RAJALAKSHMI ENGINEERING COLLEGE

An AUTONOMOUS institution

Affiliated to ANNA UNIVERSITY, Chennai

STOCK QUEST

LAB RECORD
CS19442 – SOFTWARE ENGINEERING CONCEPTS

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Software Concepts & Engineering

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OVERVIEW OF THE PROJECT

Project Title: Stock Quest

Objective

The primary objective of the "Stock Quest" is to introduce young children, specifically 5-year-olds, to the basic principles of investing and financial literacy in an engaging, interactive, and age-appropriate manner. The simulator aims to lay the foundation for an interest in finance and cultivate responsible financial habits from an early age.

Background

Financial literacy is a critical life skill, yet traditional methods of teaching it can be overly complex and inaccessible for young children. Existing stock market simulators often use intricate mechanics and real-world financial concepts, making them unsuitable for 5-year-olds. This project addresses the gap by creating a simplified and engaging learning tool tailored to the cognitive abilities and interests of young children.

Target Audience

The simulator is designed specifically for children aged 5. It considers their developmental stage, attention span, and learning preferences, ensuring the content is both educational and enjoyable.

Key Features

- Simplified Gameplay Mechanics: Easy-to-understand game rules and mechanics that mimic basic stock market operations without overwhelming details.
- Engaging Visuals and Characters: Colorful graphics and relatable characters to keep children interested and entertained.
- Interactive Learning: Hands-on activities and interactive elements to reinforce learning through play.
- Educational Content: Age-appropriate explanations of basic financial concepts, such as saving, investing, and the idea of earning returns.
-Parental Guidance: Resources and tips for parents to help facilitate discussions about money and investments at home.

Goals

- To create an accessible platform for young children to learn about the basics of investing.
- To foster an early interest in financial literacy and responsible financial behavior.
- To provide a fun and engaging educational tool that children will enjoy using.

