Software Project Management Plan: Individual Project

Revision: Version 1.0

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Preface: Developing a Cryptocurrency Exchange

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1. INTRODUCTION

1.1 Project Overview

Cryptocurrency is a currency that is digtialize in which it can be used to buy goods and services. Cryptocurrency is a growing phenomenon that can change how our form of payment and economy can impact our future in the next couple years or so. Cryptocurrency provides a secure and fast way to do transactions without the risk of having data being pirated. Also, it provides people that live around the world to trade freely across countries. This creates a level of economic equality if cryptocurrency is adopted around the world. The goal for this project is to develop cryptocurrency exchange to allow users to buy and trade cryptocurrency.

For this cryptocurrency exchange application, it will allow them to see the cryptocurrencies that the cryptocurrency exchange has to offer. Also, the application will also have other features such as seeing real time market data from their account and the account balance based on what cryptocurrency that they have invested in. The application will have a log-in system so other users will not have unauthorized access to their accounts.

1.2 Project Deliverables

- Source Code
- Milestone Review per Schedule
- Use Cases
- User Requirements
- System Test Procedure
- SPMP

- Powerpoint Presentation

1.3 Evolution of the SPMP

Version	Primary Author(s)	Version Description	Date Expected
Draft	Alexander Bautista	Initial draft that has all components filled out	6/28/2021
Final	Alexander Bautista	Final draft is the completion of the draft with all components of the SPMP completed and updated	7/23/2021

1.4 References Materials

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- https://computersciencesource.wordpress.com/2009/11/22/year-2-software-engineering-use-case-diagrams-descriptions/
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- https://www.digitalocean.com/community/tutorials/how-to-make-a-web-application-using-flask-in-python-3
- https://sloboda-studio.com/blog/the-guide-to-the-cryptomarket-how-to-develop-your-own-cryptocurrency/
- https://flask.palletsprojects.com/en/2.0.x/
- https://mrjbq7.github.io/ta-lib/

1.5 Definitions and Acronyms

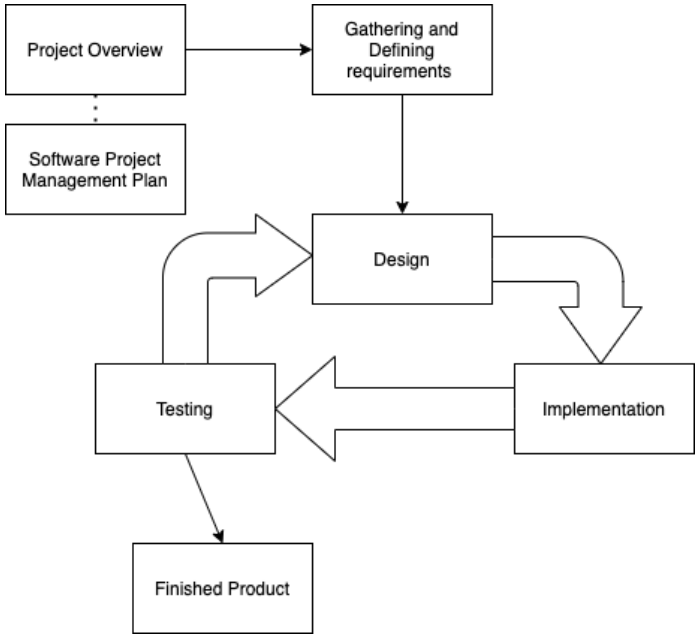
- API (Application Programming Interface) - Aa software intermediary that allows two applications to talk to each other
- ETH (Ethereum) - A decentralized, open-source blockchain with smart contract functionality. Ether is the native cryptocurrency of the platform
- Limit Buy - An order to buy or sell a stock with a restriction on the maximum price to be paid or the minimum price to be received . If the order is filled, it will only be at the specified limit price or better. However, there is no assurance of execution
- Market Order - An order to buy or sell a stock at the market's current best available price. UI (User Interface) - The space where interactions between humans and machines occur.
- SPMP (Software Project Management Plan) - A formal document that defines how a project is going to be carried out

- USDC (US Dollar Coin) - A digital stablecoin that is pegged to the United States dollar and runs on the Ethereum, Stellar, Algorand, Hedera Hashgraph and Solana blockchains
- Ta-Lib - A-Lib is widely used by trading software developers requiring to perform technical analysis of financial market data.
- Flask - A micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries.
- NumPy - A library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.

