

PROJECT PROPOSAL
ON
Hospital Management System

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Introduction:- The Hospital Management System is a simple and smart software that helps a hospital manage its daily work in an organized way. It keeps important information in one place such as patient details, doctor information, appointments, admissions , and billing. This system reduces paperwork, saves time, avoids mistakes, and makes the entire hospital process faster and smoother.

Objective:-

- To design a simple, fast, and secure command-line application.
- To eliminate manual paperwork in hospitals.
- To maintain systematic records of patients and doctors.
- To store appointment details and track availability.
- To support patient admissions and billing operations.
- To provide data consistency using JDBC + MySQL.
- To demonstrate layered architecture in a Java project.

Project Category:- It is a Command-Line Hospital Management System created using Core Java, JDBC, and MySQL, focusing on CRUD operations, data storage, appointments, admissions, and billing.

ANALYSIS:

A. Modules and Their Description

1. Patient Management Module

Manages details of all patients.

Functions:

Add patient

View all patients

Store medical problem description

Maintain contact & address details

2. Doctor Management Module

Stores details of hospital doctors.

Functions:

Add doctor

View all doctors

Save specialization & fees

3. Appointment Management Module

Handles appointments between patients & doctors.

Functions:

Book appointment

View all appointments

Store date & medical issue

4. Admission Module

Maintains inpatient admission records.

Functions:

Admit patient

Track room type

Maintain admit/discharge dates

5. Billing Module

Handles billing operations for patients.

Functions:

Generate bill

Store paid, total & balance amounts

B. Database Design

1.PATIENT TABLE

Field Name	Data Type	Description	Constraints
patient_id	INT	Unique ID of patient	Primary Key, AutoIncrement
name	VARCHAR(100)	Patient full name	Not Null
age	INT	Patient age	Not Null
gender	VARCHAR(10)	Male/Female/Other	Not Null
mobile	BIGINT	Patient contact number	Not Null
address	VARCHAR(255)	Home address	Not Null
problem_description	VARCHAR(255)	Patient's medical problem	Not Null

2.DOCTOR TABLE

Field Name	Data Type	Description	Constraints
doctor_id	INT	Unique ID of doctor	Primary Key, AutoIncrement
name	VARCHAR(100)	Doctor name	Not Null
specialization	VARCHAR(100)	Field of expertise	Not Null
mobile	BIGINT	Contact number	Not Null
fees	INT	Consultation fees	Not Null

3.APPOINTMENT TABLE

Field Name	Data Type	Description	Constraints
appointment_id	INT	Appointment ID	Primary Key, Autoincrement
patient_id	INT	Linked patient	Foreign Key
doctor_id	INT	Linked doctor	Foreign Key
appointment_date	DATE	Appointment Date	Not Null
problem	VARCHAR(255)	Problem mentioned during appointment	Optional

4.ADMISSION TABLE

Field Name	Data Type	Description	Constraints
admission_id	INT	ID of admission	Primary Key
patient_id	INT	Admitted patient	Foreign Key
room_type	VARCHAR(50)	ICU/Private/General	Not Null
admit_date	DATE	Date of admission	Not Null
discharge_date	DATE	Leaving date	Nullable

5.BILLING TABLE

Field Name	Data Type	Description	Constraints
bill_id	INT	Bill number	Primary Key
patient_id	INT	Related patient	Foreign Key
total_amount	INT	Total charges	Not Null
paid_amount	INT	Amount paid	Not Null
balance	INT	Remaining amount	Calculated
bill_date	DATE	Bill generation date	Not Null

C.ER DIAGRAM

The ER diagram displays all key entities and their essential attributes.

