FinSight Technology Overview

This document outlines the core technologies used in FinSight, their purpose, and how they fit together into the overall system architecture. It is intended as both a personal reference and as interview preparation material.

# 🧰 Technology Glossary

## Flutter

Google’s open-source UI framework. Build Android, iOS, Windows, macOS, and Linux apps from a single codebase. Used in FinSight for rendering the UI, transaction lists, and charts, and for offline storage (SQLite).

## Dart

Programming language used by Flutter. Similar to Java/JavaScript. In FinSight, Dart handles app logic: API calls, local storage, and UI state.

## Amazon S3 (Simple Storage Service)

AWS’s object storage service—scalable, durable, and cheap. In FinSight: stores raw CSV imports, exports, and backups.

## Redis

In-memory data store, often used as a cache or queue. In FinSight: caches frequently-used data (recent transactions, rules) and buffers background jobs like imports.

## AWS EC2 / ECS Fargate

Compute services. EC2 = virtual servers, ECS Fargate = serverless container hosting. In FinSight: runs the Spring Boot backend inside Docker containers.

## AWS RDS (Relational Database Service)

Managed relational database service. In FinSight: PostgreSQL database stores accounts, transactions, users, budgets, and rules.

## AWS Cognito

Authentication and identity management. In FinSight: manages user login, sign-up, password resets, and issues JWT tokens.

## AWS CloudWatch

Logging and monitoring service. In FinSight: collects backend logs and performance metrics for observability.

## Infrastructure as Code (Terraform)

Provision infrastructure through code instead of manual setup. In FinSight: defines backend ECS services, RDS Postgres, S3 buckets, Cognito, and networking in Terraform scripts.

# 🧩 How They Fit Together

1. Flutter/Dart app (mobile + desktop)  
 - Local SQLite for offline use  
 - Calls backend with JWT  
  
2. Spring Boot backend (runs in Docker on AWS ECS/EC2)  
 - Exposes APIs for transactions, budgets, rules, imports  
 - Uses Hibernate/JPA to talk to PostgreSQL (AWS RDS)  
  
3. Redis  
 - Speeds up responses (cache)  
 - Buffers background jobs (imports, tagging)  
  
4. S3  
 - Stores raw bank files, CSV imports, user exports  
  
5. Cognito  
 - Manages login, tokens, and identity  
  
6. Terraform (IaC)  
 - Describes & spins up AWS pieces (backend, DB, Redis, S3, Cognito, networking, monitoring)

# 🎯 Interview Narrative

“I built FinSight as a Flutter cross-platform app that syncs with a Spring Boot backend running on AWS ECS. Data persistence is handled in RDS (Postgres), while Redis handles caching and queues. File imports/exports are stored in S3, and authentication is secured with Cognito JWTs. The whole environment is reproducible with Terraform IaC.”