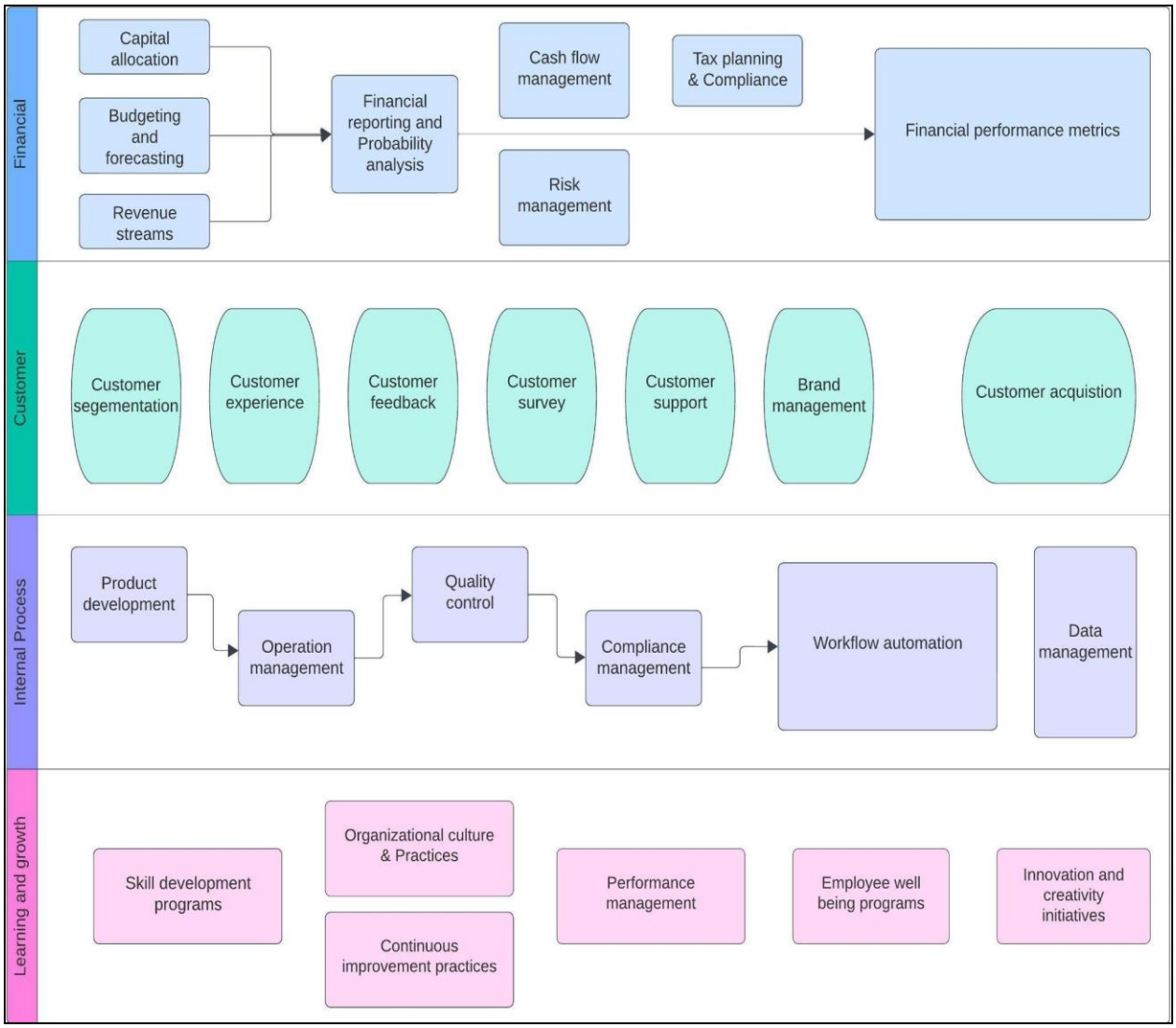
Expected Outcomes

- Improved understanding of basic investment principles among young children.
- Increased interest in financial topics and concepts from an early age.
- Positive feedback from parents and educators regarding the effectiveness of the simulator as a learning tool.

Conclusion

The "Stock Quest" represents a pioneering effort to bring financial education to a younger audience in a format that is both accessible and engaging. By simplifying complex concepts and focusing on interactive learning, this project aims to make a lasting impact on the financial literacy of future generations.

BUSINESS ARCHITECTURE DIAGRAM



REQUIREMENTS AS USER STORIES

Children's User Stories

1. As a child, I wanted to play a fun and colorful game, so that I can learn about money and investing without getting bored.
   - Acceptance Criteria: The game features engaging graphics, animations, and sound effects to keep children entertained.

2. As a child, I want to earn virtual rewards when I make good investment choices, so that I feel motivated to learn and play.
   - Acceptance Criteria: The game includes a reward system (e.g., badges, coins, or points) that recognizes good investment decisions.

3. As a child, I want to see friendly characters who explain things to me, so that I can understand the game better.
   - Acceptance Criteria: The game includes characters that guide the child through tutorials and explain basic concepts in simple terms.

4. As a child, I want to be able to easily understand what to do next, so that I can play the game without getting frustrated.
   - Acceptance Criteria:The game has clear, simple instructions and intuitive navigation that a 5-year-old can follow.

Parental User Stories

5. As a parent, I want to monitor my child's progress in the game, so that I can see what they are learning.
   - Acceptance Criteria: The game includes a parental dashboard that shows the child's progress, achievements, and areas they might need help with.

6. As a parent, I want to control the time my child spends on the game, so that they have a balanced screen time.
   - Acceptance Criteria: The game has settings that allow parents to set time limits and manage playtime.

7. As a parent, I want to understand the educational value of the game, so that I can be confident it is beneficial for my child.
   - Acceptance Criteria: The game provides information on the educational objectives and outcomes associated with each activity.

Educator User Stories

8. As an educator, I want to use the game as a teaching tool, so that I can introduce financial literacy concepts in my classroom.
   - Acceptance Criteria: The game includes lesson plans and activities that align with early childhood education standards.

