**Bob’s Repair Shop v2**

 - End-to-End Billing System -

TECHNICAL DESIGN DOCUMENT

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**Purpose:**

The purpose of this document is to provide an overview of Bob’s Computer Repair Shop v2 application development. The application will provide end-to-end billing functionality and account management for Bob’s Computer Repair Shop. The application will be developed utilizing the MEAN stack tools (Mongo, Express, Angular, and Node.js)

Keys application requirements:

* Sign-in page
* Account registration
* Role management
* Forgot password page
* Security questions page
* Custom 404 and 500 page
* About Us page
* Contact us page
* Service repair page
* Invoice summary report
* Amount total by product graph
* Log files page

**Bob’s Repair Terminology**:

404 Page - Page Not Found error page

500 Page - Internal Server error page

Angular – a TypeScript-based open-source front-end web application platform led by the Angular Team at Google and other communities

AngularJS Material – is both a UI component framework and a reference implementation of Google’s Material Design Specification

APIs – (Application Programming Interface) is a set of routines, protocols, and tools for building software applications. Basically, an API specifies how software components should interact. Additionally, APIs are used when programming graphical user interface (GUI) components

Application Server - is a set of routines, protocols, and tools for building software applications. Basically, an API specifies how software components should interact. Additionally, APIs are used when programming graphical user interface (GUI) components

Express – or simply Express, is a web application framework for Node.js, released as free and open-source software under the MIT License. It is designed for building web applications and APIs

Heroku - used for deployment; a platform as a service (PaaS) that enables developers to build, run, and operated applications entirely in the cloud

Log Files - a history of actions executed by a database management system and recorded to avoid losses in crashes or hardware failures; also known as a *transaction log*

MongoDB - is a free and open-source cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents

mLab - Database-as-a-Service for MongoDB. mLab is a fully managed cloud database service featuring automated provisioning and scaling of MongoDB databases, backup and recovery, 24/7 monitoring and alerting, web-based management tools, and expert support. mLab runs on cloud providers Amazon, Google, and Microsoft Azure, and has partnered with platform-as-a-service providers

Node – (1) an individual computing device in a network; (2) a connection point in a data structure such as a linked list or tree

Node.js - is a JavaScript runtime built on Chrome's V8 JavaScript engine. Node.js uses an event-driven, non-blocking I/O model; npm

NoSQL– “non-relational” database that provides a mechanism for storing and retrieving data that is modeled in means other than the tabular relations used in relational databases

Relational Database – a database that consists of tables made up of rows and columns that are used to define relation between the contained data

TypeScript – is an open-source programming language designed for development of large applications and is a subset of JavaScript

**Bob’s Repair Shop User Personas**:



User Stories

**THE User (employee) -**

* As a user, I need to be able to access NodeQuiz using my employee ID number, so that I can test and record my overall scores.
* As a user, I need material to cover navigation and quizzes, so that I have thorough understanding of what types of questions will be presented.
* As a user, I need to be able to read through the *review presentations* at my leisure, so that I have time to study when it’s convenient for myself.
* As a user, I need to be able to read through and *submit the quiz* at my leisure, so that I have time to complete the quiz when it’s convenient for myself.
* As a user, I need to be able to access my test results and overall test scores, so that I can see what areas I succeeded in and what may need improvement(s).

**THE UI/UX Developer/Designer -**

* As a developer/designer, I need to create an employee\_ID field that accepts numeric values in relation to the user database.
* As a developer/designer, I need to develop a slide-show presentation, so that the user has material to review prior to the quiz assessments.
* As a developer/designer, I need to create a one-page quiz template that accepts radio and submit button input, so that the user can complete and submit their quizzes.
* As a developer/designer, I need to create a functionality that is able to calculate the amount correct/incorrect selections and output an overall score, so that the user can see what the results of their quizzes are.
* As a developer/designer, I need to add three separate quiz selections that are easy to locate and navigate through, so that the user understands how to access and use each section to its entirety.

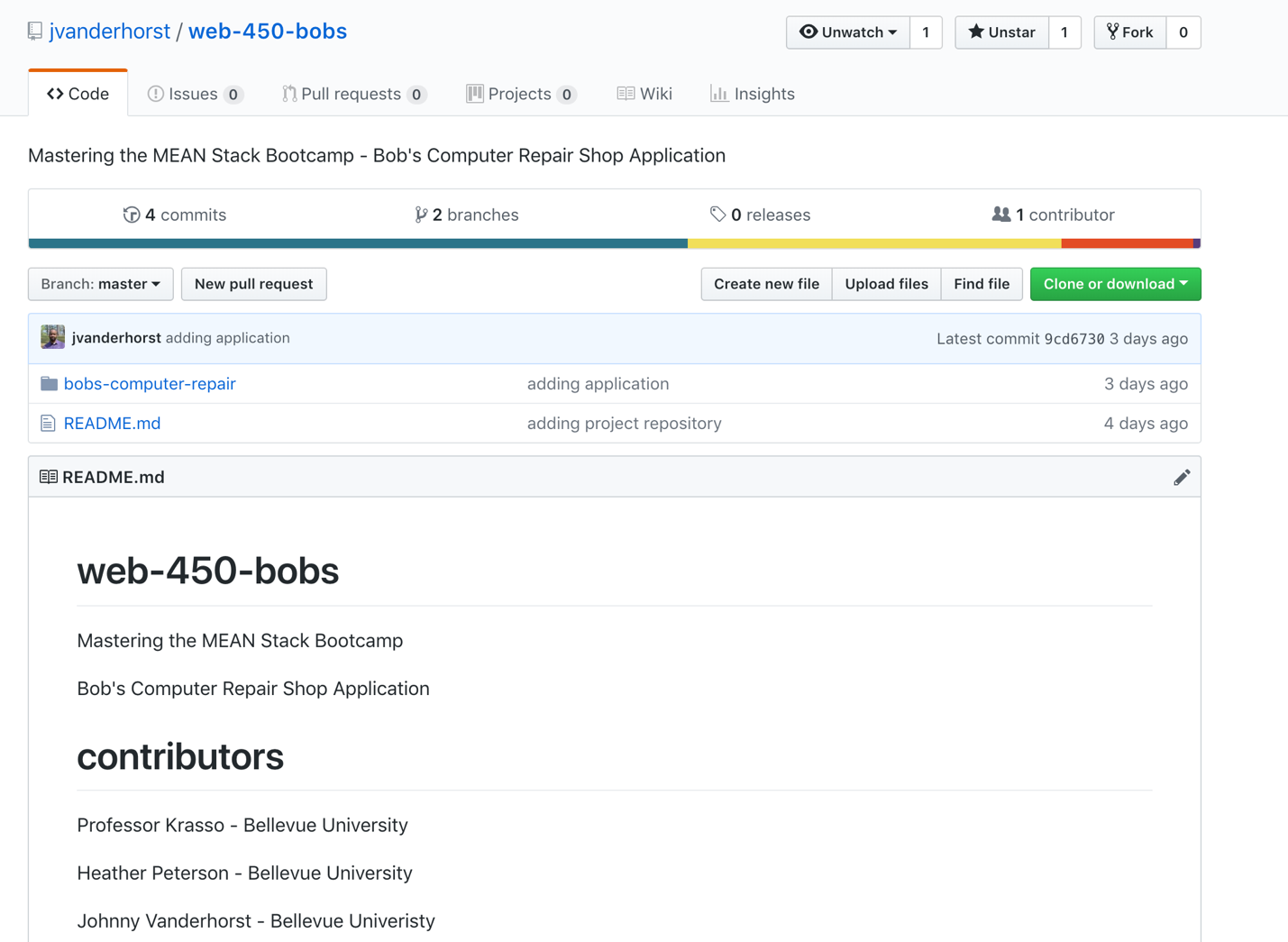
**THE Company/Site Owner -**

* As the company/site owner, I need to review and discuss all portions of the quizzes being presented, so that the employees are aware of the new application software.
* As the company/site owner, I need to verify that each employee\_ID is unique to that of the employee, so that there is accurate output information connected to the user.
* As the company/site owner, I need to be aware of the presentations being presented, so that I can address any questions or concerns the employees may have.
* As the company/site owner, I need to have an understanding of how the NodeQuiz application works, so that I can not only navigate others but also access quiz scores.
* As the company/site owner, I need to make sure all the application functions are working properly and that all quiz answers are matching with the user’s selection, so that there is an assurance that all I/O information is valid.

Time Estimations

|  |  |  |
| --- | --- | --- |
| ***As a UI/UX web DEVELOPER, I need to create an online computer*** | ***Work*** | ***Points*** |
| ***repair site so new/old users can initiate end-to-end transactions*** | ***Hours*** |  |
|  |  |  |
| 1. Add functioning login page that allows users to sign-in or sign-up to access. | 3 | 4 |
| 2. Create a registration page for new users to sign-up and automatically creates and updates information. | 3 | 4 |
| 3. Add a role management page that incorporates CRUD (preconfigured roles: standard and admin). | 8 | 10 |
| 4. Add a user management page that incorporates CRUD. | 8 | 10 |
| 5. Developing a Security Questions page with an input of at least 3 questions/answers. | 5 | 6 |
| 6. Developing a Forgot Password page that retrieves username and security question data. | 6 | 8 |
| 7. Develop custom 404 and 500 pages. | 2 | 2 |
| 8. Add external About Us, Contact, Service Repair, and Invoice Summary pages. | 8 | 12 |
| 9. Create an Amount Total by-product graph. | 4 | 5 |
| 10. Create a Log files page. | 5 | 8 |
| TOTAL HOURS: | 52 | 69 |
|  |  |  |
| ***As a UI/UX web DESIGNER, I need to implement easy navigation*** | ***Work*** | ***Points*** |
| ***so that users/admin can easily use/manage the online repair shop*** | ***Hours*** |  |
|  |  |  |
| 1. Create a service that is fast and convenient for users/admin. | 3 | 6 |
| 2. Implement responsive design so site can be viewed on multiple devices. | 1 | 5 |
| 3. Apply browsing services so users can easily navigate when searching. | 3 | 5 |
| 4. Display price of services clearly so there is clear understanding of costs. | 2 | 5 |
| 5. Identifiable external links so users can contact and view history purchases. | 1 | 5 |
| 6. Apply a word doc and images to the About Us Page. | 1 | 2 |
| 7. Create a drop-down list for security questions/answers. | 4 | 7 |
| TOTAL HOURS: | 15 | 35 |
|  |  |  |
|  |  |  |

GitHub Repository Setup



Prototypes

Business Rules

ORD Diagram

NoSQL Document Diagram (added Results collection)

NoSQL Data Structure