

Distributed Systems

Assignment 3

Remote Procedure Call
(RPC)

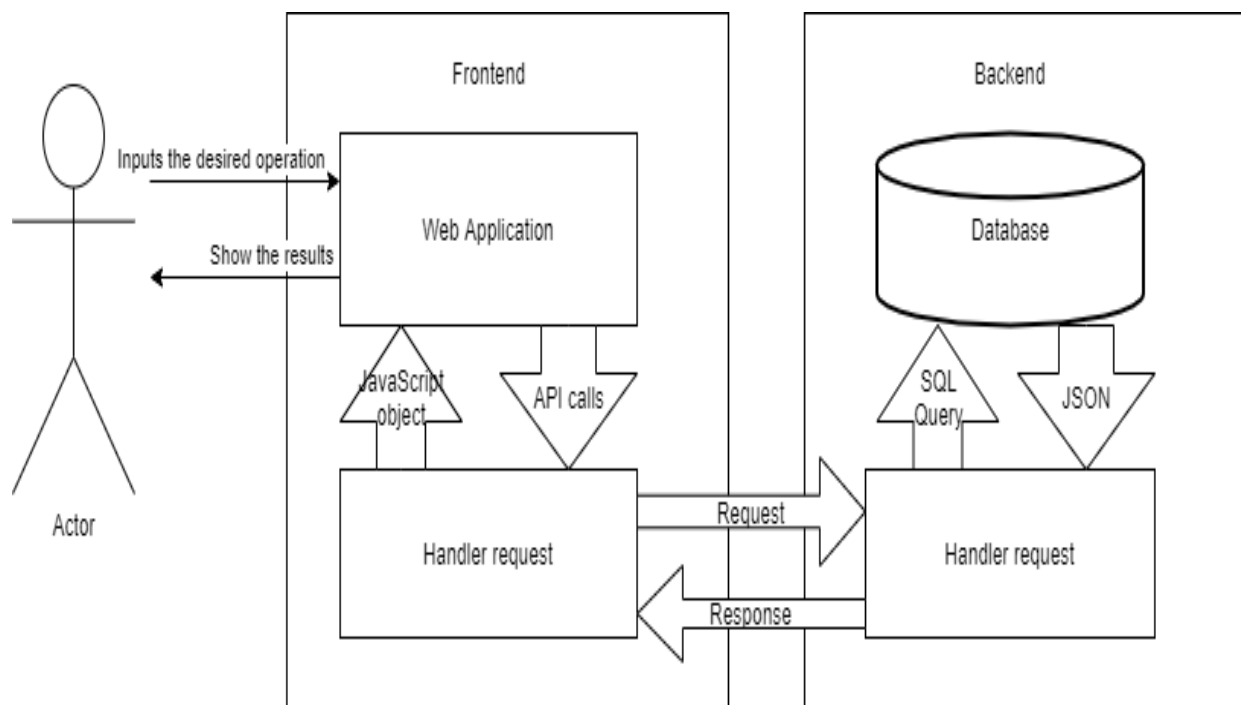
Smart Home Appliance

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1. Conceptual architecture of the distributed system:

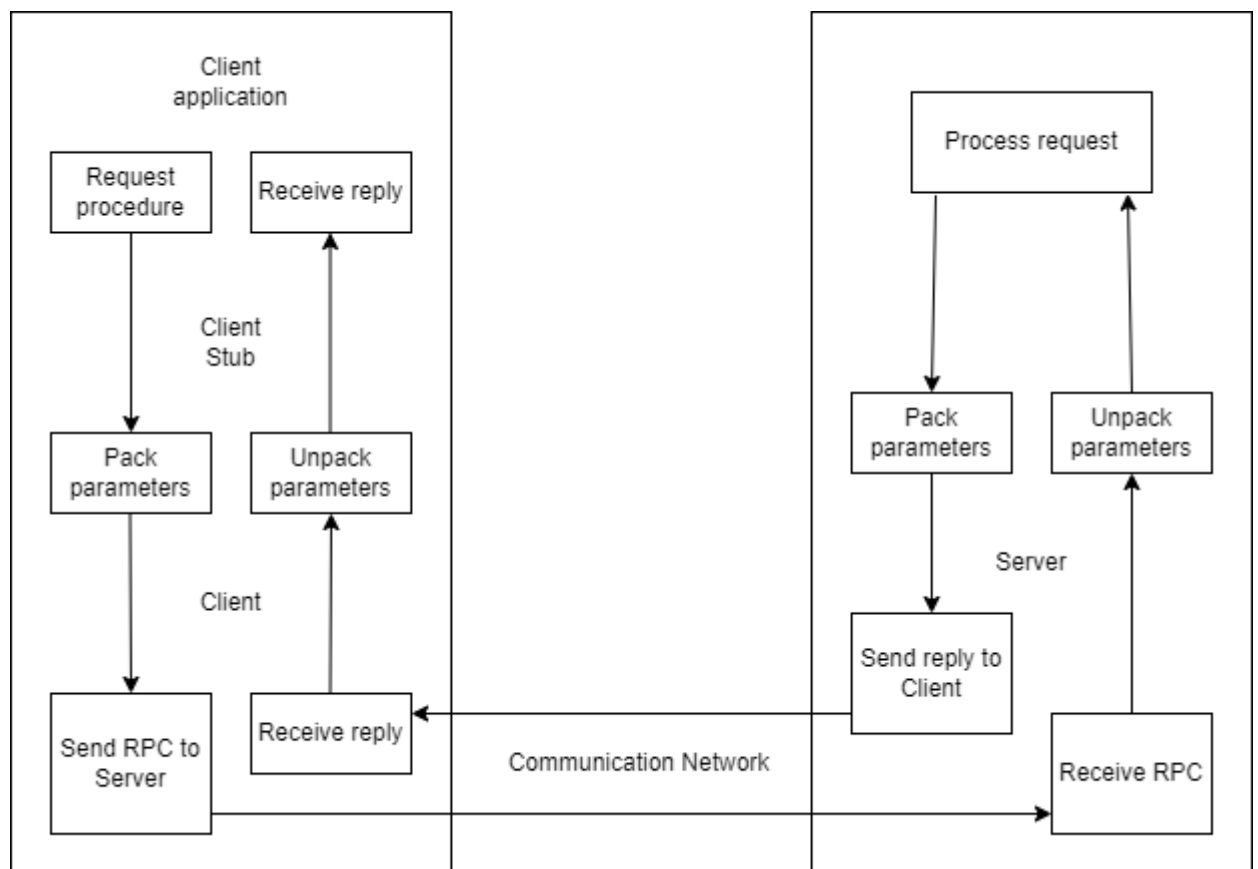
The system represents an online energy utility platform which has two types of users: administrators and clients. The type of the user is determined when the login operation takes place and depending on the respective type each user will have access to its specific options and features. The client is restricted from using the administrator menus, to be more precisely he can't modify anything related to the database. The system also contains two more elements: devices and sensors. Each user can have a group of devices, but a device can only have one owner. The sensors can each belong to only one device and a device is restricted to only have one sensor. Those sensors have the purpose of monitoring the energy consumption of their respective device. The administrator can view all the users, devices and sensors of the system and he can also perform CRUD operations on all of them. He can also link devices to users or sensors to devices at any given time, as long as he respects the conditions that a sensor can belong only to one device and that a device can belong only to one user. The clients can view their own devices with their related sensors.

The client can view his history consumption via a chart into the history consumption tab. There he can select the number of days x to show the consumption of his sensors in the last x days on the chart.



Remote Procedure Call (RPC) is a software communication protocol that one program can use to request a service from a program located in another computer on a network without having to understand the network's details. RPC is used to call other processes on the remote systems like a local system. RPC uses the client-server model and is a synchronous operation.

In the RPC model, the client makes a procedure call to send a data packet to the server. When the packet arrives, the server calls a dispatch routine, performs whatever service is requested, and sends a reply back to the client. The procedure call then returns to the client.



2. UML Deployment Diagram:

