Mobile and Web Timecard

PROJECT PLAN

sdmay18-14
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1 Introductory Material

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 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 style working in two week iterations. The iterations allow the team to deliver the user's highest priority needs first and facilitate adaption to change, so every possible need the users may have does not need to be planned ahead of time. Data will be stored and retrieved to and from a database server hosted via Microsoft Azure. The backend codebase will be built on a Microsoft application server and coded in C#. The frontend will be coded differently depending on whether it is the iOS (Swift), Android (Java), or web app (Javascript).

1.3 Operating 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 Intended 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

Assumptions:

- 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

Limitations:

- 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 other 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 Microsoft Azure. This application will provide an easy, 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/client can be properly billed.

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

2 Proposed Approach and Statement of Work

2.1 Functional requirements

The Genova time card should be accessible through Android devices, iOS devices, and through a web portal. It must be able to log times related to the projects worked on and

any notes the developer might have. The admin features will be limited to the web application.

2.2 Constraints considerations

The time card should mirror the design from Genova's previous time card. The database should be quickly accessible and simple to use.

All coding standards will follow guidelines for their respective coding languages and abide by IEEE standards. No unethical practices will be followed and client data will not be shared.

2.3 Technology considerations

iOS design requires the use of compatible Apple systems. Designing the iOS time card will force the team to delegate work to those with the hardware capable of running xcode. This may pose issues with cross-platform communication. Similar coding styles should allow for easier integration across multiple platforms.

2.4 Safety considerations

All work performed is digital and presents no physical hazards to any party involved.

2.5 Previous Work and Literature

There are hundreds of similar time card systems that companies use. Genova had a previous system, but due to software updates it was no longer compatible. They provided the design notes on source material of their previous time card system to help guide us. There are other options available to Genova, but they would rather have their own in-house software that they can control more and change as they please. Because of this, other software programs are inherently less efficient for them.

Some disadvantages of Genova's current timecard solution is that it is not liked by most employees and is less intuitive than their previous systems. They also do not have much control over their existing solution since they did not develop it themselves. The other disadvantage of the current system is that it is only accessible via the web. Our solution is a mobile-first design approach that improves ease of access and user experience.

2.6 Possible Risks and risk management

The largest concern that may slow down the project is knowledge of the tools we have. Not all of us are experts in iOS/Android development, server and database management, web development, etc... Other than that, with the project being entirely software built, there aren't any major concerns.

2.7 Project Proposed Milestones and evaluation criteria

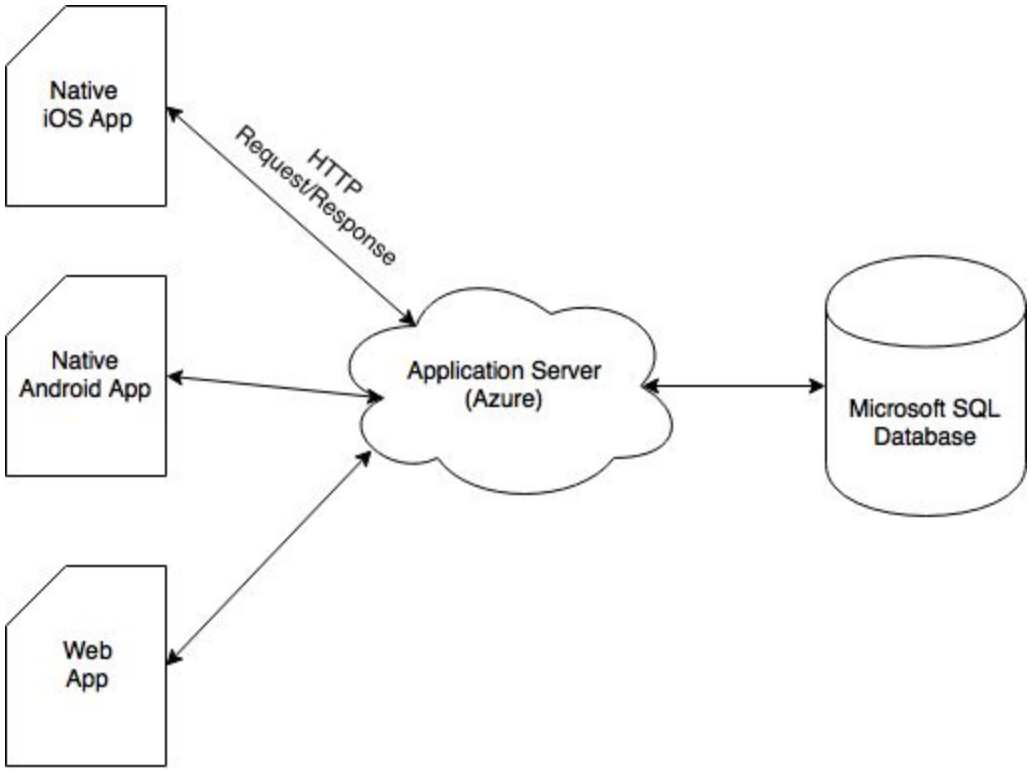
Android functionality, iOS functionality, server and database functionality, and Web service functionality are the main milestones. We will be testing that they work as

intended by Genova, that they work with the other parts of the project, and that they work with Genova's systems overall.