9. As an educator, I want to track the progress of multiple children, so that I can assess their understanding and tailor my lessons.
   - Acceptance Criteria: The game includes features for educators to monitor and compare the progress of students individually and as a group.

Developer User Stories

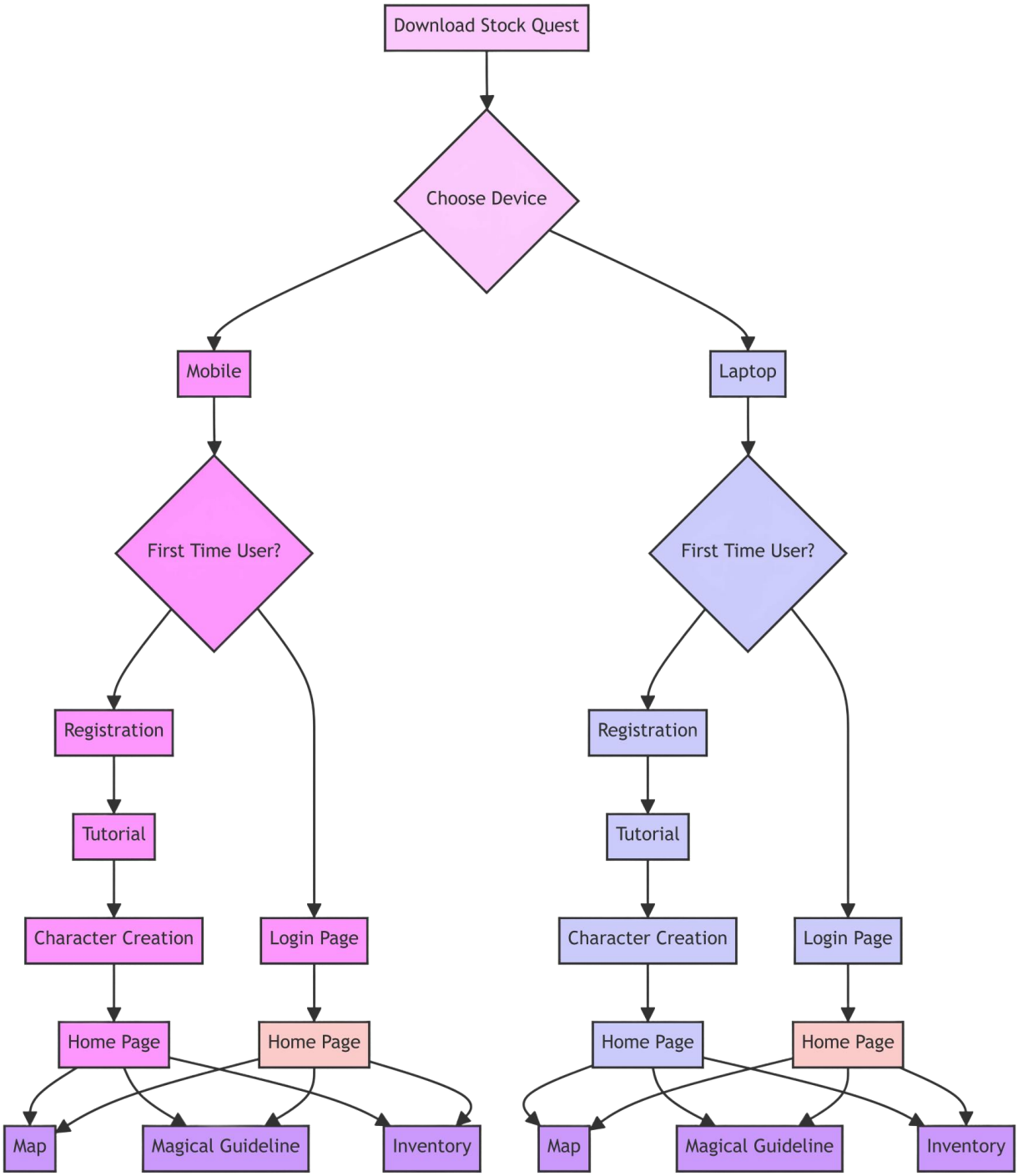
10. As a developer, I want to ensure the game is easy to update, so that new content can be added without major changes to the system.
   - Acceptance Criteria: The game is built with a modular architecture that allows for easy updates and additions of new content and features.