2. PROJECT ORGANIZATION

2.1 Process Model

The early stages of the project will focus on planning and gathering the requirements of application needs, such as having a buying and selling crypto functions. After gathering and defining each requirement, we start a cycle of designing and implementation to make sure the application is running smoothly and the features of the applications are functioning for the user end.



2.2 Organizational Structure

2.3 Organizational Interfaces

- No subcontractors.
- Using Heroku as a hosting platform for the website.

Name	Role and Responsibility
Alexander Bautiata	Project Manager - Develop and plan out the

	tasks and assignments that are needed to complete the tasks. Contact project advisor about any problems or updates with project
	Designer - Design the application and define the features that are needed for the application. Also, decide which tools that are needed to create the application
	Developer - Implement the design and include all features and functions that are needed in the application. Develop the user interface and make sure it is running.
	Tester - Testing and documenting any bugs or problems that the application has or
	Documenter - Develop the manuals that are needed for the application and update any documents if needed
Rebecca Broadwater	Project Advisor - Oversees the project and deals with any inquiries through the project process.

2.4 Project Responsibilities

2.4.1 Responsibilities of Project Manager

- Develop the Software Development Plan
- Plan out what tasks are needed to be completed for project to be successful
- Scheduling which certain task are needed to be completed during a specific time period
- Identify which tools are going to be used to construct the project

2.4.2 Responsibilities of Developer

- Developing how to construct the project with it’s given tools
- Developing the features to sell and buy cryptocurrency in the website

- Integrating an API into the cryptocurrency website for users to have access real time market data, trades, and account management
- Intergate the front-end and back-end of the website
- Maintaining the system while it's running
- Designing the user interface

2.4.3 Responsibilities of Tester

- Designing a plan to test the system
- Test the user interface to see each function that is in the website to see if they are running smoothly (selling/buying cryptocurrency and seeing market data).
- Document any bugs or issues for the website
- Re-Test the software if the existing bugs are new bigs exist

2.4.4 Responsibilities of Documenter

- Organize each document that is documented during the development of project
- Proof-read each document to see the grammar and information that is written is correct
- Update and edit each document if needed.

Responsibility	Member
Project Manager/Developer/Tester/Documenter	Alexander Bautista

3. MANAGERIAL PROCESS

3.1 Management Objectives and Priorities

- The vision for this project is to develop a cryptocurrency exchange web-based application to buy and trade crypto. This will allow users to buy and trade cryptocurrencies. From

each transaction that they made through the exchange, it will update their account balance of the cryptocurrency that they bought. Also, the user will be able to see all the available cryptocurrency that is available in the exchange and see real-time market data.

- To complete this objective, there will be a meeting and communication with the project advisor if there are any inquiries or questions during the project development Also, There will be a set schedule for each phase, (design, implement and testing), so the project will be on schedule before the deadline approaches.

3.2 Assumptions, Dependencies and Constraints

- These are the assumptions, dependencies, and constraints that this project will encounter
    - The project will be web-based.
    - Time constraints such as length of the semester, due dates and deadlines that are needed to be met.
    - The cryptocurrency exchange must have a section in the dashboard of the cryptocurrency that the user has in their account.
    - The website must have a buy/trade function in which the user is allowed to purchase the cryptocurrency that is available in the exchange.

3.3 Risk Management

- Changes to Project Scope: Throughout the development phase, there will be changes in the project due to certain circumstances, such as time constraints. To combat this, there will be a defined schedule in which each phase must be completed at a certain time.

- Project Advisor Unavailability: There are times that the project advisor will not be available to communicate through Discord. To counteract this, if there are any inquiries or questions about the project, text or email the project advisor.
- Missed Deadlines: There are going to be times that there might be external circumstances that affect the project progression or some phases of the project might take longer to complete than others. To counteract this, some phases of the project will be rescheduled to cater to meet the deadline of when the project needs to be completed.
- Inconsistency with Design: During the implementation phase, there might be times that some tasks are taking longer to complete than expected. This leads to developing shortcuts to complete the application before the deadline. To solve this problem, the design will be updated to still somewhat replicate the original design before but more practicable to complete the application on time.

3.4 Monitoring and Controlling Mechanisms

- Calendly and Discord will be the main monitoring and controlling mechanism that will be used to communicate. Calendly will allow the person who is developing the project to schedule with the project advisor. Discord will become the communication software that will be used to communicate with the project advisor to update them about the project or have questions about how to proceed with the project.