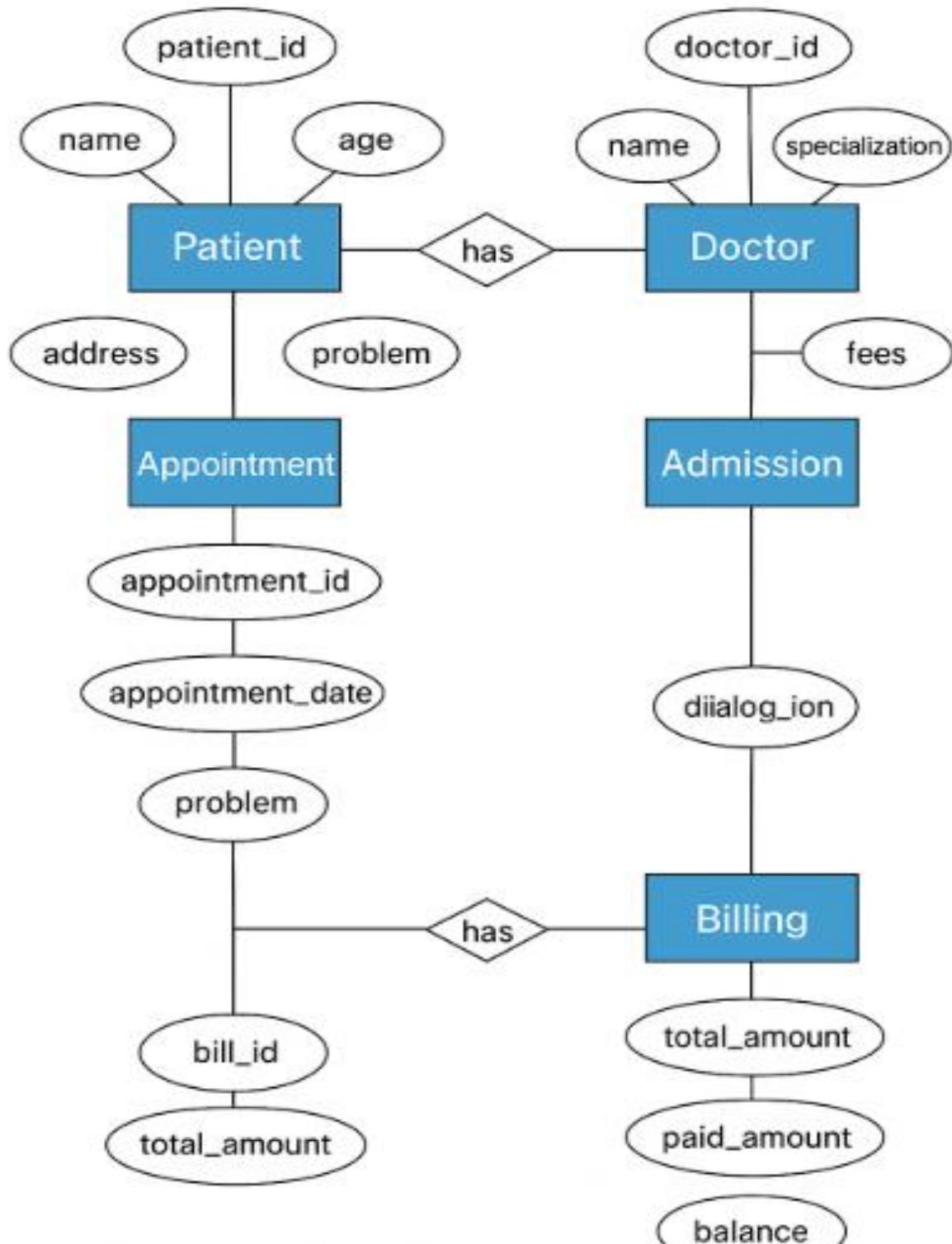
It clearly defines the relationships between different database tables.

Primary and foreign keys are used to maintain data accuracy and linkage.

It acts as the structural blueprint for creating the complete database.

Descriptions:

- A patient can have many appointments.
- A doctor can attend many appointments.
- A patient can have multiple admissions.
- A patient can have multiple bills.



Data Flow Diagram:-

DFD LEVEL-0:- The Level-0 Data Flow Diagram (DFD), also called the **Context Diagram**, represents the **entire Hospital Management System (HMS)** as a single process. It shows how the system interacts with external entities and how data flows between them.

At this level, **internal processes are not shown**. Only **inputs and outputs** between the system and external entities are represented.

Purpose of Level-0 DFD:-

- Provides a **high-level view** of the entire system
- Shows **system boundaries**
- Identifies **external entities** interacting with the system
- Helps understand **overall data flow**
- Acts as a **base for Level-1 and Level-2 DFDs**

