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. If a user is trying to buy a crptocruurney, it will give them the option to do a market order or a limit order. A market order is when the user purchases the cryptocurrency at its current best available price while a limit order is when the user purchases the cryptocurrency at a price the user wants to buy it at. If the user does a market order, the user puts the amount of coins that they want to buy and it will show the total amount they have to pay. If the user does a limit buy, the user enters the amount of coins that they want to buy and enter the price they want to buy the coin at. For selling, it is similar to how the user buys the coin. If it's a market order, the user will enter the total amount of coins that they want to sell and the coins will sell at its current best available price. The user will then receive the profit they have gotten from the sale. If it's a limit order, the user enters the amount of coins that they want to sell and enter the price they want to sell the coin at.

1.2 Project Deliverables

- Source Code
- Diagram
- Use Cases
- User Requirements
- SPMP
- Video Demonstration
- Documentation of each phase of the project

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
Preliminary	Alexander Bautista	Preliminary draft has components updated in the document is	7/15/2021
Final	Alexander Bautista	Final draft is the completion of the draft with all components of the SPMP completed and updated	7/26/2021

1.4 References Materials

- https://ase.in.tum.de/stars.globalse.org/stars1/docs/SPMP/Examples/Examples.html
- https://computersciencesource.wordpress.com/2009/11/22/year-2-software-engineering-use-case-diagrams-descriptions/

- https://www.conyers.com/publications/view/why-is-crypto-so-important-and-should-i-care/
- https://www.nerdwallet.com/article/investing/cryptocurrency-7-things-to-know#1.-what-is-cryptocurrency
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- https://www.conyers.com/publications/view/why-is-crypto-so-important-and-should-i-care/#:~:text=It%20became%20the%20absolutely%20wrong%20time%20to%20buy%20crypto.&text=But%20cryptocurrency%20is%20important%20and,risk%20of%20data%20being%20pirated.
- https://jelvix.com/blog/how-to-create-a-cryptocurrency-exchange-website
- https://www.schwab.com/resource-center/insights/content/3-order-types-market-limit-and-stop-orders

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.

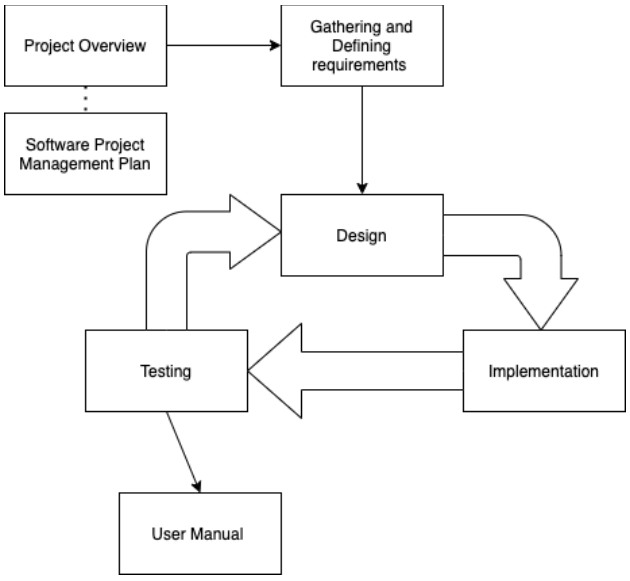
UI (User Interface) - The space where interactions between humans and machines occur.

- 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

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

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 in which they can have the option to do a market buy or limit buy. From each transaction that they made through the exchange, it will give the details about the order. Also, the user will see what cryptocurrencies that they have in their account.
- 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.
- The buy function can give the user to do a market order or a limit order while buying the cryptocurrency that they selected
- The sell function can give the user a market order or a limit order while trading the cryptocurrency that they selected.

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

- For this project, the use of diagrams will represent data, relationships and requirements that are needed. The main actors of the systems and how they interact with the system will be interpreted through the Use Cases model. For developing the system, it will be intercepted through an Entity-Relationship Diagram in which the development of the system will analyse how the entities that are involved in developing the system interact with each other.

- Throughout the designing phase of the project, it will show that this project will incorporate different programming languages and tools in developing this project. The tools that are in consideration to use during the developing phase are Javascript, React.Js, HTML, Digital Ocean, Truffle, Ganache, Node.js, OpenDax, and Docker. Also there are some pre-established web tools that are in consideration to use in the development phase such as the Ethereum BlockChain and CoinMarketAPI.

4.2 Software Documentation

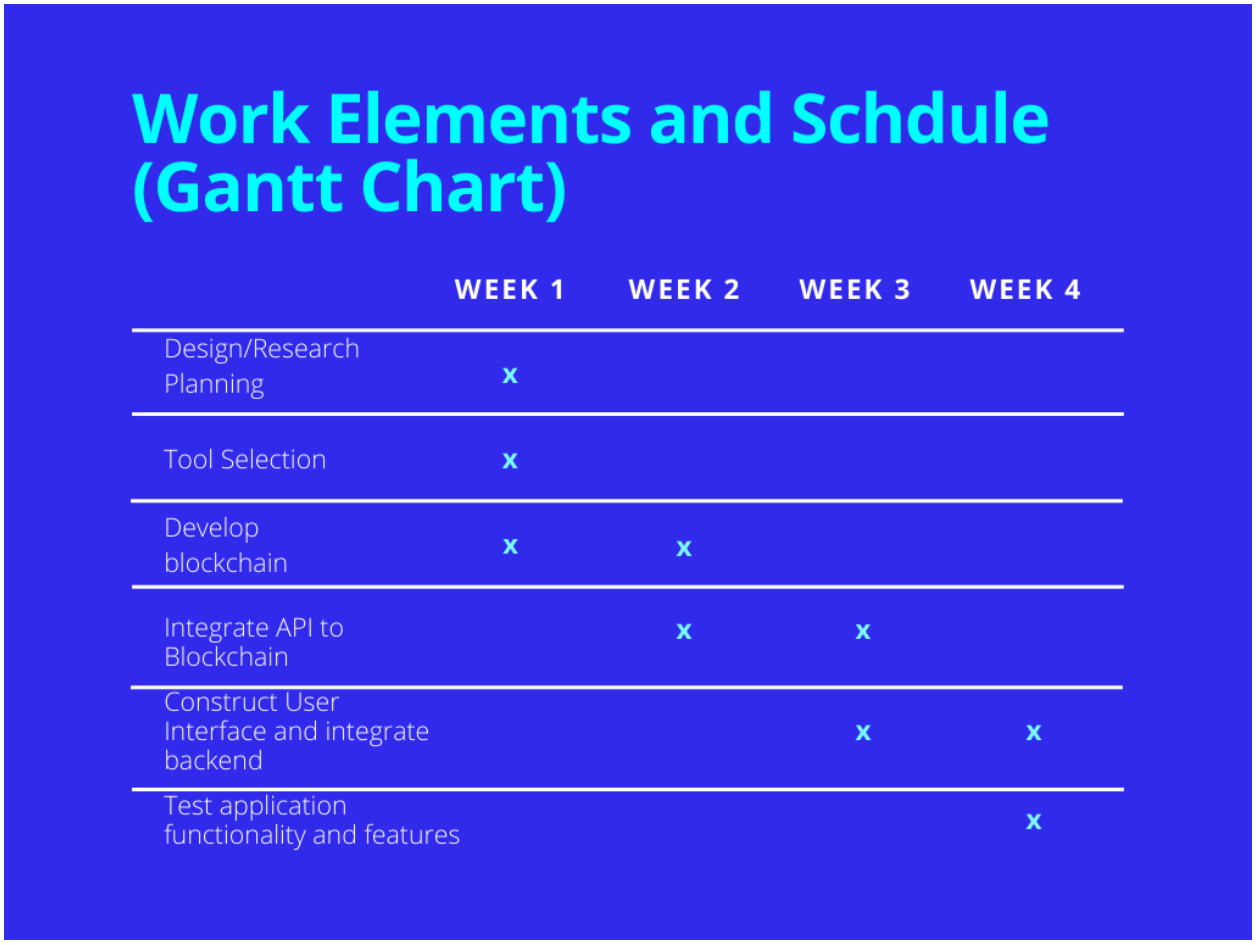
- The Software Documentation will consist of these documents:
    - ➢ Software Project Management Plan: A document that gives an overview about the project planning
    - ➢ Systems Test Procedure - A documentation of how the web application is going to be tested such as functionality and features.
    - ➢ Systems Test Report - Documentation of the results of the test and the problems and bugs that are encountered from each test run.
    - ➢ User Manual: A document that explains to the user of the application how to use the functions and features of the exchange.

4.3 Project Support Functions

- For this project it will have a Software Quality Assurance Plan, Configuration Plan, and Verification and Validation Plan:
    - Software Quality Assurance Plan:
        - This will plan out how often the application will be tested to make sure each part of the development is running smoothly and function well.

- Configuration Plan
    - This will plan out which components of the application can be changed through the project as it progresses.
- Verification and Validation Plan:
    - This will plan out what requirements that are needed to be met in the project and it reaches the expectations of how the user would expect to use the web-based application.

5. WORK ELEMENTS, SCHEDULE, BUDGET



Budget: The budget can range from 0-29$ depending on which type of API is going to be used for the project