2.8 Project tracking procedures

We will be using a service provided to use by Genova called Rally. We can have a list of user stories that need to be worked on and assigned in one section, what is being worked on and by who on another, and then what has been completed and by who in the final section. Genova will continuously track that we are using and updating Rally and hold us accountable for any people who are not pulling their weight.

2.9 Objective of the task



Our end goal is to have a software product in the form of an app. It will be multiplatform so that any Genova employee can use it. The client applications will interface with a Microsoft application server hosted on Azure through a REST API. The application server will process the client requests and retrieve the necessary data from the SQL database and send it as a response to the clients. The clients will then process the response data and present it to the user.

2.10 Task approach

The project will be broken down into tasks or user stories organized by the tool Rally. Each task will be a single feature of the overall application (i.e. Design database tables and

relationships, etc.). Each user story will be assigned a point value that correlates to the amount of time a task is estimated to take.

2.11 Expected Results and Validation

By the end of the spring semester, we expect to have a working time card system working on iOS, Android, and Web and have it available for Genova employees to use.

We are expected to create the fully functional, multi-platform electronic time card system for Genova's company use. Genova employees will be able to clock in and out through the app on iOS and Android devices as well as online. Our solution will be confirmed as working when it is able to be integrated into their internal systems fully functional and without causing any issues with other systems they have in place.

3 Estimated Resources and Project Timeline

3.1 Personnel effort requirements

Include a detailed estimate in the form of a table accompanied by a textual reference and explanation. This estimate shall be done on a task-by-task basis and should be based on the projected effort required to perform the task correctly and not just "X" hours per week for the number of weeks that the task is active

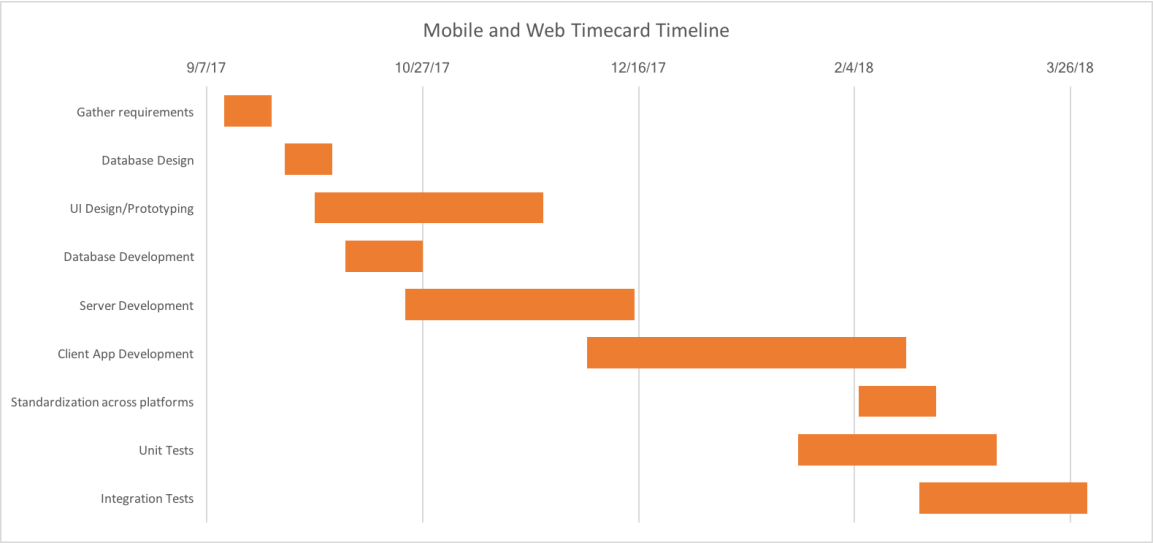
3.2 other resource requirements

- Previous iteration design documents
- Microsoft Azure database and application server
- Android Studio
- Mac computer with Xcode

3.2 Financial requirements

The financial requirements consist of Microsoft Azure monthly usages costs for server and database as well as any equipment necessary to test the time card system. Through the use of a free development tier, the financial requirement is estimated to be very small during development and only slightly larger once application is deployed to production. See details for Azure pricing here.

3.3 Project Timeline



The requirements for the project must be known before any work can begin. Once the requirements have been defined, the database is designed. Once database design is completed, development on the database can begins. The UI design and prototyping for the client applications starts shortly after database design and will continue until client app development starts. Server development starts immediately after the database is setup. Client side app development cannot start until a majority of the server development is complete. Near the end of client app development, testing phases will begin, both unit and integration tests. There is also a period to ensure standardization across the various client applications.

4 Closure Materials

4.1 Conclusion

After Genova's previous time card system starting causing conflicts with the rest of their systems from an update they switched to a less desirable application to track the hours spent on projects. As a software company, they would like to develop their own time card system again that will continue to cooperate with their other systems. This new application should be accessible on iOS, Android, and other web devices. To accomplish this, our team is using a service called Rally to create an action tracker that we use to list out all the steps needed to complete the project through the guidance of Genova's teams. When completed, Genova will have overseen the project throughout its development and have approved the process.

4.2 References

4.2 Appendices