**Capstone Project Document**

This document outline shows you the information required for the capstone document.

1. Use this as a template for your own document.
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5. Explanations of the sections are in Blue color and should be removed from the document
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7. Bullets are good to use in your document when you are listing ideas

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## 

## Preface

## Purpose of Document

* This document is to provide information and reference to “High Five Star” web application development procedure. Found in the following sections are purposes of developing the application and business requirements that it will fill. It contains Use case and design diagrams as well as system requirements. Application architecture are illustrated as well as hardware and software requirements for development and deployment. Finally, project timelines are described in detail.

## Documentation Standards

* The term “Service Provider” will refer to any business/individual worker who provides work/services to be advertised on Hire Five Star.

## User Requirements

**Business Overview and Objectives**

Hire Five Star seeks to provide a platform to solve the problem of finding the best quality workers/services/companies and to hire them. The company seeks to implement a web-based interface for potential customers to use for free to log in and search for companies or individuals that provide a service that they are looking for. The interface is meant to be easy to use and provide a reliable means of finding rated services for hire. Conversely, the interface would charge a fee for Service providers to use the platform as a means to advertise their business and reach potential customers. The solution will result in a safe and effective way for both customers and Service Providers to conduct business.

## Project Overview

## Statement of the Problem

* There currently is no easy method of finding the best quality of workers or companies that provide a service and hire them.

**Project Scope**

* Provide web application that allows customers to search for services.
* Provide a means to compare different service providers.
* Assure the quality of work and payments for both sides
* Allow service providers to post relevant information about their services and pricing
* Ability to generate a contract between customer and service provider in order to ensure quality of work and agreed pricing is met
* Provide a reward system in the form of discounts for high volume users
* Application fee for service providers with monthly fees and percentage of commission from business obtained from application with 3 tier account system for service providers, Gold, silver, and bronze. Higher account tiers will show first in searches.

**System Environment**

* The application will be a web-based application providing and easy to use interface for both customer to seek out services and service provider to advertise and sell services.

**Current System**

* Current existing systems include web browser searching, word of mouth through personal connections and currently knowing a service provider.

**System Requirements Use Case Diagram** *Diagram

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###### **Use Case Descriptions and Scenarios**

|  |  |  |
| --- | --- | --- |
| **Use Case 1: Customer interaction with application**  **Actor description**:Any citizen who signs up as a user of the application and that is searching for specific services to hire a provider of said service. | | |
| **Actor Action** | **System Action** | |
| **1.1 - Login** – Customer will log into app via HTML form with username and password | **1.2**. App will Authenticate provided username and password and if user exists and password is valid, log user into Customer interface. | |
| **1.3 - Search for Services –** Customer will have ability to use search function to enter service name. | **1.4 –** will perform filtered search of requested services by matching words. Will also filter results based on Service Provider tier level and ratings. | |
| **1.5 Contact Service Provider-** will have option and means to contact service provider to initiate negotiations | **1.6 –** Will open chat style messaging system to connect customer and Service Provider | |
| **1.7 – sign contract -** parties will have means to send electronic copy of service contract and add digital signature | **1.8 –** Contract can be sent between parties in e-mail form for digital signature. | |
| **1.9 - Submit Review of Service** Provider – customer will have option to submit review of Service provider upon contract completion. | **1.9.1** – Will post review contents to Service Provider profile as such that it is visible in review portion of profile for customers to view. | |
| **1.9.2 - Receive Incentive Discounts for High Usage -** Incentive discounts will be awarded for users who hire more service providers through app. | **1.9.3 –** track hiring history of Customers in profile. Award incentive discounts based on number of successful hires | |
| **1.9.4 – Report Scam companies to Admin** can select option on Service Provider profile to “Report user”. | **1.9.5 –** on “Report User” selection will provide checkbox form of reason for reporting and send request to admin for investigation | |
| **Use Case 2: Service Provider interaction with application**  Actor description - Any worker or business owner that provides a service and wanting to advertise and sell their services on an efficient platform. | | |
| **Actor Action** | **System Action** | |
| **2.1 - Login** – Service provider will log into app via HTML form with username and password. App will Authenticate and will log into service provider interface | **2.2 -** App will Authenticate provided username and password and if user exists and password is valid, log user into Customer interface. | |
| **2.3 - Create Profile –** will have means to create profile with description of services, bio. May request assistance in account creation | **2.4 –** on profile creation will send account creation request to admin for approval and if approved will create account for Service Provider. | |
| **2.5 - Choose Tier Level –** choose tier level to increase visibility in searches. Gold, Silver and Bronze | **2.6 –** Assign tier level to account to indicate visibility level during searches. | |
| **2.6 - Receive communications from customers –** means to receive messages from customers to provide more information. | **2.7 –** notification of new messages in interface and chat style messaging system will be used for communication with customer for negotiations. | |
| **2.8 - Sign contract –** parties will have means to send electronic copy of service contract and add digital signature | **2.9 -** Contract can be sent between parties in e-mail form for digital signature. | |
| **Use Case 3: Administrator interaction with application**  Actor description – A Designated operator of the application that will provide a form of control of the application use. | | |
| **3.1 – Receive request for account creation –** will approve/disapprove new account request sent when Service Provider creates profile. On request of Service Provider, will aid in the account creation process. | | **3.2 –** will send notification to admin profile with Service Provider profile details for approval. On approval will generate new profile for Service Provider and store in DB. |
| **3.3 = Monitor accounts –** view Service Provider accounts andwill receive reports from customers reporting scam companies and will have means to delete accounts. | | **3.4 –** search function for finding Service Provider accounts and ability to delete fake accounts |

