

CS 5200 - Database Management Systems

Project Proposal

Software Testing Management Platform

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Introduction

This project demonstrates a platform that streamlines manual testing for software development companies. Test writers can author reusable test cases with detailed steps, organize them under projects, and schedule test runs aligned with release cycles. Testers receive assigned runs, execute each prescribed step, and capture pass/fail outcomes and notes about the executed test. The users are also provided with a summary of the test cases that are run in a particular project or a test run.

Database Description

The database will contain the following:

1. **Organization:** An organization describes the company that is using the platform. An organization has a name, description, address and pin code.
2. **Project:** A project is a grouping done by the organization. They can be grouped according to the organization's discretion. Generally they are grouped based on the testing cycle or the actual software to be tested. A single organization can contain multiple projects at the same time. A project has a name and description.
3. **Test Case:** Describes a test along with its steps. This test case can only be written by a Test Writer. There can be multiple test cases in a project. A test case has a title and description.
4. **Test Step:** Describes a step to be taken in a test case. There can be multiple steps in a test case. A test step contains a detailed description and additional data that needs to be provided to the Tester. For example: password and user_name of the website.
5. **Test Run:** Test Run is just a grouping of a particular set of test cases. The test cases are grouped and assigned to a particular tester. The tester then marks the status of the test cases based on their test experience. A project can have multiple test runs and only 1 tester can be assigned to a particular test run. A test run contains a name and description.

6. **Status:** Defines a status for the test case in a run. By default, the statuses are PASS and FAIL but the test writer is allowed to add additional statuses. (For example: PARTIAL). Each test case in a run can only have 1 Status.
7. **User:** Describes the user using the test management platform. Currently, 2 user types are allowed. Test Writer and Tester. The Test Writer can create and edit projects, test cases, steps and test runs. A tester is not allowed to do any of that. A tester can only execute and mark the status of a test case in a run. A user has a name, employee code and a designation.

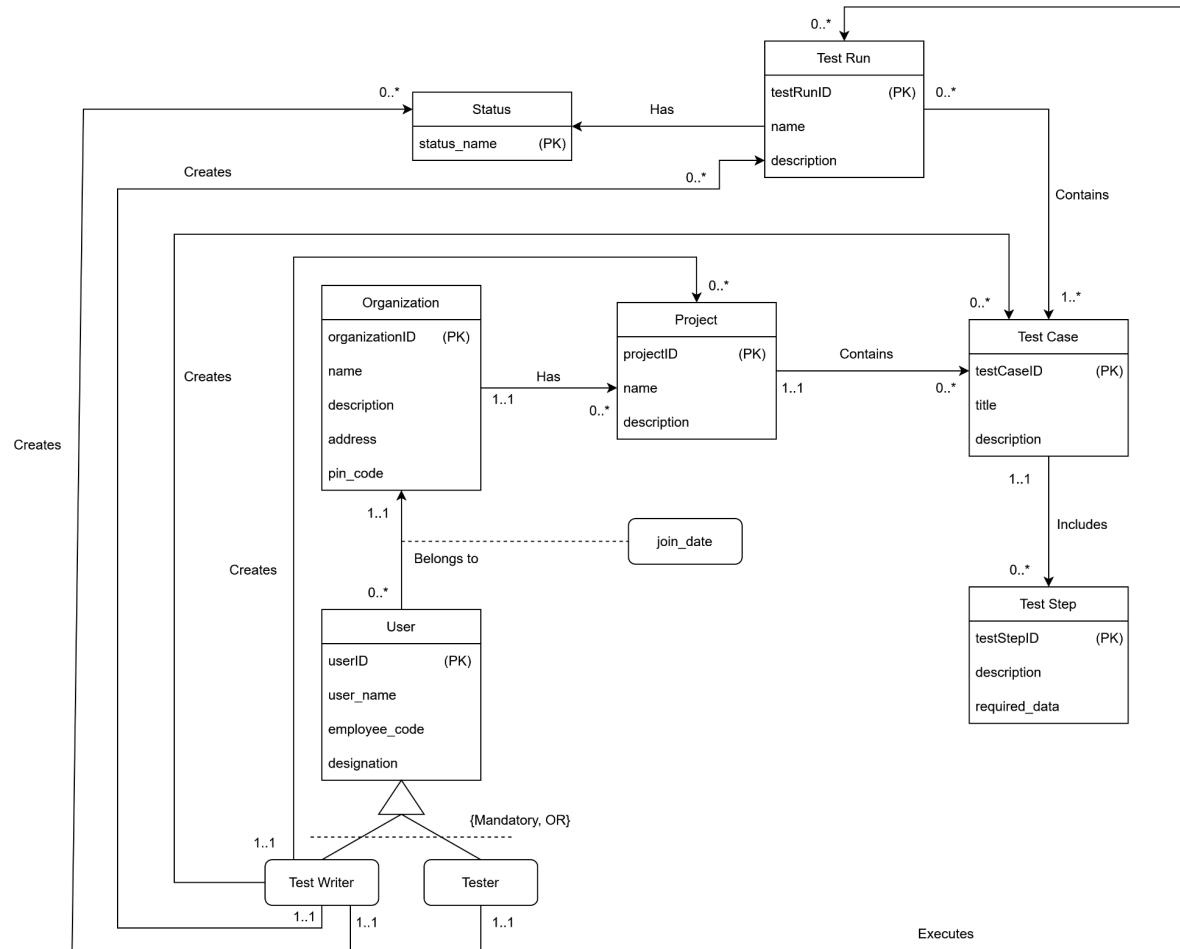
Software

I plan to use SQL to create and manage the database and I plan on using Node.js with Express (TypeScript) for the backend. Using TypeScript provides static typing that reduces runtime defects as opposed to JavaScript and still compiles to JavaScript as required. Requesting approval to use TypeScript due to these maintainability advantages; I can revert to plain JavaScript if necessary. For the frontend, I plan on using React to create a simple UI that displays all the data to the user and allows them to interact with the DB.

Domain Interest

I believe manual testing is essential for complex end-user software, accessibility, and products where human oversight is mandatory. Having worked on projects with QA efforts on large-scale systems, I have seen the productivity losses when manual testing lacks structure. This project offers an opportunity to codify best practices into a pragmatic tool that elevates manual testing outcomes.

UML Diagram



Activity Diagram

