

Lab 1 – QuestNest Product Description

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1 Introduction

Many households struggle to manage and distribute responsibilities accordingly. This often leads to tension between family members, as it affects daily routines, family cohesion, and child development. QuestNest will provide families with a way to evenly distribute chores while reinforcing healthy habits.

1.1 Societal Problem

In many families, household chores typically fall onto a single parent or caregiver. This issue may lead to tension and conflict among family members when children resist taking on tasks or when there is no shared agreement on how chores should be distributed (Lam, 2016). A study done by Braun Research found that out of 1,001 U.S. adults, only 28% assigned chores to their children, despite over 80% of them stating that they were assigned chores (Society for the Psychology of Women, 2017). It is shown that when assigned chores, kids display an increase in school engagement, positive mental health in adulthood, and family cohesion (Rende, 2015).

1.2 Problem Characteristics

Parents and caregivers struggle to assign and follow up on chores effectively, leading to tension within households. Traditional chore charts often fail to provide the necessary structure or engagement to promote consistency and accountability. Families need a positive and structured system to balance responsibilities and engagingly build better habits.

1.3 Solution Statement

QuestNest is a gamified mobile application that makes chore tracking engaging and fun through a reward management system. The goal is to transform routine household chores into a rewarding quest, teaching responsibility and healthy habits through positive reinforcement.

2 Product Description

QuestNest is a mobile application designed to manage chore tracking through a fun a structured reward system. With QuestNest, children will earn experience points (XP) for completing tasks. By consistently participating, the XP will allow children to level up and unlock rewards such as extended screen time and special privileges. This reward system will motivate children to complete household responsibilities by turning them into a fun, interactive quest.

Caregivers will be able to monitor their children's progress while also being able to assign and customize chores. Other features provided with QuestNest include caregiver-managed verification, tiered incentives, reminders, and a shared family calendar. The application is designed to encourage consistency, accountability, and communication while also building lifelong habits of responsibility and reducing household stress.

2.1 Key Product Features and Capabilities

QuestNest will have six key product features and capabilities, which include Gamified Chore Tracking and Experience Points System, Tiered Leveling System, Collaborative Family Rewards, Customization, Validation and Verification, and Shared Family Calendar and Notifications.

2.1.1 Gamified Chore Tracking and Experience Points System

QuestNest transforms daily chores into interactive quests using a gamified system that rewards children with XP upon task completion.

2.1.2 Tiered Leveling System

The application utilizes a tiered leveling system that tracks progress as XP is accumulated. As children level up, they will unlock higher-value rewards that were previously inaccessible. This structure reinforces long-term engagement by linking progression with goal setting.

2.1.3 Collaborative Family Rewards

A caregiver is provided the option to enable the Collaborative Family Rewards feature, which allows caregivers to define rewards that require collective completion of tasks by every family member. This collaboration fosters mutual accountability and helps strengthen familial bonds.

2.1.4 Customization

Caregivers have full control over the reward system, including the ability to define which rewards are available and assign XP costs to each of them. All reward redemptions will require caregiver approval before being granted.

2.1.5 Validation and Verification

Caregivers manage verification measures. When a child completes a task, they upload and submit media proof, such as photos or videos. Caregivers then review the media submissions and validate them accordingly before awarding XP.

2.1.6 Shared Family Calendar and Notifications

An integrated family calendar is included with QuestNest, ensuring that the family stays organized and responsible. The calendar will store information such as the scheduling of chores, events, and important dates. Assigned tasks will be visible and tied directly to reminders and notifications.

2.2 Major Components (Hardware/Software)

QuestNest will be developed as a mobile application with the use of Python 3.13.5. The application will adopt the Model-View-Controller (MVC) architectural pattern as shown in Figure 1. This will ensure an organized codebase and assert strict responsibilities to each technology/class.

