

Project Design Phase-II

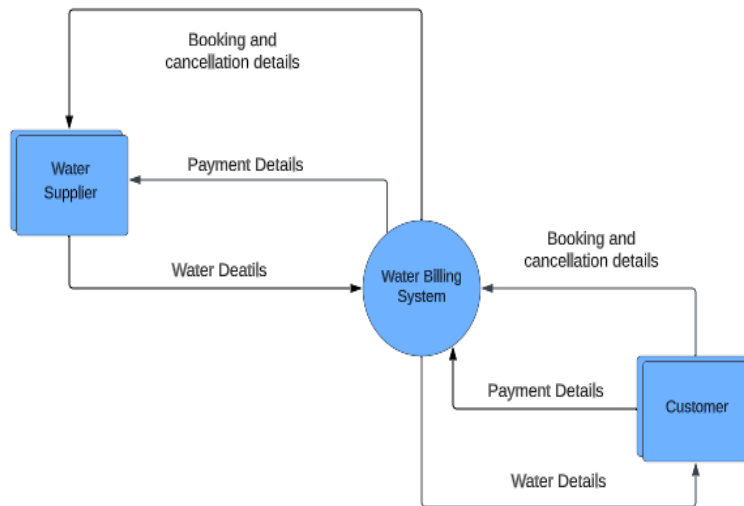
Data Flow Diagram & User Stories

Date	13 May 2023
Team ID	NM2023TMID01199
Project Title	Smart Billing system for water suppliers

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

Level 0 DFD:



Also known as a context-level DFD, the level 0 diagram represents the system as a single process and shows the major processes or subsystems within the system. It illustrates the main data flows between processes and external entities, providing a broad view of the system's functionality.

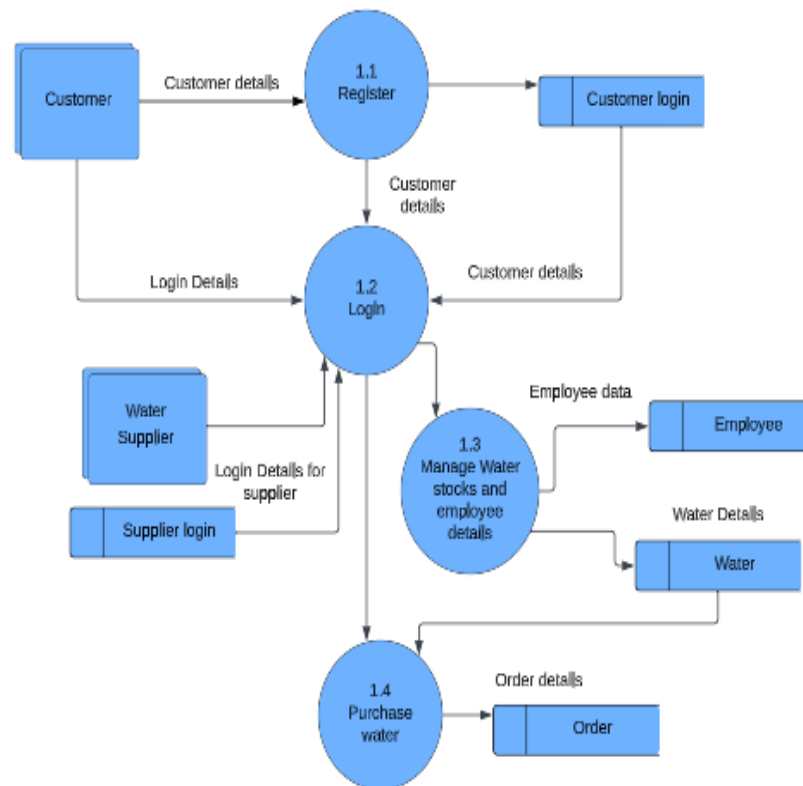
Rules:

- Single process
- Less number of entities
- Doesn't contain data store

Level 1 DFD:

Level 1 DFDs provide a more detailed view of the system by decomposing the major processes or subsystems identified in the level 0 DFD into sub-processes. Each process in the level 1 DFD represents a more detailed description of the activities involved in the system.

