

Architectural Design for Term Project



Software Engineering

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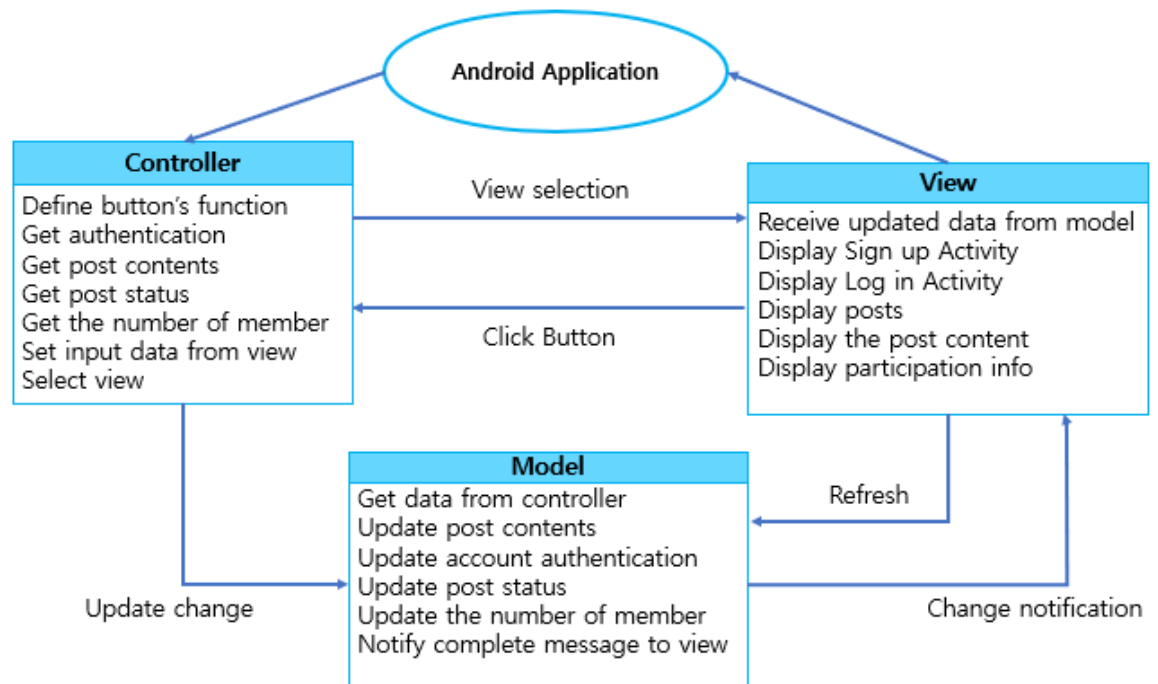
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1. Decision

- Q1 : Is there a generic application architecture that can act as a template for the system that is being designed?
A1 : Our system behaves similarly to an inter-user trading system or a reservation system because it is based on posting posts and other users participating and changing the status of posts.
- Q2 : How will the system be distributed across hardware cores or processors?
A2 : The system is distributed in Android application format.
- Q3 : What architectural patterns or styles might be used?
A3 : In our system, the Client-Server pattern is best suited because interaction between clients is the main function of the system.
- Q4 : What strategy will be used to control the operation of the components in the system?
A4 : System administrators control authorization and account authentication of posts through database rules in Firebase and constraint settings within code.
- Q5 : What will be the fundamental approach used to structure the system?
- A5-1 : The functions that the system supports should be defined. (In our system, Log In and Out, Posting a board, Writing comments)
- A5-2 : Who is the actual user of the system. (In our system, students live alone or living in dormitories.)
- A5-3 : What external systems interact with our system. (In our system, Calling or Delivery applications.)
- Q6: How will the structural components in the system be decomposed into sub-components?
- A6. First, the components of the overall system will be divided into components for each function, then into components for each function. (In our system, Log in and out component, Sign up and in component, Recruiting Board, Recruiting complete Board and components of each function.)
- Q7 : How should the architecture of the system be documented?
- A7 : We need to find the best model for our current system and include all the parts that correspond to that model, each interacting parts, and functions.

2. Architectural Patterns

2.1 MVC Pattern



Model

- Encapsulates application state
- Receive update from controller
- Store data to DB
- Notifies view of state changes

View

- Display activities
- Renders model
- Receive updated data from model
- Requests refresh to model

Controller

- Define functions
- Select View
- Maps user action to model

2.2 Layered Architecture

User Interface

Food-Mate Application

Configuration services

Application management Account management
Board management Post management

Application services

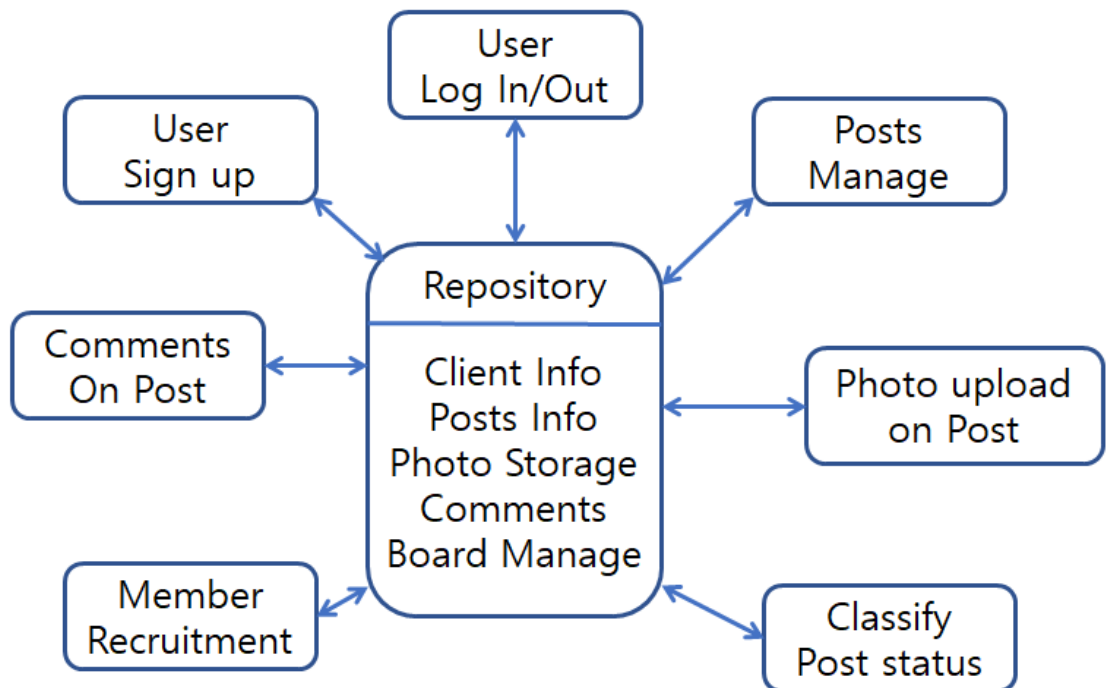
Sign Up Log In Find password Create Post Show board
Edit post Participate Write comment Upload picture
Remove post Show history Notification Search Post

Firebase services

Authentication Realtime Database Server Storage
Send Email Realtime Notification

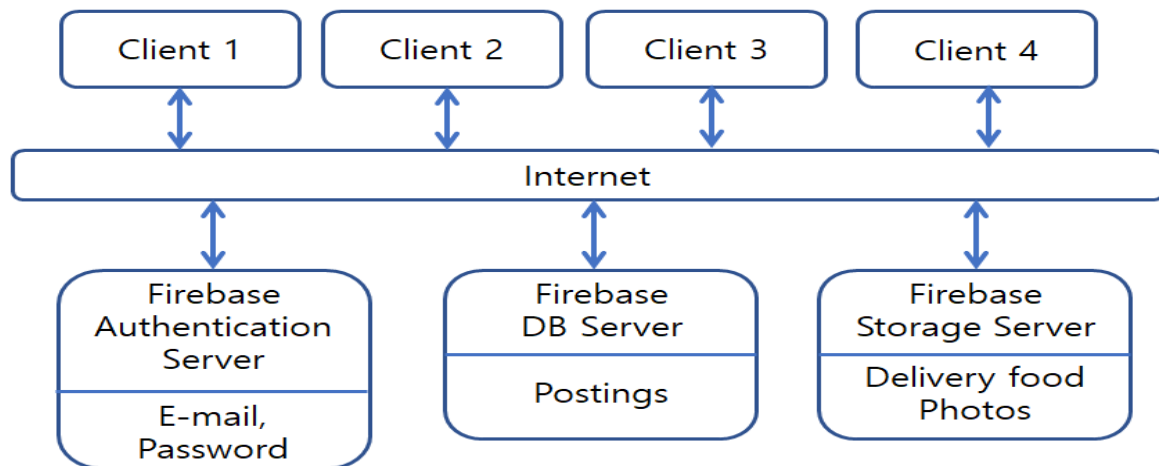
- The database uses the Firebase service to store posts and accounting data on the server.
- The application provides services for posts such as account management, post creation, and comment writing, and also provides interaction services among users such as participation and search.
- In configuration, posts, bulletin boards and accounts are managed based on databases.
- UI is provided by Android applications.

2.3 Repository Architecture



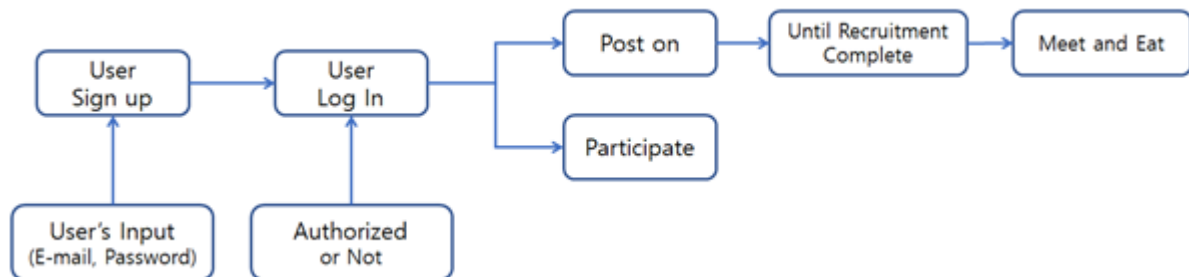
- Inside the database(repository), there is client information, photos that clients used, posts, comments of each post, and so on..
- From the database, if clients require a specific function, the database sends the data to application and changes also reflected in real time.
- Especially, the function to manage posts to turn into recruitment boards when they are full is important.

2.4 A Client-Server Architecture



- Clients can log in and out through a Log In server that stores each individual email(Authorized by University account.) and password.
- Clients can post on the Recruiting boards and each posting will store in the Database server.
- The pictures used by the Clients are stored separately on the Storage Server.

2.5 Pipe and Filter Architecture



- The process of our System.
- User's input will be the first step, and sign up by Email and password.
- After Authentication of an Email, Users can log in or retry.
- After Log in, users can post on or participate. If users post on the board, wait until the recruitment completes. When recruitment is completed, writers and participants meet together and eat. Or if users don't post on the board, they just find posts with something they want to eat.