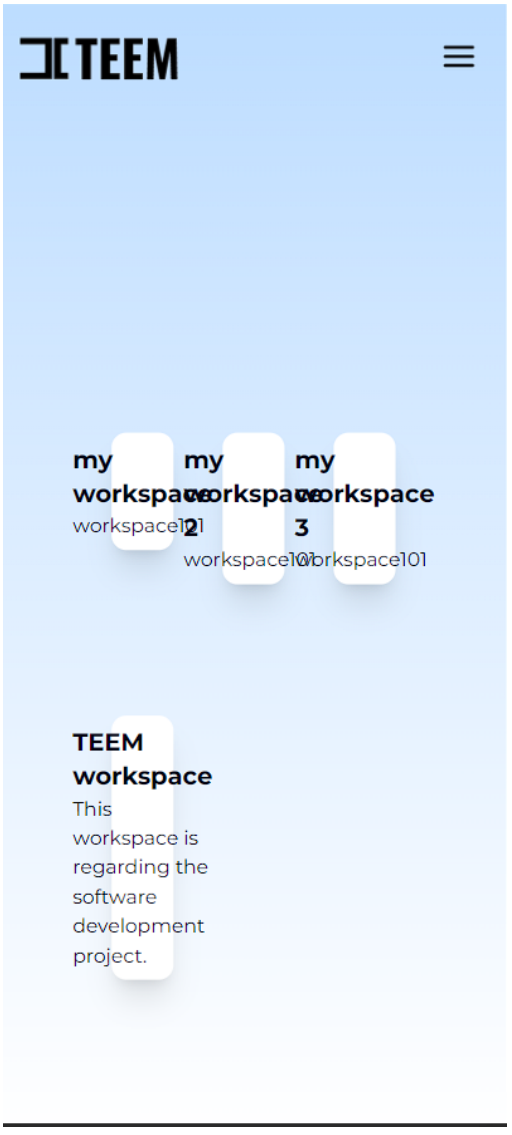
5.3. Target Environments

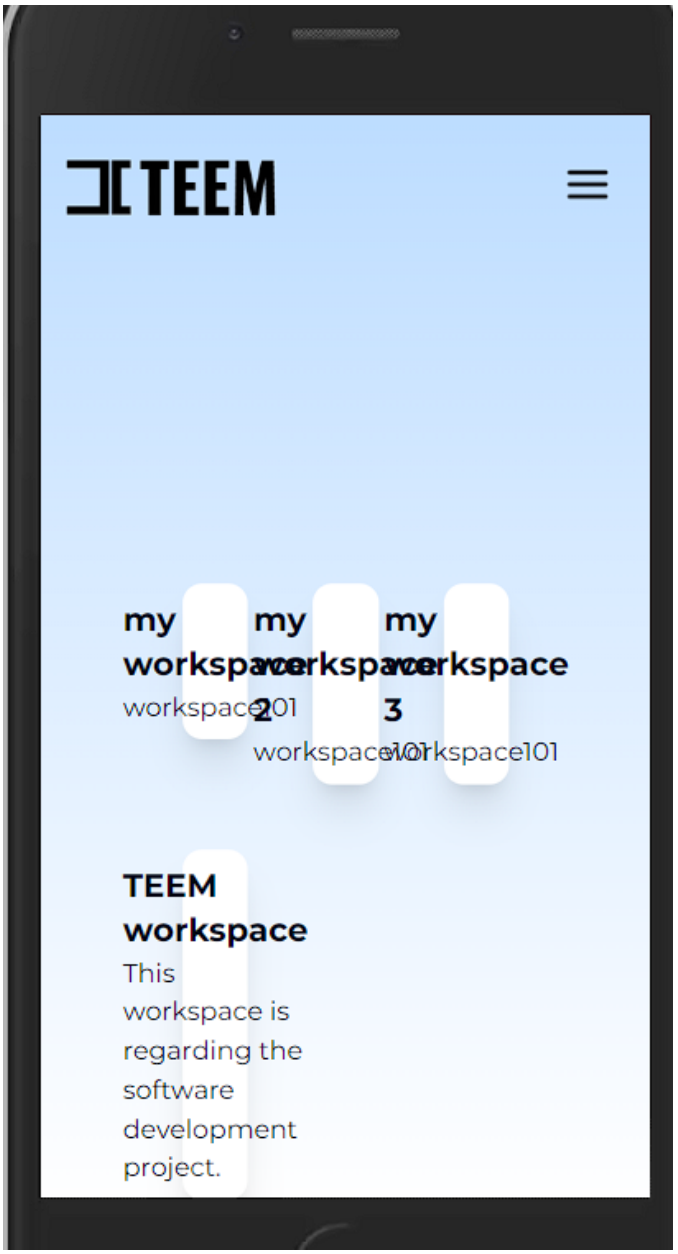
A. Browsers:
   - Microsoft Edge (latest version)

B. Mobile Devices:
   - Apple iPhone (iOS 13)
   - android

5.4. Result


Teem App
localhost:3000/dashboard
Incognito
TEEM
Dashboard
my workspace
workspace101
14%
my workspace 2
workspace101
0%
my workspace 3
workspace101
0%
TEEM workspace
This workspace is regarding the software development project.
0%
localhost:3000/workspace/49/stream


TEEM
my workspace
workspace101
my workspace 2
workspace101
my workspace 3
workspace101
TEEM workspace
This workspace is regarding the software development project.



5.5. Conclusion

Compatibility testing acknowledges the non-responsive nature of the TEEM website and aims to identify specific issues related to the designated browsers, operating systems, and mobile devices. While the website may not provide an optimized experience, ensuring core functionalities work across diverse environments is essential.

6. Usability testing

6.1. Introduction

Usability testing for the TEEM website aims to evaluate the user experience, accessibility, and internationalization features. The focus is on assessing how easy it is for users (stakeholders and teammates) to interact with the system, particularly in scheduling and managing team meetings.

6.2. Objective

- Evaluate the overall user experience of stakeholders and teammates.
- Assess the accessibility of the TEEM website for users with diverse needs.
- Verify the internationalisation features to ensure usability across different regions.

6.3. Test Plan and Result

6.3.1. Registration Process

- *Objective*: Assess the ease of registration for users.
- *Procedure*: Attempt to register using email ID and Google Auth, observing the registration flow and any potential challenges.
- *Findings*: The registration process is deemed perfect, providing a smooth onboarding experience.

6.3.2. Login Process

- *Objective*: Verify the efficiency of the login process.
- *Procedure*:
    - Access the login page.
    - Enter valid credentials.
    - Confirm successful login.

- *Findings*: The login process is flawless, ensuring secure and seamless access.

6.3.3. Create Workspace

- *Objective*: Confirm the functionality of creating a new workspace
- *Procedure*:
    - Navigate to the workspace creation page.
    - Input required information.
    - Verify the successful creation of the workspace.
- *Findings*: Creating a workspace is successfully implemented.

6.3.4. Edit Workspace

- *Objective*: Evaluate the functionality of editing a workspace.
- *Procedure*:
    - Access the workspace settings.
    - Attempt to edit workspace details.
- *Findings*: Editing workspace is not working or not properly implemented.

6.3.4. Create Task

- *Objective*: Confirm the ability to create a new task.
- *Procedure*:
    - Go to the task creation section.
    - Input task details.
    - Verify successful task creation.
    -
- *Findings*: Creating tasks is implemented successfully.

6.3.5. Edit Task Details

- *Objective*: Assess the functionality of editing task details.
- *Procedure*:
    - Access task details.
    - Attempt to edit task information.
- *Findings*: Editing task details is successfully implemented.

6.3.6. Edit Task Assignee

- *Objective*: Evaluate the functionality of assigning tasks.
- *Procedure*:
    - Access task assignment settings.
    - Attempt to edit task assignee

- *Findings*: Editing task assignee is not properly implemented.

6.3.7. Create Meeting

- *Objective*: Confirm the ability to schedule a new meeting.
- *Procedure*:
  - Navigate to the meeting scheduling section.
  - Input meeting details.
  - Verify successful meeting creation.
- *Findings*: Creating meetings is implemented successfully..

6.3.8. Edit Meeting Details

- *Objective*: Assess the functionality of editing meeting details.
- *Procedure*:
  - Access meeting details.
  - Attempt to edit meeting information.
- *Findings*: Editing meeting details is not properly implemented.

6.3.9. Edit Meeting Invitees

- *Objective*: Evaluate the functionality of editing meeting invitees.
- *Procedure*:
  - Access meeting invitee settings.
  - Attempt to edit meeting invitees.
- *Findings*: Editing meeting invitees is not properly implemented.

6.3.10. Request Meeting Reschedule

- *Objective*: Confirm if invitees can request a reschedule for a meeting.
- *Procedure*:
  - As an invitee, attempt to send a reschedule request.
- *Findings*: Invitees don't have the option to send a request for rescheduling a meeting.

6.3.11. Navigation and Pop-up Usage

- *Objective*: Assess the overall navigation experience.
- *Procedure*: Navigate through various sections of the website.
- *Findings*: Navigation is not optimal.

6.3.12. Workspace Progress

- *Objective*:Verify if workspace progress tracking is accurate.
- *Procedure*:
  - Access the workspace progress section.
  - Check displayed progress against actual progress.
- *Findings*: Workspace progress tracking is showing accurate results.

6.4. Conclusion

Usability testing revealed that the TEEM website excels in certain aspects, such as registration and login processes. However, critical issues were identified in the implementation of editing workspaces, task assignees, meeting details, and invitees. Additionally, the absence of an option for invitees to request meeting rescheduling and suboptimal navigation detract from the overall user experience. Addressing these issues is essential to enhance the usability and functionality of the TEEM platform.