11. As a developer, I want to make sure the game runs smoothly on various devices, so that all children can access it regardless of the hardware they have.
   - Acceptance Criteria: The game is optimized for performance on tablets, smartphones, and computers, with minimal loading times and responsive design.

12. As a developer, I want to ensure the game is secure, so that children's data and privacy are protected.
   - Acceptance Criteria: The game follows best practices for data security and privacy, including secure data storage and compliance with relevant regulations.

These user stories help to define the requirements for the "Stock Quest" from the perspectives of different stakeholders, ensuring that the final product is engaging, educational, and user-friendly for both children and the adults who support their learning.

ARCHITECTURE DIAGRAM



TEST STRATEGY

The test strategy outlines the approach, resources, and schedule for testing the "Stock Quest" project. The objective is to ensure the simulator is reliable, user-friendly, secure, and educationally effective.

Objectives
- Validate that the simulator meets all functional and non-functional requirements.
- Ensure the user interface is intuitive and engaging for 5-year-olds.
- Confirm that the educational content is accurate and appropriate for the target age group.
- Verify that the system performs well across different devices and environments.
- Ensure data security and privacy measures are effectively implemented.

Scope

The testing will cover:
- Functional Testing
- Usability Testing
- Performance Testing
- Security Testing
- Compatibility Testing
- Regression Testing

Test Phases

1. Requirement Analysis
   - Review project requirements to understand the scope and identify testable elements.

2. Test Planning
   - Develop the test plan, including schedules, resources, and tools.
   - Define the test objectives, scope, and deliverables.

3. Test Design
   - Create detailed test cases and scenarios based on requirements.
   - Prepare test data for different test scenarios.

4. Test Environment Setup
   - Set up the test environments, including devices (tablets, smartphones, PCs).
   - Ensure environments simulate real-world usage conditions.

5. Test Execution
   - Execute test cases for each test phase.
   - Log defects and track them to resolution.

6. Test Closure
   - Ensure all planned tests are executed.
   - Summarize test results and provide a final report.
   - Conduct a post-project review to identify lessons learned.

Types of Testing

1. Functional Testing
   - Objective: Verify that the simulator functions according to requirements.
   - Activities:
     - Validate game mechanics and rules.
     - Check user interactions and responses.
     - Test educational modules for accuracy.

2. Usability Testing
   - Objective: Ensure the simulator is easy to use for 5-year-olds.
   - Activities:
     - Conduct user testing sessions with children.
     - Observe and record their interactions.
     - Gather feedback from parents and educators.

3. Performance Testing
   - Objective: Ensure the simulator performs well under various conditions.
   - Activities:
     - Test load times and responsiveness.
     - Assess performance under different network conditions.

4. Security Testing
   - Objective: Ensure user data is protected and privacy is maintained.
   - Activities:
     - Conduct vulnerability assessments.
     - Verify data encryption and secure data storage.

5. Compatibility Testing
   - Objective: Ensure the simulator works across different devices and browsers.

- Activities:
  - Test on various tablets, smartphones, and PCs.
  - Validate performance on different web browsers.

6. Regression Testing
  - Objective: Ensure new changes do not adversely affect existing functionality.
  - Activities:
    - Re-execute previously passed test cases after updates.
    - Verify that fixes and enhancements work correctly.