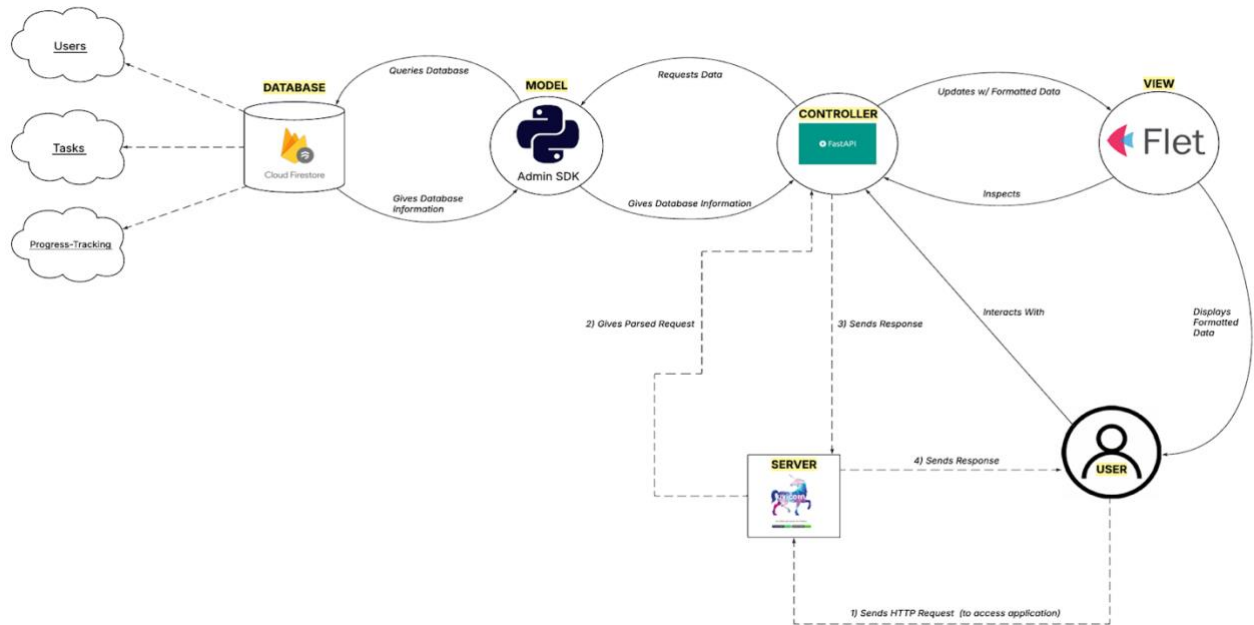


Figure 1: Functional Component Diagram

2.2.1 Model

The Model layer is responsible for handling the application's business logic and database interactions. QuestNest will use Google Firestore, a cloud-based NoSQL database, capable of multi-platform hosting and quick real-time updates. The Model will use the Python Admin SDK to query and interact with the Firestore database directly.

2.2.2 View

The View will manage the visual presentation of the application. It formats and displays data from the database. The application will utilize Flet, a Python framework built on Flutter. Flet supports multi-platform development and enables the creation of appealing UI for users of all ages.

2.2.3 Controller

The Controller serves as the central coordinator of the application, as it will allow the Model and the View to interact and communicate with one another. As the user interacts with the

device, it will “ask” the Model for information about the database. It will then allow the View to receive that data in a defined fashion.

The Controller will also carry the load of work to be done for the back-end. Since this cannot be accomplished easily with Python alone, FastAPI will be the framework used that will connect all the components. It will follow the protocols and procedures of RESTful API, allowing the establishment of endpoints for users’ navigational needs, and interacting with the web server while also providing quick performance.

2.2.4 Web Server

Uvicorn will serve as the Web Server, which will receive the users’ requests, parse its data, give that data to FastAPI, then receive the response and deliver it to the user for access. It is a tightly integrated dependency of FastAPI and works seamlessly with Flet.

3 Identification of Case Study

QuestNest is designed to make chores fun and engaging while promoting consistency and accountability for all users. Users include family members, such as parents and caregivers, who are seeking a way to establish better habits for kids, and children looking for a rewarding and engaging way to complete mandatory chores. QuestNest will support families who struggle with distributing chores effectively while motivating children to complete tasks.

In the future, QuestNest may be adapted for use in educational environments and therapeutic settings where positive behaviors and habit-building are essential and encouraged.

4 Glossary

Experience Points (XP) - points awarded as a progression indicator.

Family-Level Goal - collaborative custom chores awarded if all members of the family complete their assigned tasks.

Push Notification - an alert received from an application to notify when there is a new event or message to view.

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