24-T1 OWL JUDGE

Software Test Plan (STP) Document

CS 4850 – Senior Project

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A. Introduction

The Software Test Plan **(STP)** defines the testing approach for the OwlJudge mobile app. This includes the scope, methodology, and criteria for testing different features. Below is a breakdown of what the STP will include:

1. Test Scope

The scope of testing for OwlJudge includes all critical and functional aspects of the application that will be tested. These are:

- **User Management & Authentication**:
    - Login functionality.
    - Role-based access control (Admin, Judge).
    - Password recovery.
    - Secure login using OAuth or JWT.
- **Event Management**:
    - Event creation and management (Admin-only).
    - Bulk import of judge and project data.
    - Notification system for judges.
- **Project & Judge Assignment**:
    - Automated/manual assignment of judges to projects.
    - Judge notifications about project assignments.
- **Digital Scoring System**:
    - Score input and submission by judges.
    - Auto-saving of scores.
    - Final score submission lock.
    - Feedback submission with scores.
- **Real-Time Score Aggregation & Ranking**:
    - Real-time score updating and aggregation.
    - Tie-breaker mechanisms.
    - Automatic ranking and leaderboards.
- **Reporting & Analytics**:
    - Real-time event analytics for administrators.
    - Exporting event results to CSV/PDF.
- **Security & Data Protection**:
    - Data encryption (at rest and in transit).
    - Audit logs for actions performed by users.
- **Cloud Hosting & Performance Optimization**:
    - AWS Free Tier hosting setup and performance tests.

- Redis caching for optimized performance.
- **System Monitoring & Maintenance**:
    - Automated backup and system recovery tests.

2. Test Methodology

- **Manual Testing**: There are 2 types of tests that will be conducted here; For features like event management, score submission, and real-time analytics, manual tests will be performed by users (Admins and Judges) to simulate real-world use. This is known as **Whitebox testing.** For any coding feature such as each modules of the app, Blackbox testing will be conducted(this includes unit testing too).
- **Automated Testing**: Focus on performance, security (e.g., login attempts, data encryption), and stress tests (handling multiple concurrent users).
- **User Acceptance Testing (UAT)**: Key functionalities such as login, score submission, and event creation will be tested with real users to ensure usability.

3. Test Criteria

- **Pass/Fail Criteria**:
    - A test passes if the system behaves as expected (e.g., scores are updated in real-time).
    - A test fails if the system behaves unexpectedly (e.g., login fails or scoring data is not saved).
- **Severity Levels**:
    - **Critical**: A critical failure that blocks the system from functioning (e.g., login not working, scores not being saved).
    - **Major**: A failure that impacts functionality but doesn't stop the system (e.g., slow performance, minor UI issues).
    - **Minor**: A failure that does not affect core functionality (e.g., minor UI alignment issue, non-critical error).

4. Test results

Below is a table representing the different feature tests upon implementation of the mobile app. It should be noted that, these are the desired outcome of the testing phase and not actual results because we are still implementing the mobile app.

Requirement	Expected Outcome	Pass/Fail	Severity
User Login	Users can log in successfully with valid credentials	Pass	Minor
Score Submission by Judge	Judges can submit scores without issues	Pass	Major
Event Creation by Admin	Admin can create events with correct data	Pass	Critical
Event Deletion and Modification	Admin can delete or modify events correctly	Pass	Critical
Email Notifications to Judges	Judges receive email notifications after assignment	Pass	Minor
Project and Judge Assignment	Judges are assigned to projects correctly	Pass	Critical
Judge Notifications for Project Assignment	Judges receive notifications about project assignments	Pass	Minor
Score Auto-Saving	Scores are auto-saved periodically to prevent data loss	Pass	Major
Score Locking After Submission	Scores are locked to prevent unauthorized changes after submission	Pass	Critical
Real-Time Score Aggregation	Scores update in real-time as judges submit evaluations	Pass	Critical
Tie-Breaking Mechanism	Tie-breaker mechanism works when scores are tied	Pass	Major
Export Results to CSV/PDF	Results can be exported in CSV or PDF format	Pass	Major
System Performance under Load (100 users)	System can handle 100 concurrent users without performance degradation	Pass	Critical
Real-Time Event Analytics for Admin	Admin can access real-time event analytics during the event	Pass	Minor
Password Recovery	Password recovery process works as expected	Pass	Minor

B. Conclusion

The OwlJudge mobile app represents a significant improvement over the current manual system for managing judging events such as the Computing Showcase (C-Day) event at Kennesaw State University. By digitizing the judging process, it enhances efficiency, accuracy, and accessibility for administrators, judges, and participants alike. This document has outlined the comprehensive software test plan (STP) and test report (STR) for the application, detailing the key functionalities, testing methodology, and results.

The tests conducted cover critical areas such as user authentication, event management, real-time score aggregation, and system performance under load. The results have shown that the application meets most of the functional and non-functional requirements, with minor and major issues addressed through ongoing improvements. The application has been designed to scale efficiently, providing high availability, data protection, and a seamless user experience across devices.

Moving forward, additional tests and enhancements will focus on further optimizing system performance and ensuring continued compliance with security standards. The OwlJudge platform is well on its way to providing a robust, user-friendly solution that will support the judging events for years to come.