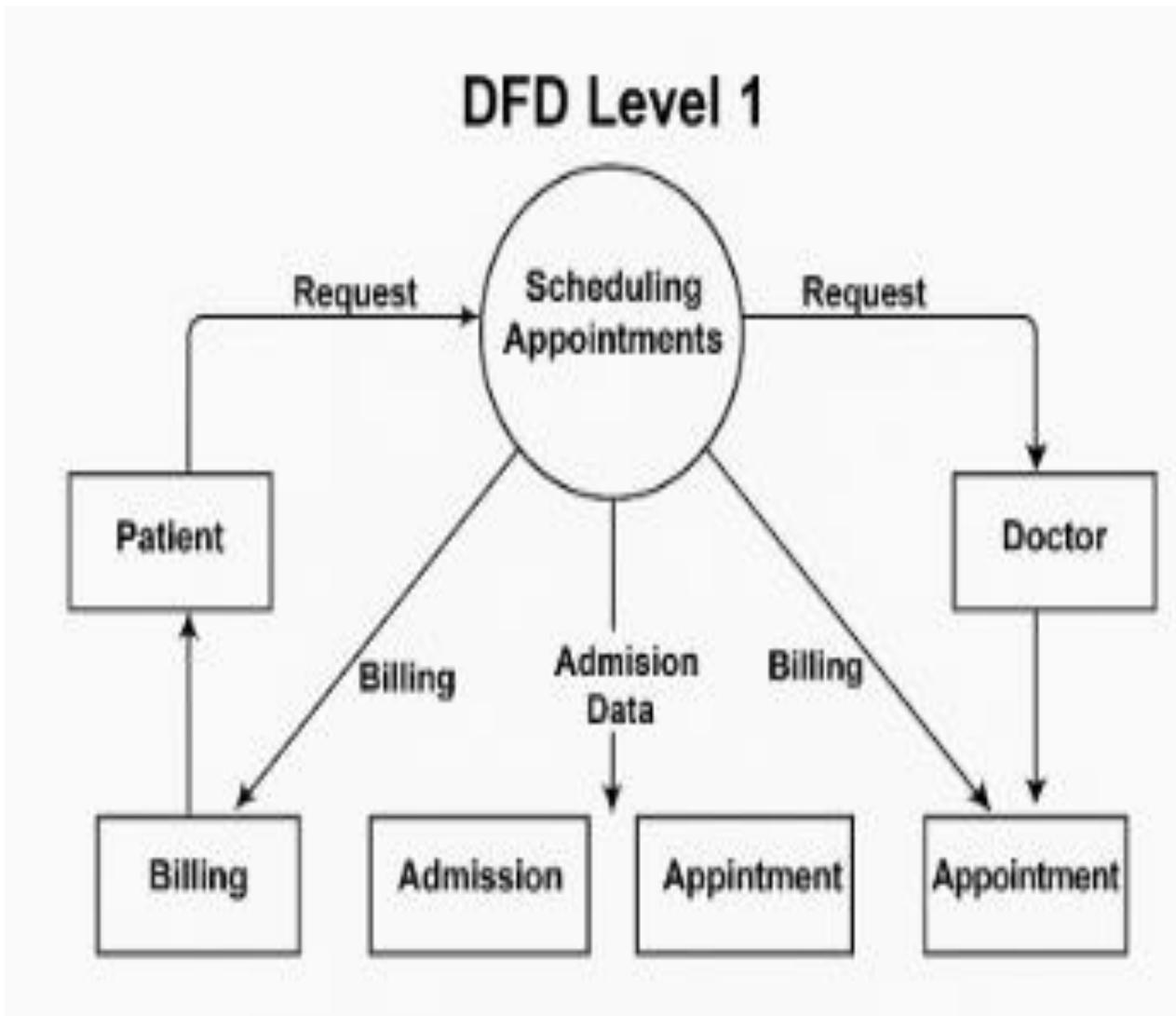
Zero level DFD



DFD LEVEL-1:- The Level-1 Data Flow Diagram (DFD) is an expansion of the Level-0 diagram. It breaks the **Hospital Management System** into its **major functional modules** and shows how data flows between external entities, processes, and data stores

Purpose of Level-1 DFD:-

- Shows **major system functions**
- Explains how data moves between processes and data stores
- Helps understand **logical flow of information**
- Acts as a foundation for **Level-2 DFDs**

