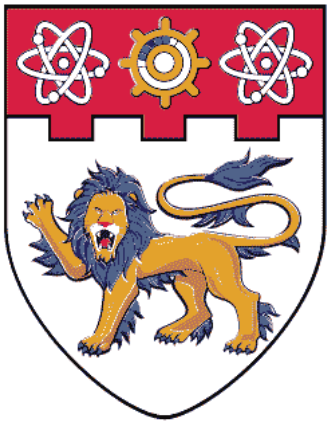

NANYANG TECHNOLOGICAL UNIVERSITY
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Drawdiculous

Test Plan

Version 1.1

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Document Change Record

Revision	Description of Change	Approved by	Date
1.0	Initial Plan	Lee Yu Jie Melvin	25 Oct 2021
1.1	Updated Features to be tested	Sannabhadti Shipra Deepak	30 Oct 2021

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1. Test Plan Identifier

Test Plan refers to this document as defined under the Software Configuration Management Plan (SCMP) for Drawdiculous project. Any changes or update to this test plan will require the version number to be updated according to the SCMP. The current version for this plan as of writing is version 1.0.

2. Introduction

The purpose of this test plan is to perform a formal testing procedure for the Drawdiculous application. The following sections will discuss the items and features that are to be tested, as well as their respective pass/fail criteria. This document will further discuss the approaches that are used to conduct the tests, including the required environment and resources. Testing responsibilities for each role defined in the project will also be mentioned here. For details regarding the test result, please refer to Test Cases and Test Coverage Report.

3. Test Items

The following are a list of functionalities that need to be tested for the current testing phase.

3.1. Account Functionalities

S/N	Features
1	Account Registrations
2	Account Login

3.2. Gameplay Functionalities

S/N	Features
1	Game room
2	Game play
3	Result

4. Features to be Tested

The following are a list of features that will be tested for the current testing phase.

S/N	Features	Severity
1	Create Account	High
2	Login	High
3	Forgot Password	Medium
4	Create Game Room	High
5	Join Specific Game Room	High
6	Join Random Game Room	High
7	Leave Game Room	Medium
8	Remove Player	Medium
9	Start Game	High
10	Draw with Tools	High
11	Use Chat Feature	Medium
12	Guess Word	High
13	Return to Home	Medium

5. Features Not to be Tested

All the features implemented in the ‘Drawdiculous’ application will be tested, as they all have medium/high priority and are necessary to run the application.

6. Approach

The current testing phase will comprise unit testing, integration testing, system testing as well as acceptance testing.

6.1. Unit Testing

Unit testing is conducted to ensure that each component unit of the system performs its functionalities as intended in the use cases. For example, during the gameplay, the user is able to draw on the respective canvas through hands or any stylus devices via the phone screen.

The tests will initially be carried out by the development team, especially the front-end team based on the list of use cases. Any errors found would immediately be fixed and pushed to development. After confirming that the basic functionalities are error-free, the Software Quality (SQ) team would further verify through possible bugs and error-prone cases.

6.2. Integration Testing

Integration testing is conducted once each individual unit is successfully tested error-free. Interfaces between different components are observed and tested to ensure the interactions between components are functioning as intended.

Incrementing testing will be carried out by the development team, with the guide of the SQ team. This type of testing continuously tests connecting interfaces once they are completed by utilising sub units, a segment of code that stimulates the responses of the connecting lower-level interfaces. This allows the testing team to perform a mock interface test from the early stages.

6.3. System Testing

System testing is conducted once the entire system is completed and supposedly ready to be pushed for production. This phase is also known as alpha testing. Unit and integration must be successfully done to ensure that the system is working perfectly according to the intended use cases as specified under the System Requirement Specification (SRS). Validation testing must also be done against the specifications specified in the SRS to ensure compliance to both functional and non-functional requirements.

The SQ team would finally carry out a series of final tests to identify any bugs based on the software application behaviour, software design, and the expectations of the end user.

6.4. Acceptance Testing

Acceptance testing is only performed when the entire system is ready for deployment. This phase is also known as beta testing. In this phase, general users without prior knowledge of the system's internals would be asked to test the system. Feedbacks would then be gathered from the test group to determine its performance in a realistic environment on whether the operation of the system is intuitive for the end-users. The completion of this phase would mark the end of the current testing cycle.

7. Item Passing Criteria

Phases	Requisite
Unit Test	Test cases completed and passed the expected outputs given the inputs.
	Individual features performed as intended as specified in the SRS.
Integration Test	Test cases completed and passed the expected outputs given the inputs.
	Individual features performed as they were prior to integration.
	All subsystems performed as intended as specified in the SRS.
System Test	Test cases completed and passed the expected outputs given the inputs.
	All subsystems and features performed as they were prior to the system test.
	System performed as intended as specified in the SRS.

8. Suspension Criteria and Resumption Requirements

During each phase of testing, unexpected situations may occur. This section defined the requirement for suspension and resumption of the respective testing phases in the event of a disruption.