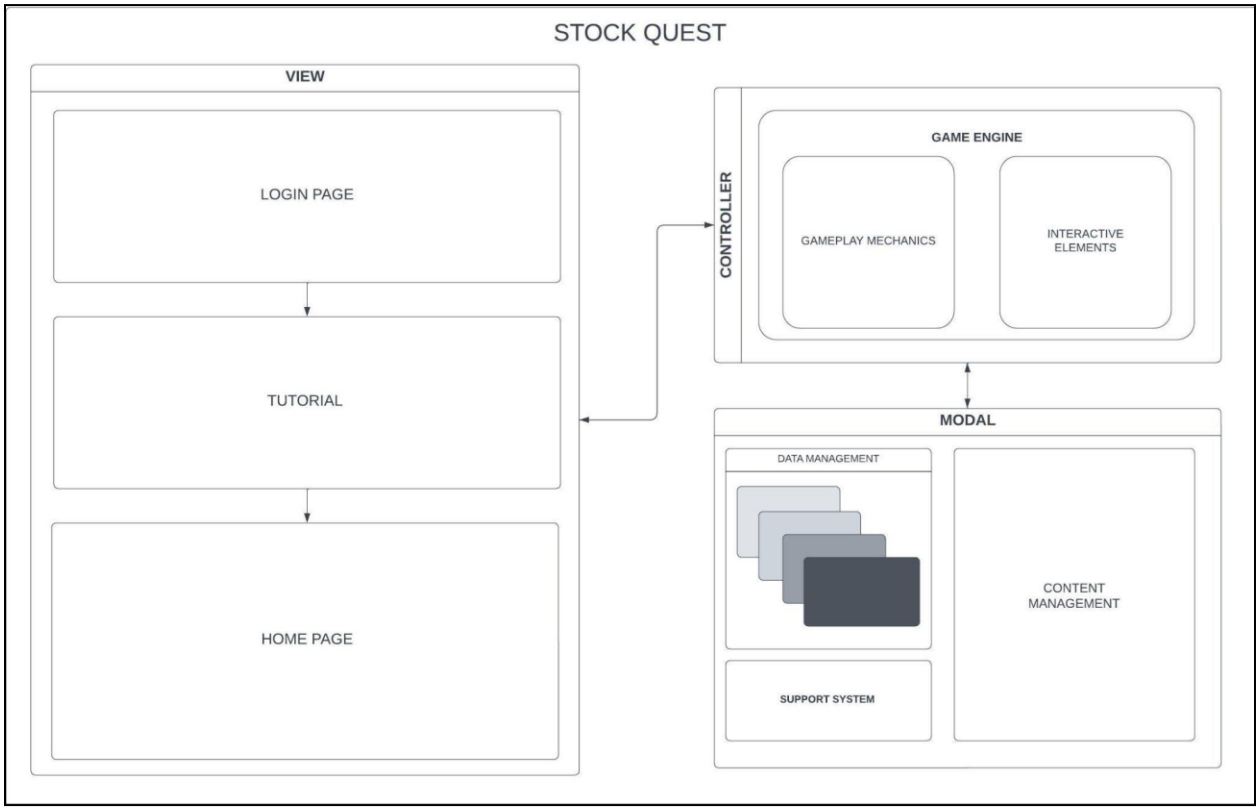
Tools and Resources

- Test Management Tools: JIRA, TestRail
- Automation Tools: Selenium, Appium
- Performance Testing Tools: JMeter, LoadRunner
- Security Testing Tools: OWASP ZAP, Burp Suite

Schedule
1. Requirement Analysis: Week 1-2
2. Test Planning: Week 3-4
3. Test Design: Week 5-6
4. Test Environment Setup: Week 7
5. Test Execution: Week 8-12
6. Test Closure: Week 13

Risk Management

- Potential Risks:
  - Misunderstanding user needs for 5-year-olds.
  - Technical challenges with multi-device compatibility.
  - Security vulnerabilities.

Test Reporting
- Daily Status Reports: Progress updates and issues encountered.
- Weekly Reports: Summary of activities, test results, and planned actions.
- Final Test Report: Comprehensive overview of testing outcomes, including defect analysis and recommendations.

DEPLOYMENT ARCHITECTURE OF THE APPLICATION