TASK 3: ARCHITECTURAL DESIGN

TASK 3.1: ARCHITECTURAL APPROACH

Architectural Decisions:

The architectural approach for this system is going to consider following decisions:

Performance: The system should be able to store and manage 1000 MCPs, x staffs at the moment. The system should be able to handle many simultaneous users.

Security: The system shall provide password protected access to the system. Only the back officer is granted access to add, modify, remove resources of the organization (database, employees,…).

Availability: The system shall be available on both PC and mobile devices using as web

application.

Scalability: The system should accommodate further changes, improvements in future versions.

Maintainability: System maintenance should cause minimal interruptions to its activities, by applying server-client architectural patterns.

Architectural Pattern:

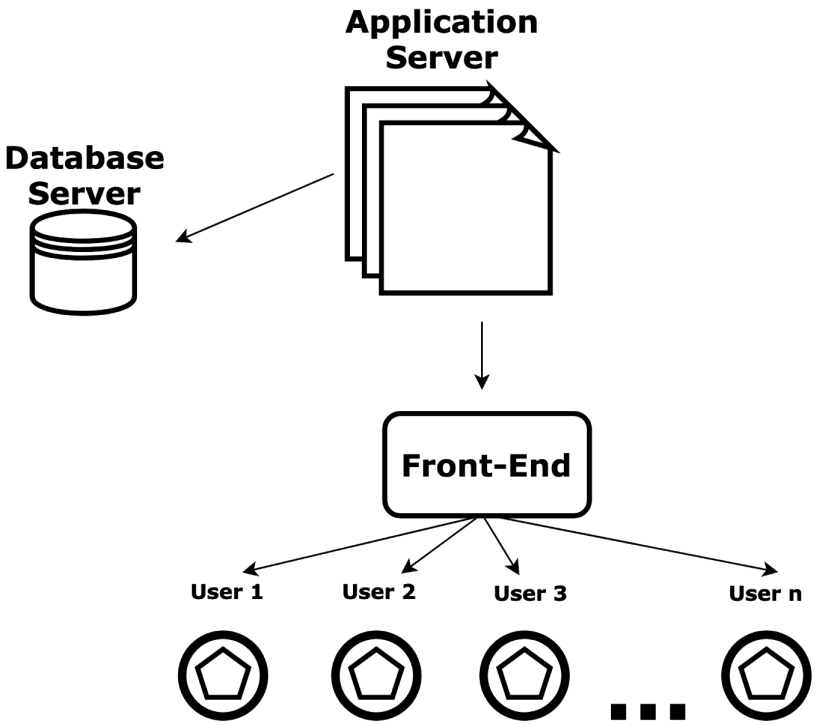
In this architectural approach, the best suited architectural pattern for this system is the Client-Server pattern. Seeing the waste collection system as a network, the servers would be located at every MCPs, with the back officers, collectors and janitors all acting as clients.

Client-Server pattern:

Client: Back officers, collectors, janitors.

Server: MCPs.

Application Architecture:



The system is intended to consist of 3 main modules:

- Task Assignment Module.
- Map Module.
- Communication Module.

Task Assignment Module:

- Input: Schedules, tasks, routes assigned by the back officers.
- Output: Schedule and tasks shown and notified for each respective employee.
- Function: Manage staff, vehicles, MCPs status, assigned tasks, routes and schedules.

Map Module:

- Input: Map information, local MCPs' status, on-duty collectors' locations and their assigned routes.
- Output: Realtime information and updates displayed on a map.

- Function: Display MCP’s status, respective locations and routes of each collector on a map.

Communication Module:

- Input: Messages, MCP’s status updates
- Output: Messages and updates notified to employees respectively
- Function: Establish communication between employees.

TASK 3.2: IMPLEMENTATION DIAGRAM