## Functional Requirements

* Clean, easy to use Web application interface.
* Allow users to create a profile as either a customer or a service provider
* One log in for all users but depending on profile status will direct user to appropriate interface (customer or service provider)
* Easy to use search option for customers to search for services
* AI virtual assistant (chatbot) to aid in customer user experience
* Direct messaging feature to message service provider for questions and to negotiate for services.
* Customer usage should be tracked to award discount incentives
* Service providers sign up should allow user to indicate tier level. Tier level upgrade at any time will be available. Tier level will dictate visibility.
* Customers will have ability to submit reviews of service providers if they have hired provider
* Service providers will be able to post description of their services and pictures of their work for advertising purposes
* Easy to use username and password reset should be implemented.

## Non-Functional Requirements

* User log in passwords will be stored in database using hash algorithm
* All HTML forms will be sanitized for exploitations including SQL injection and command injection attacks. Use known good libraries within development frameworks if necessary.
* Tier level of service providers will be a field in service provider table in data base. Search results will be sorted by tier level in the query.
* Reviews submitted by customers will be stored in own table with relationship to the service provider and review can be seen when viewing service provider profile in application. Reviews will be sorted by date submitted.
* Customer incentive discounts will be based on usage **(# of successful hires, not log ins!)** usage will be tracked in database table and incentive field will be calculated based on usage field.

## System Interface Requirements

* Use pre-built A.I virtual assistant to be embedded in application (to be chosen)
* Payment gateway service API (Paypal or similar) to handle transactions between customers and service providers

## Maintainability and Administration Requirements

* Payment methods will have to be monitored and modified on ad-hoc bases to meet PCI requirements, user/industry standards etc.
* U.I will be updated to continue to provide modern user experience based on current industry standards. A modern front-end framework with little chance of deprecation in near future should be chosen to increase lifespan of application without having to perform a complete re-write of codebase.
* Will have administrator log in to handle false profiles or misuse of platform.
* Easy to use username and password reset should be implemented.

## Usability Requirements

* Expected to have varying levels of experience of users
* Focus will be to have a clean and intuitive user interface. Styles and fonts should be easy to see. All functions should be accessible with minimal “clicks”
* For inexperienced users, the AI chatbot should be very intuitive and easy to use to aid in use of the platform.

**Interaction Sequence Diagrams**

*A picture containing timeline

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**State Machine Diagram**

**Diagram

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**Activity Diagrams**

Customer Activity Diagram Service Provider Activity Diagram

Diagram

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Admin Activity Diagram

Diagram

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## System Design

Layered Architecture

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Hardware Architecture

* The application frontend will run on client’s personal computer in the browser using modern frontend framework. The application backend will run on webserver with a database configured locally on same server. The application frontend will send http requests to backend on web server and receive a json response with requested data.