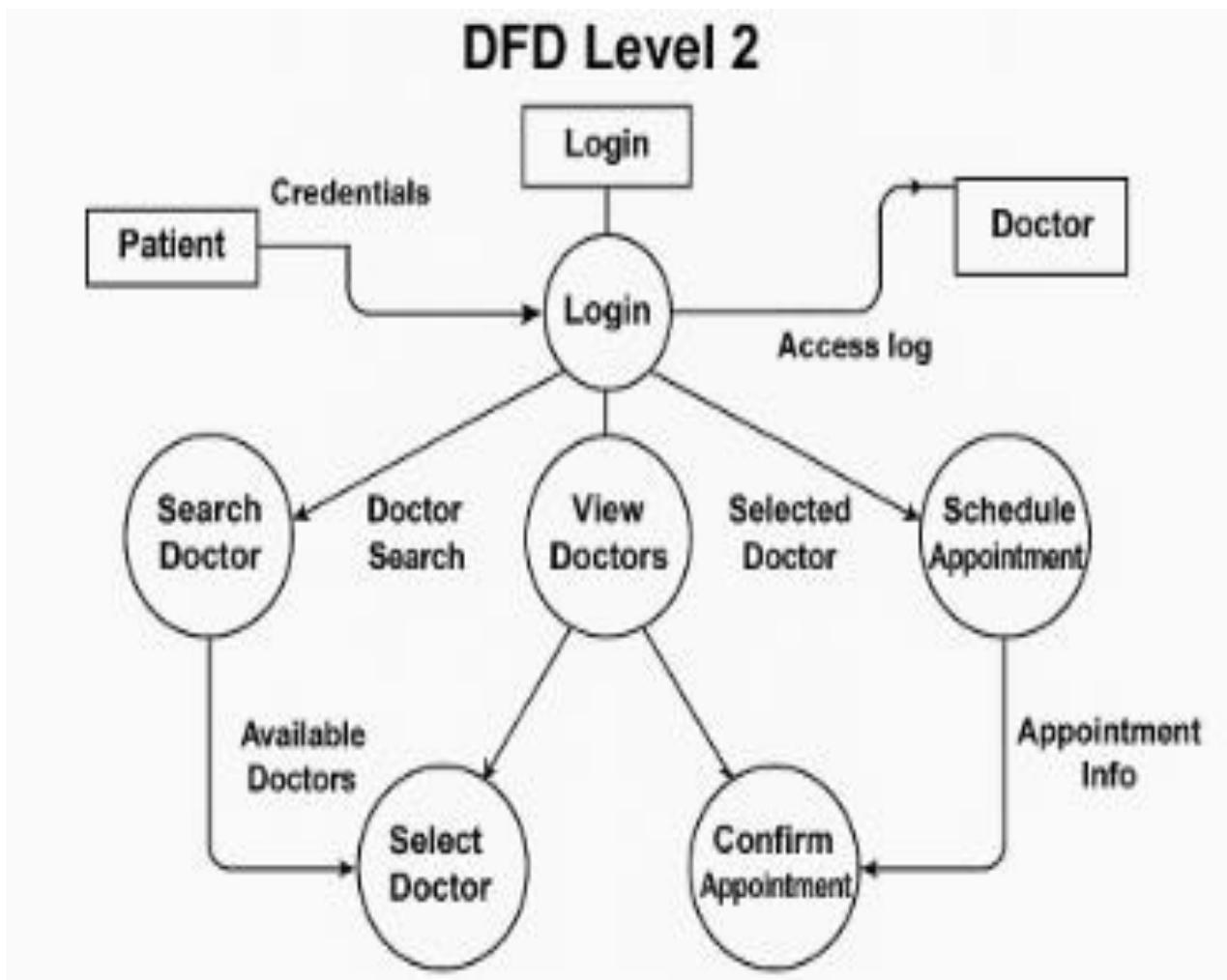


DFD LEVEL-2:- The Level-2 Data Flow Diagram (DFD) provides a **detailed decomposition** of the Level-1 processes. Each major module of the Hospital Management System is broken down into **sub-processes** to show how data is processed, stored, and retrieved in detail.

This level helps in understanding the **internal working of each module** and shows how the system ensures **data accuracy, consistency, and efficiency**.

Purpose of Level-2 DFD:-

- Shows **detailed internal processes**
- Explains **how each module functions**
- Identifies **data storage and retrieval points**
- Helps developers during **database and module design**
- Ensures **system reliability and accuracy**



Complete Structure:-

- Patient registers
- Patient books appointment
- Doctor consults patient
- Patient gets admitted (if required)
- Room is allotted
- Treatment is provided
- Bill is generated
- Payment is done
- Patient is discharged

Platform Used:-

Hardware Requirement:-

- Processor: Intel Core i3 or above
- RAM: Minimum 4 GB
- Hard Disk: 500 GB or above
- Keyboard
- Mouse
- Monitor

Software Requirement:-

- Operating System: Windows 10 or above
- Programming Language: Java
- Database: MySQL
- IDE: Eclipse / IntelliJ IDEA
- JDBC Driver

Future Scope:-

- Online appointment booking.
- SMS alerts for reminders and updates.
- Separate login panels for admin, doctor, and staff.
- Pharmacy and lab test modules.
- Online payment and e-billing support.
- Cloud-based backup and data security

Bibliography:-

- Java Programming Documentation – Oracle
- MySQL Reference Manual
- JDBC API Documentation
- Online tutorials and reference materials