

VIETNAM NATIONAL UNIVERSITY - HO CHI MINH CITY
UNIVERSITY OF TECHNOLOGY
FACULTY OF COMPUTER SCIENCE AND ENGINEERING



SOFTWARE ENGINEERING

GROUP NAME: Do something bro

URBAN WASTE COLLECTION AID - UWC 2.0

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1. Introduction

Urban waste management is one of several significant problems faced by many countries in the world and thus considered one of the important points to be improved in Sustainable Development Goal (SDG) 11: sustainable cities and communities and SDG 6: clean water and sanitation. Particular attention is given to developing countries that continue to prioritize development and economic growth. In urban context, solid waste management is costly and ineffective. Improvement of waste collection and management is emphasized by governments and organizations for positive impacts on cities, societies and environments

2. Architecture design

2.1. Task 3.1

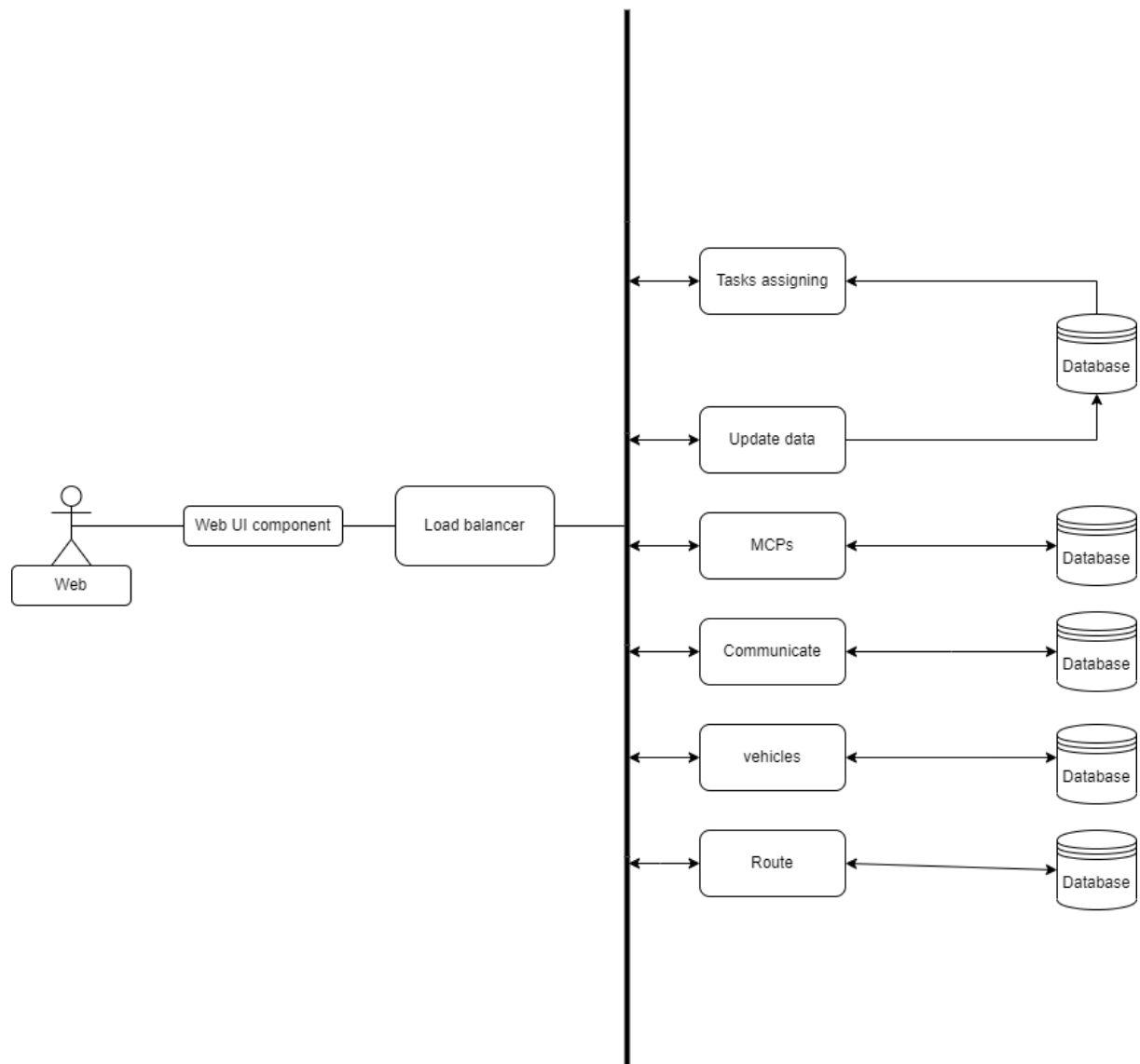


Figure 1: Architecture design pattern for our design of UWC 2.0

- **Presentation Strategy:**
 - As a language model, our presentation strategy is focused on providing accurate and helpful responses to user queries in a natural and conversational manner.
 - Whether users are seeking information on vehicles, routes, MCPs, or other related topics, We strive to offer clear and concise answers that are easy to understand.
 - We also aim to deliver these responses promptly to ensure a smooth user experience.
- **Data Storage Approach:**
 - In our microservices architecture, each service utilizes a different database management system that is well-suited to its specific needs.