Level 1 DFD:



Reference link:

1) Level 0 DFD:

https://lucid.app/lucidchart/3c3acc87-8731-4202-bab1-8d7f75696863/edit?viewport_loc=-208%2C-98%2C2220%2C1038%2C0_0&invitationId=inv_f1c15d57-baec-4e13-89ea-1b8d3cc0292c

2) Level 1 DFD:

https://lucid.app/lucidchart/3c3acc87-8731-4202-bab1-8d7f75696863/edit?viewport_loc=-377%2C153%2C2775%2C1298%2CsmcY5e91tNIH&invitationId=inv_f1c15d57-baec-4e13-89ea-1b8d3cc0292c

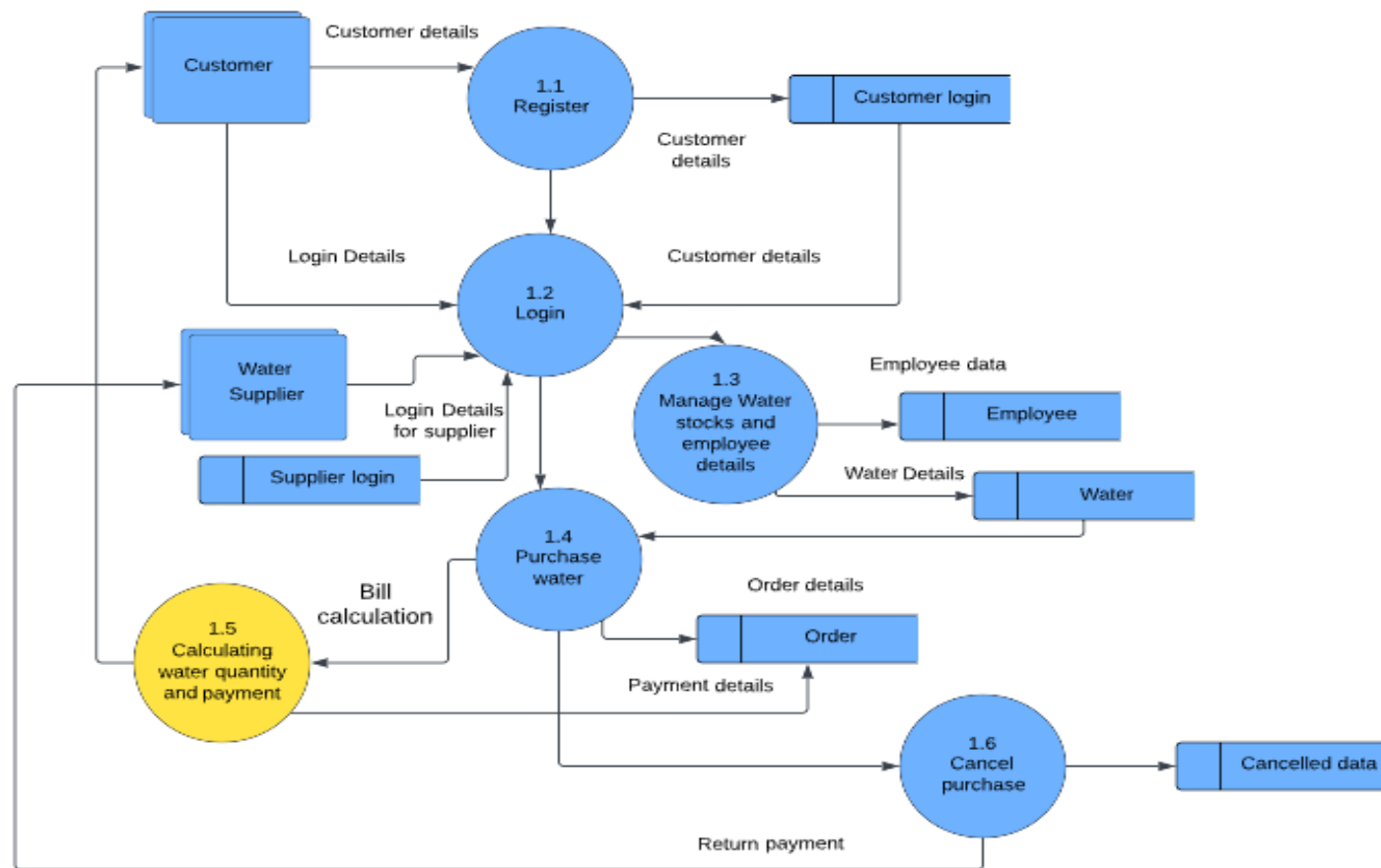
3) Level 2 DFD:

https://lucid.app/lucidchart/7402ce6c-e46b-41ab-80ae-f777b9317593/edit?viewport_loc=-204%2C202%2C2467%2C1153%2C0_0&invitationId=inv_5250e341-6c74-4bbe-a8f6-f65928c58462

Level 2 (and subsequent) DFDs:

If further detail is required, the level 1 DFD can be decomposed into more detailed DFDs, such as level 2, level 3, and so on. These diagrams continue to break down the processes into finer levels of detail, allowing for a comprehensive understanding of the system's processes and data flows.