3.5 Staffing Plan

- Since this is an individual project, it will only take two people to complete this project. One being the person who plans, constructs, and documents the project. While the other

person (Professor Rebeecaa Broadwater) will provide guidance, approvals, or consultation with personnel involved in the project.

4. TECHNICAL PROCESS

4.1 Methods, Tools and Techniques

- Building the web-application will take time and precision. Even though the project already has set requirements, the application must have a good quality User Interface so users can enjoy the experience while using GigaExchange. To create this, we will develop a friendly and interactive front-end that will be constructed through HTML5. CSS3, and Bootstrap4. For the back-end it will carry out the functions when the user wants to do an action in the application. The back-end will be developed with Python with some added libraries such as NumPy and TA-Lib. Also the API that will be used is the Binance API
- The selected software process that will be used is the iterative process. This means that each section of code that is written will be tested to see if it runs correctly and carries out the function that it is supposed to. By using the iterative process, it will show results of the application in the early stages of the development and to easily identify any functional or design flaws.

4.2 Software Documentation

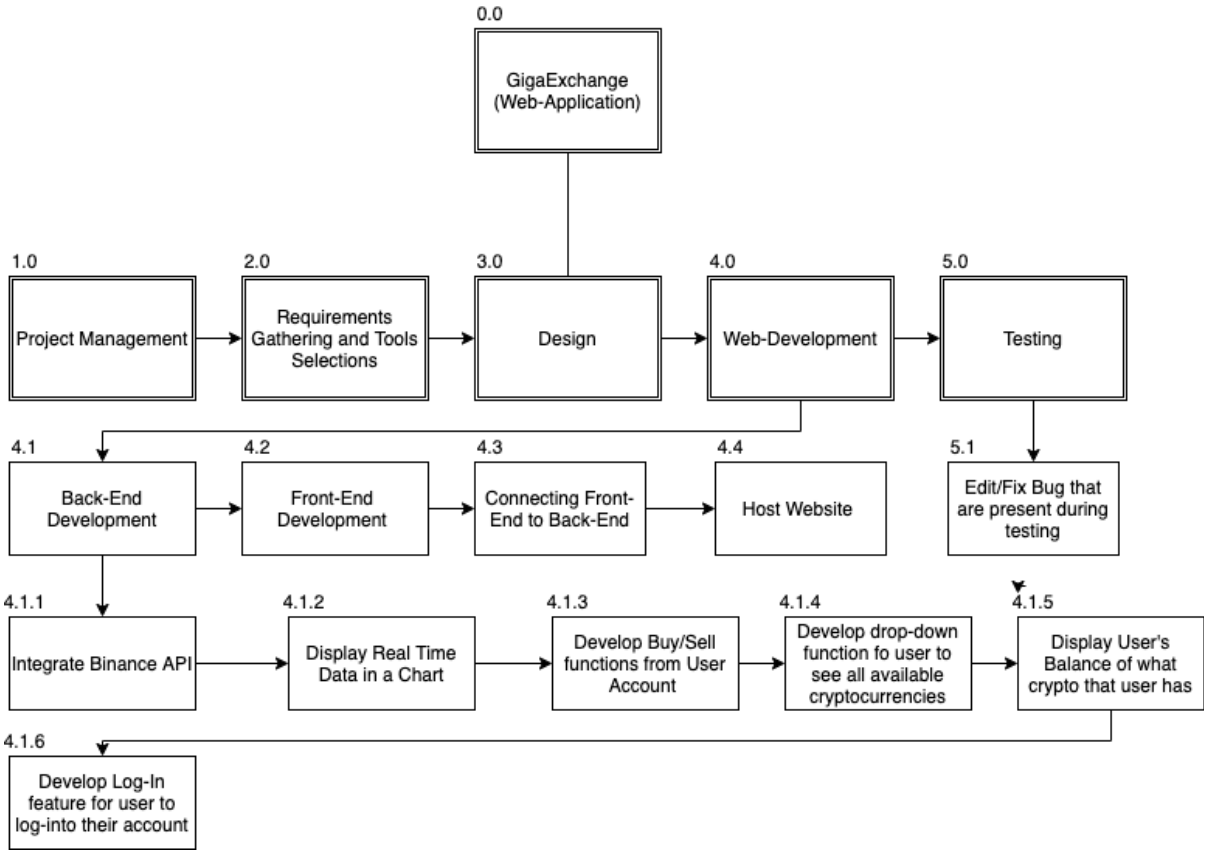
- The Software Documentation will be as follows:
    - ➢ Software Project Management Plan: A document that gives an overview about the project planning