 - Using MySQL for the vehicles service, Redis for the Redis service, and MongoDB for the other services is an excellent approach that can help ensure optimal performance and scalability.
 - Additionally, using a distributed database system can provide high availability and help prevent data loss in the event of hardware failures or other disruptions.
- **API Management:**
 - We use Kubernetes and Docker for deployment and control, as well as an ingress controller to handle API traffic and routing, is a solid API management approach.
 - These tools allow us to easily manage and scale your microservices while ensuring optimal performance and reliability.
 - Moreover, using a comprehensive API management platform can provide additional features such as access controls, rate limiting, and analytics to help us monitor and manage API usage and performance.

2.2. Task 3.2

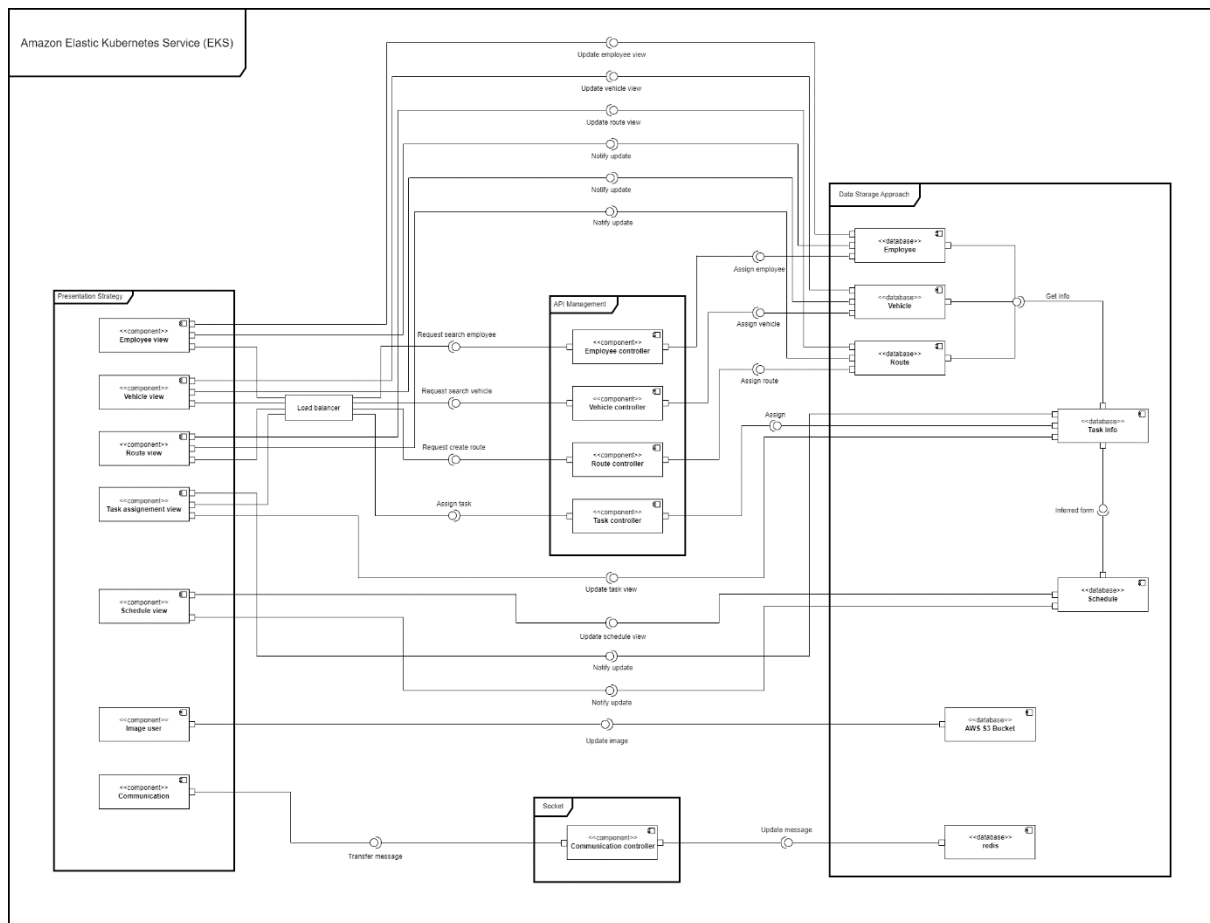


Figure 2: Component diagram for Task Assignment Module

Description of Component diagram for Task Assignment Module:

- Data Storage Approach:

- Data Storage Approach components notify Presentation Strategy component of state changes
- Data Storage Approach component encapsulates application state

- Presentation Strategy:

- Presentation Strategy component Employee view, Vehicle view, Route view, Task assignment view belong to the Back officer. They help BA with task assigning.
- Presentation Strategy components requests model update from Data Storage Approach component and perform get methods to API Management component with users event.
- Presentation Strategy render to display data.

- API Management:

- API Management component maps users action and update the Data Storage Approach components.
- API Management tasks are as describe in section 3.1.

