

Project Epsilon

System Design Document

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CRC Cards

App

Class Name: app	
Parent Class: N/A Subclasses: N/A	
Responsibilities: Starts the application, ties all the classes together, renders the HTML.	Collaborators: Every class.

DAO

Class Name: Dao	
Parent Class: N/A Subclasses: N/A	
Responsibilities: Handles all queries with the db.	Collaborators: Company, RStatus, Request, Role, Team, User.

Request

Class Name: Request	
Parent Class: N/A Subclasses: N/A	
Responsibilities: Has an identifier, knows its status, knows its requesting user, knows its requested team, knows when it was created and when it was updated. Has a method to turn it into a str.	Collaborators: User, Team

Team

Class Name: Team	
Parent Class: N/A Subclasses: N/A	
Responsibilities: Has an identifier, knows its user and their role. Has a method to turn it into a str.	Collaborators: User, Registration

User

Class Name: User	
Parent Class: N/A Subclasses: N/A	
Responsibilities: Has an identifier, knows its role, it's name, contact information, and description. Has a method to turn it into a str.	Collaborators: Team, Request

Company

Class Name: Company	
Parent Class: N/A Subclasses: N/A	
Responsibilities: Has an identifier, knows its name, description, and create date. Has a method to turn it into a str.	Collaborators: Team, User, Request.

RStatus

Class Name: RStatus (Enum)	
Parent Class: N/A Subclasses: N/A	
Responsibilities: Has names (accepted, rejected, pending) and values (1, 2, 3). Has a method to turn it into a str.	Collaborators: Team.

Role

Class Name: Role (Enum)	
Parent Class: N/A Subclasses: N/A	
Responsibilities: Has names (team owner, team admin, team member) and values (1, 2, 3). Has a method to turn it into a str.	Collaborators: Team, User.

Software Architecture

Description

Project Epsilon is a Startup Marketplace application in current development. The architecture of this project is a **Three-Tier Architecture**. This means the application will have a presentation tier, a logic or application tier, and a data tier.¹ All of these are running in their own infrastructure. By choosing this architecture, the team is allowed to run the development of these tiers independently and avoid conflict.

Presentation Tier

For the front end of the application, we will be using the **React** framework. React is a javascript library that helps build the graphic user interface of web applications. It is lightweight and scalable² and even though it does not have excellent documentation, the community feeds online offer sufficient support.

Application Tier

The application tier houses the project logic and API. We will use the **Flask** framework in Python code. Flask offers the flexibility we need as it is compatible with a lot of other frameworks such as Docker. Allowing for design changes in the future makes it easier to scale this project according to any new requirements that might come in. Flask is also independent from the front end framework and the database management systems, allowing us to choose the most convenient for us.

Data Tier

The chosen database management system is **MySQL**. We are connecting the application and data tiers through the flask-mysqldb³ library. We chose a relational DMS because the team has had more exposure to this type of database and it appears the most fit for our database schema as we want the data to be more structured.

¹ Education, I. C. (2021, April 5). *Three-Tier Architecture*. IBM.
<https://www.ibm.com/cloud/learn/three-tier-architecture>

² Lvova, E. (2021, April 5). *React vs. Vue in 2021: Best JavaScript Framework*. Dzone.
<https://dzone.com/articles/react-vs-vue-in-2021-best-javascript-framework>

³ Flask-MySQLdb. (n.d.). *Welcome to Flask-MySQLdb's documentation! — Flask-MySQLdb 0.2.0 documentation*. Retrieved June 10, 2021, from <https://flask-mysqldb.readthedocs.io/en/latest/>

Diagram

The following is the System Architecture Diagram of Project Epsilon. It is a three tier architecture as cited above (<https://www.ibm.com/cloud/learn/three-tier-architecture>).

