Mobile and Web Timecard

DESIGN DOCUMENT

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List of figures/tables/symbols/definitions

N/A

NOTE: This template is a work in progress. When in doubt, please consult the project plan assignment document and associated grading rubric.

1 Introduction

1.1 ACKNOWLEDGEMENT

Genova Technologies has provided and will continue to provide significant guidance in the form of technical advice, tools, and financial aid. Bi-weekly meetings are held to review the progress of the senior design team, and more frequent meetings will likely be necessary with our technical lead from Genova, Tom Sidebottom, to continue answering our technical problems. Genova has set the senior design team up with accounts in the Agile tool, Rally, to allow us to document our progress in a uniform way. Genova has committed up to $20,000 in financial support to aid in the completion of the project.

1.2 PROBLEM AND PROJECT STATEMENT

The problem we are aiming to solve with this project is Genova Technology's lack of user-friendly and well-liked method to track time spent on projects. Genova previously had a time card which most employees enjoyed using. A change in the accounting software used by Genova left this old time card incompatible with the new accounting software. Because of this incompatibility Genova was forced to go back to an old and disliked time tracking application. Genova hopes the senior design team can develop an iOS, Android, and web time tracking application that is compatible with the accounting software and user-friendly.

The senior design team will solve this problem by developing an iOS, Android, and web time card application. We will accomplish this by utilizing industry standard software development tools and an Agile development methodology set up with 2-3 week long development sprints, the tool Rally will be utilized to implement this Agile methodology. Data will be stored and retrieved to and from a database server hosted via Amazon Web Services. The back end code base will be built on a linux server and coded in Java. The front end will be coded differently depending on whether it is the iOS, Android, or web app.

1.3 operational Environment

Since this is a software project the operating environment is fairly straightforward and we don't have to worry about any physical conditions. The iOS application will run on an Apple iOS device, the Android application will run on an Android device and operating system, and the web app will run on a standard web browser.

1.4 INTENDED USERS AND uses

The end users for this product will be the employees of Genova Technologies as this is an internally used application. The mobile and web time card application must provide easy and user-friendly functionality to allow the Genova employees to quickly and efficiently track their time spent on different projects. Additionally it must provide a simple way for the administrators to login to the application to review and approve the timecards. If a

timecard is denied, there will be an option to add a note describing why it was denied, and the timecard will go back to the employee to be changed and resubmitted. Once timecards are approved the data must be exported to the compatible accounting software so Genova's customers can be properly billed for their time.

1.5 ASSUMPTIONS AND LIMITATIONS

<u>Assumptions:</u>

- Application will only be used by Genova employees and therefore the maximum number of concurrent connections will be limited number of employees and consultants
- Users will not access time-card application from multiple platforms (on the same account) concurrently
- Multiple language support not necessary
- Voiceover support not necessary
- Application will not be used outside the United States

<u>Limitations:</u>

- Time-card application will have a minimum of feature parity with old system
- Time-card application must run natively on iOS and Android operating systems
- Server costs will be covered by client

1.6 EXPECTED END PRODUCT AND DELIVERABLES

The end product will be an iOS, Android, and web application which will store and retrieve data to and from a server hosted via Amazon Web Services. This application will provide an easy and user-friendly way for Genova's employees to track their time spent on different projects. Once the timecards have been completed the administrator will review the timecards and have the option to approve or deny them. Once approved the timecard data will be sent to the accounting software so the customer can be properly billed.

The mobile and web timecard will be completed by the end of April 2018.

2. Specifications and Analysis

2.1 PROPOSED DESIGN

The web and mobile timecard is implemented using a client-server application architecture. The application server provides the clients (Web, iOS, Android) with the data through a REST API. The application server communicates with the database to retrieve the data requested from the clients. The server is implemented with a Java application server deployed on AWS EC2 and the database on AWS RDS. The clients make requests to the server for specific data using HTTP requests following the REST protocol.

The data is returned to the clients in the form of JSON which is then parsed into a useable form and presented to the end user.

2.2 Design Analysis

We have not gotten to a point where we have done anything that works or doesn't work. We are still in the process of covering all the groundwork such as creating user stories and suggesting database designs. They are having us go extremely slow, which is something we have observed and would like to move more quickly in the remaining part of the semester. It's good that we have set a strong foundation, but in doing so we haven't actually started doing any applicable programming or testing of the project.

3 Testing and Implementation

3.1 Interface Specifications

Our process revolves around test based development. Our current efforts consist of creating tests and use cases that our software may be built around.

3.2 Hardware and software

We are using software called Rally to create user stories. We will create and use imagined situations to be the tests/tasks that our software must be able to perform. Rally will therefore serve as the place where we create and log our progress in completing high level goals for our testing phase.

We have not made a final decision on what software we will use for testing our applications. There are multiple options for testing each that we are looking into.

The Android application can be tested with JUnit tests. These are common tests for Java applications and can be easily created to test our code. There are also additional testing tools that we might use, such as Espresso. These might work better, as they are Android specific and may allow us to create better tests.

The web application will have multiple parts to test, using different languages. Currently, Selenium looks like it would be the best tool for us to test the website.

3.3 Process

N/A

3.4 Results

There has been no testing yet due to no functional parts of the application being created at this point in time. Everything we have done until now has been theoretical and meant to improve the team members understand and knowledge of the project and the process.

4 Closing Material

4.1 Conclusion

So far we have set up Rally accounts and created user stories for the project, been in ongoing discussions on how the overall design process and project outlook will look with Genova, and began creating database requirements and relationships. The main goals we have set for this semester is to be able to really follow and understand the Agile process and and to have a functional admin side of the app working on at least one type of device. Genova is being very hands-on in their approach and setting the timeline for the project the way they would like it done, so while we discuss with them what should be done and how so, they call the shots in terms of what the next steps will be.

4.2 References

We have referenced the previous time card system's manuals provided by Genova. They show how to use the system on the user end and admin end. This has given us a good idea on what we need to implement.

4.3 Appendices

None applicable at this time.