Level 2 DFD:



User Stories:

Use the below template to list all the user stories for the product.

User type	Functional requirements (Epic)	User story number	User Story/Task	Acceptance Criteria	Priority	Team Member
Customer (Online user)	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	I can access my account / Dashboard	High	Jayapal
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Jayapal
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Dhanush
		USN-4	As a user, I can register for the application through Gmail		Medium	Gowri shankar
	Login	USN-5	As a user, I can log into the application by entering email & password	I can login & access the dashboard	High	Arun prasad
	Dashboard	USN-6	As a user, I can access my dashboard for booking, cancelling and billing with respect to my water usage details	I can access my account / Dashboard	High	Dhanush
		USN-7	As a customer, I want to receive detailed and transparent billing statements from the smart billing system, including the amount of water consumed, the tariff	No malfunctions may occur	High	Gowri shankar

			rates, and any additional charges, to better understand and manage my water usage.			
	Booking and cancellation	USN-8	As a customer, I want the smart billing system to provide a self-service portal where I can access my billing history, view historical consumption data, booking and cancellation of order and request adjustments or dispute charges if needed, to ensure accuracy and transparency in billing.	The customer can book or cancel their orders.	High	Jayapal
	Payment	USN-8	As a customer, I want the smart billing system to provide convenient and flexible payment options, such as online payment portals and mobile apps, so that I can easily pay my bills and have a hassle-free billing experience.	The customer can pay for their water usage via online mode	High	Arun Prasad
Customer (Offline User)	Purchase water from supplier	USN-9	As a customer, I want to purchase a water from a good trustable vendor.	A customer can purchase their required water	High	Dhanush
	Billing and payment	USN-10	As a customer, I want to calculate my water consumption and bill according to that.	The customer can pay for their water usage via offline mode	High	Jayapal
Water Supplier	Trustable deal	USN-11	As a water supplier, I want to automate meter reading to eliminate manual errors and reduce operational costs. The system should be able to retrieve accurate consumption data from smart	Every customer and supplier must need a trustable deal with each other	High	Arun prasad

			water meters installed at customer premises.			
	Billing software	USN-12	As a water supplier, I want the billing system to generate accurate and timely bills based on the consumption data collected from the smart water meters. The system should calculate the charges according to the tariff structure, taking into account factors such as different rates for residential and commercial customers or peak and off-peak periods.	The customer can pay for their water usage via online and offline mode	High	Jayapal
	Catch online customer	USN-13	As a water supplier, I want to provide customers with online access to their billing information. The system should offer a user-friendly customer portal where customers can view their consumption history, current balance, and download invoices. It should also send automated email or SMS notifications when bills are generated or payments are due.	It is necessary to catch the online customers as well as Offline customer.	High	Arun prasad
	Utilize the offline customer efficiently	USN-14	As a water supplier, I want to efficiently utilize the customer those who are not have a knowledge about internet access.		High	Dhanush
Customer Care executive	Work of customer care executive	USN-15	As a customer care execute, I want the smart billing system to handle billing disputes efficiently, providing a	If any errors may occur in water billing software or any doubts/ issues regarding to access the software, the executive should	Medium	Jayapal

			mechanism for customers to raise concerns or discrepancies and initiate a resolution process, ensuring timely and satisfactory resolutions.	work to clarify the customer issues.		
Employee	Employee's Work	USN-16	As an employee, I want the smart billing system to support automated meter reading data collection from remote locations, allowing for data retrieval even in areas with poor network connectivity and ensuring accurate billing for all customers.	The employee should work back on the billing software	Medium	Gowri shankar
Sociologist	Opinion	USN-17	As a sociologist, I want to understand the socio-economic factors that influence water usage patterns and behaviours. I need access to data that includes demographic information, household income levels, education, and cultural factors to study how these variables impact water consumption and conservation practices.	The sociologist could have the curiosity to save the water. So that the water billing system provides the awareness to save water. Because if anyone could pay for water, they becomes very conscious to use and save it.	Medium	Jayapal

These user stories address the various functionalities and requirements of a smart billing system for water suppliers, including automated meter reading, accurate billing, customer self-service, payment options, notifications, dispute resolution, reporting, integration, security, scalability, personalized billing plans, API capabilities, meter management, and compliance.