8.1. Suspension Criteria

Testing should be suspended at all phase when, but not limited to:

- More than half of the systems are error prone;
- Single subsystem or features is found to be defective and the problem is known to be propagated throughout the remaining test cases;
- External services such as database or server are down;
- Data being compromised; and
- Requests from developers to suspend the test case for urgent fixes.

8.2. Resumption Requirements

Testing may only resume when all found bugs or errors are rectified, and/or when external services resumed. All tests done immediately prior to the suspension of the testing shall be marked fail or incomplete.

In the event where the suspensions are due to high severity problems such as, but not limited to data being compromised and half of the systems are error prone, a complete analysis report of the problem must be generated and approved, with the necessary actions taken to prevent a recurrence of such events prior to the resumption of testing.

9. Test Deliverables

The deliverables covered by this document includes:

- Test design document
- Test Cases
- Test Report
- Error Logs
- List of corrective actions taken

10. Environmental Needs

During the testing phases, Drawdiculous system must be up and running through the whole testing processes.

11. Responsibilities

The following table describes the role and responsibilities of each key member in the project.

Roles	Responsibility
Project Manager (PM)	● Oversees project progress ● Approves and executes project plan ● Assigns tasks and reports status of project to team members ● Manages and motivates team members ● Represents the team to the outside world
Lead Developer (LD)	● Overall technical lead, leads backend and frontend developer ● Responsible for technical aspects of product release ● Creates requirement specification document
Front-end Developer	● Designs user interface of application ● Developing features to enhance user experience ● Maintain brand consistency throughout design
Back-end Developer	● Integration of user-facing elements with server side logic ● Database integration and management ● Ensure high performance and responsiveness to requests from front-end
Quality Assurance Engineer & Manager (QAM)	● Ensures acceptable software quality ● Ensures proper implementation of the quality assurance process. ● Designs testing strategies ● Creates and manages test plan ● Verify software requirements ● Executes test procedures
Release Engineer & Manager (REM)	● Identify the configuration items ● Manage configuration records and release of product ● Create baselines and build and integrate changes for delivery.

12. Staffing and Training Needs

The list of blockages and test cases will be compiled by the lead developer and distributed via official communication means to each team member before each testing phase. The project manager (PM) and QA team will be working closely during this phase to ensure any issues encountered are quickly identified and discussed.

Training for new recruits would be handled internally by the respective member in the role specified in the above section for a week in order to allow the new recruits to get familiar with the tools before ramping up and getting involved in the testing phase.

13. Schedule

The testing schedule follows the Gantt Chart schedule approved by the project manager in the Project Plan. This ensures that there is sufficient time for the testing phase so that the project could be delivered on time.

In the event where testing could not be completed on schedule, the quality assurance engineer & manager (QAM) would liaise with the lead developer to check and compile a list of items, each of which contains, but not limited to the following:

- Severity of the issue.
- Detailed analysis of the issue encountered.
- Estimated time required to fix the issue.
- Personnel(s) assigned to fix the issue.

Any missing or incorrect information regarding any part of the testing phase is to be reported to the QAM immediately without failure. The QAM will follow up by investigating the issue, and provide a suitable action to resolve it.

14. Risks and Contingencies

This section covers the possible risks that might occur during the event of testing, as well as the corresponding contingency plan to mitigate the risk. The following shows the contingency plans for the corresponding significant risks related to this phase of testing.

Risk	**Contingency**
Lack of testing personnel	Any member within the organisation, except the developers, can help as testers during the alpha test. Public users may be invited to participate as testers during the beta test.
Improper communication	Testers are required to document the entire testing process regardless of how insignificant the action. This would be verified and validated later by the team. A template of the test would be provided for the test phase. The testers shall consult with the QAM for any queries related to the testing.
Lack of training/information	A test guide will be provided by the QAM prior to the testing which the personnel could refer to during the testing process. Should the information provided is insufficient, the tester shall consult with the QAM for more details about it.
Inadequacy of testing tools	The release manager is to ensure that the required resources are available for usage before the testing phase. Backups must be prepared whenever changes are made and shall be used in the event of damaged or missing resources.
Server down during testing	Testers are required to inform the QAM immediately. All tests conducted prior to the server down should render failed and must conduct a retest when the server is back running. This is to ensure that the server downtime is not due to error in coding.

15. Testing Approval

A full report regarding the result of the testing process is generated after each testing phase by the respective personnel. The following shows the role of each key member in varying and approving each test stage completion.

Roles	Test Phases	Approval Requisite
Lead Developer	Unit Testing & Integration Testing	Functionality tested and verified based on the requirement specified in the SRS.
Quality Assurance Engineer & Manager	Acceptance Testing	Application met the user's minimum expectation and acceptance criteria
Project Manager	System Testing	System is running properly and working correctly according to the previous requirements.
Release Manager	Review	All test results would be reviewed and scrutinised to ensure it comply with the standard, and test data are not tampered with.