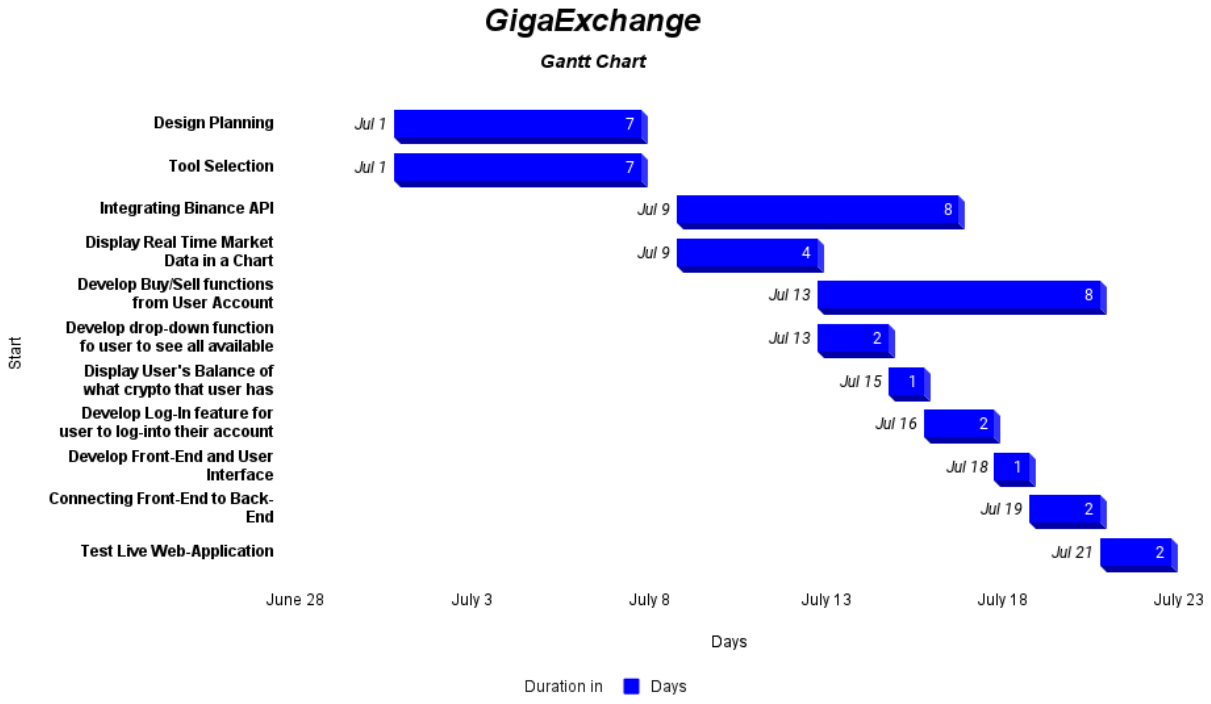
- ➢ Code Commenting - There will be comments throughout the code in the front-end and back-end in which it has a title of the section of the code.
- ➢ Milestone Review per Schedule - Documentation of the results of the test and the problems and bugs that are encountered from each test run.

4.3 Project Support Functions

- For this project it will have a Software Quality Assurance Plan:
  - Classify each requirement from high to low priority.
  - Develop checkpoints for each requirement by giving it specific data that it needs to be done.
  - Add any adjustments that are needed in the code.
  - Reviewing the code every time that is being tested to see if it runs properly or if there are any bugs.
  - Evaluate the application outcome to see if it meets requirements or if there are any improvements that are needed to be implemented.

5. Description of Work Packages


0.0
GigaExchange (Web-Application)
1.0
Project Management
2.0
Requirements Gathering and Tools Selections
3.0
Design
4.0
Web-Development
5.0
Testing
4.1
Back-End Development
4.2
Front-End Development
4.3
Connecting Front-End to Back-End
4.4
Host Website
5.1
Edit/Fix Bug that are present during testing
4.1.1
Integrate Binance API
4.1.2
Display Real Time Data in a Chart
4.1.3
Develop Buy/Sell functions from User Account
4.1.4
Develop drop-down function fo user to see all available cryptocurrencies
4.1.5
Display User's Balance of what crypto that user has
4.1.6
Develop Log-In feature for user to log-into their account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Develop Front-End and User Interface
Connecting Front-End to Back-End
Test Live Web-Application
Jul 1
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Start
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July 8
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July 23
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Duration in
Days