*Diagram

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**Hardware Platform**

* Development - X64, 2.8Ghz 4 core processor, 8 GB Ram 250GB SSD storage
* Production – 1.6 GHz CPU, 1.75 GM RAM, 1 x 40 GB HDD

Software Platform

* VS Code (or similar IDE)
* Nodejs
* ExpressJS
* react v 17.0.2
* react-dom v 17.0.2
* Babel
* MongoDB
* Bootstrap for React (CDN) – (May also use Semantic U.I and/or Material U.I)

Interaction Model

Log in and sign-up page

A picture containing text, businesscard

Description automatically generatedGraphical user interface

Description automatically generated

Customer and Service Provider Home pages

Graphical user interface, website

Description automatically generatedA picture containing table

Description automatically generated

Service Provider Profile creation/Update profile page and contact page

Graphical user interface, text, application

Description automatically generatedGraphical user interface, application

Description automatically generated

Font – Montserrat

Colour scheme

Login/sign-up/contact – right div – Linear gradient #57A9C2 - #329F3D

NAV Bar - Linear gradient #329F3D - #57A9C2

Customer and Service Provider Home pages – body background - #F2F6F6

Service Provider Profile form - #57A9C2

Buttons - #EA6C6C

Font color – white

Login/Sign-up/contact page picture

- Text, letter

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Persistence Model

* Will utilize ORM in backend framework or if using NoSQL type database (i.e., MongoDB) will use appropriate query structure as per database.

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## Project Management

**Schedule**

###### Project start meeting 11/21/21 11/22/21

###### Project Capstone Document 22/11/2021 30/11/2021

###### Use Case Diagram 1/12/2021 3/12/2021

###### Interaction Sequence Diagrams 2/12/2021 4/12/2021

###### State Machine Diagrams 3/12/2021 5/12/2021

###### Activity Diagrams 4/12/2021 6/12/2021

###### Interaction Sequence Diagrams 5/12/2021 7/12/2021

###### AdminActivityDiagram 6/12/2021 8/12/2021

###### ServiceActivityDiagram 7/12/2021 9/12/2021

###### CustActivityDiagram 8/12/2021 10/12/2021

###### Deployment diagram 9/12/2021 11/12/2021

###### Coding meeting and minutes 10/12/2021 12/12/2021

###### start of coding 11/12/2021 13/12/2021

###### Management 13/12/2021 18/12/2021

###### Git and GitHub 18/12/2021 31/12/2021

###### Merv system research 31/12/2021 8/1/2022

###### Flask and django research 8/1/2022 12/1/2022

###### miscellaneous research 12/1/2022 25/1/2022

###### 2 weeks to close project 25/1/2022 7/2/2022

###### Testing 7/2/2022 12/2/2022

###### Presentation 12/2/2022 28/2/2022

## Team Configuration

###### Stephen Church – Team Lead/Backend Developer

* Robert Devries – Frontend Developer
* Behnam Hossien – Frontend Developer

(Recommend all team members rotate through positions in order to gain necessary experience in all areas of project development)

## Project Standards and Procedures

* Regular team meetings will occur via Slack group chat in 1–2-week intervals
* Project is stored on remote repository on GitHub
* All team members shall create local repositories on there own personal development computers and will link to remote repository. Team member is to ensure that regular Push/Pulls are conducted to ensure local and remote repositories are kept as up to date as possible.
* All team members are responsible for creating/working in local branches on new features. Once feature work is complete a pull request will be created in remote repository with remaining team members selected as reviewers for approval. Once all parties have approved of changes, the branch will be merged with main.

## Glossary

*[Place on a separate page of its own]*

###### definitions of **technical** terms used in this document. Some common terms might have project-specific meaning and so should be described here also, e.g. “manager” has many meanings, but if it means something specific in your project describe it to avoid ambiguity

## 

## Index

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**Appendix A: Data Dictionary**

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*A data dictionary should describe each of the classes in your system, including its attributes, operations, associations, etc. It should include things like valid ranges for attributes, e.g. must not be null, must be between 1 and 10, etc., and a general description of what operations are intended to do. It is intended to be a resource that a developer can go to during project implementation if s/he needs more information on what a specific class is supposed to do in the application (and how), i.e. it’s supposed to reduce ambiguity in the design.*

*There is no standard format for a data dictionary so we recommend using one of two approaches:*

* *Use JavaDoc to create formatted descriptions of your classes, and their contents, e.g. describe the responsibilities of each class, what it’s attributes are (including things like data types, valid ranges for values, etc.), what operations each one will have and roughly what each operation should do. An advantage of using JavaDoc is that it is easy to auto-generate the data dictionary content periodically as the project progresses*
* *Create a table in Word with appropriate columns and enter the data dictionary information into that. This is simple but the content cannot be auto-generated and must be manually update*

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[**https://learning.oreilly.com/library/view/software-engineering/9789332558298/xhtml/Chapter006.xhtml#h5-001**](https://learning.oreilly.com/library/view/software-engineering/9789332558298/xhtml/Chapter006.xhtml#h5-001)