

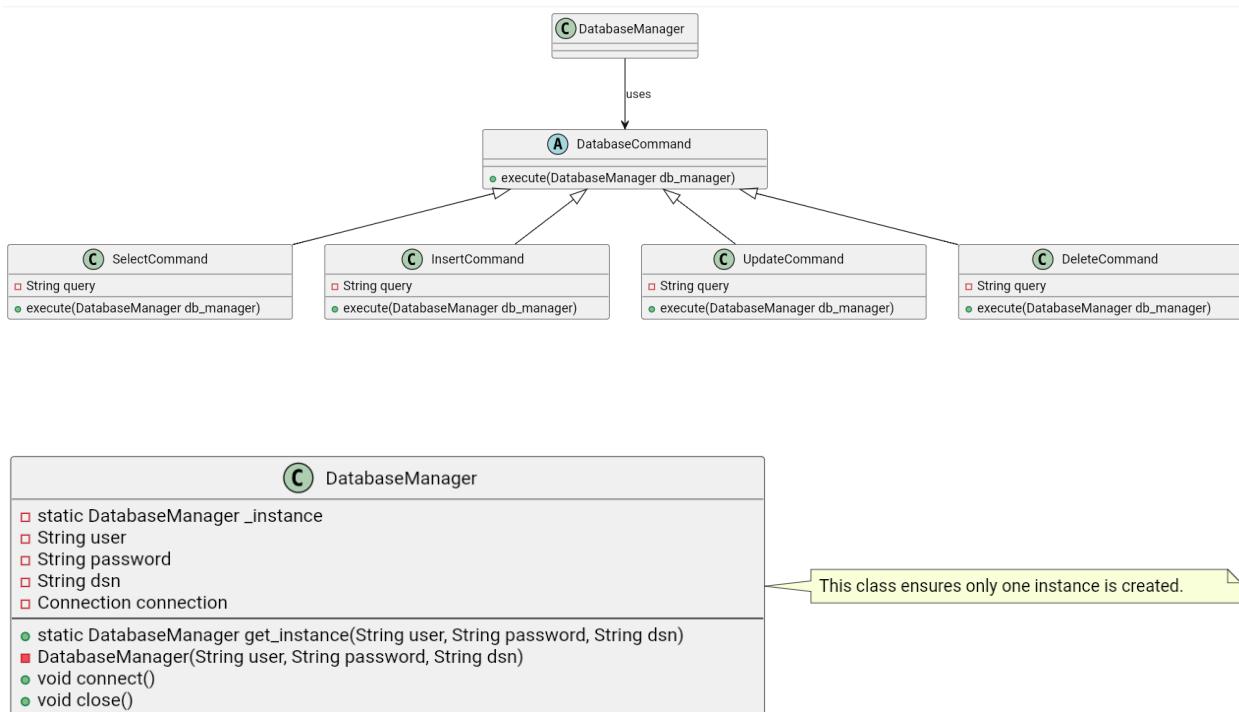
Project Aim

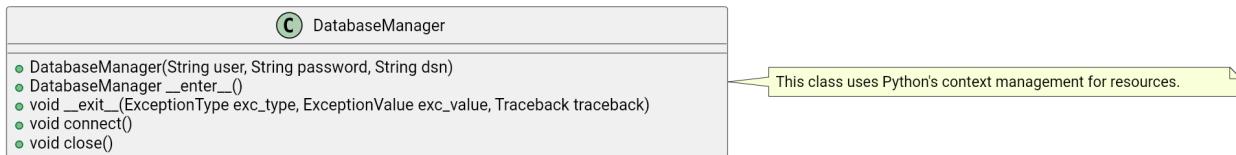
To develop a **simplified hospital management system** that streamlines key administrative and clinical processes, including patient registration, appointment scheduling, medical record management, billing, doctors management, updating any changes through mail and soon. This system aims to improve efficiency, data accessibility, and accuracy for hospital staff and facilitate seamless interactions for patients.

List of modules :

- > Patient Management
- > Doctor Management
- > Appointment Scheduling
- > Medical Records Management
- > Billing and Invoice
- > Sending mail (for any updates to patients)
- > Database operation manager (DML, DQL)

Design Pattern UML Diagram :





Design Patterns Used (With code):

Singleton Pattern:

- Ensures that a class has only one instance and provides a global point of access to it.
- Useful for shared resources like database connections, logging, or configuration objects.
- Implementation involves a static instance and a controlled way to access or create it.

Code :

```

class DatabaseManager:
    _instance = None # Singleton instance placeholder

    @staticmethod
    def get_instance(user=None, password=None, dsn=None):
        """Retrieve or create the singleton instance of
DatabaseManager."""
        if DatabaseManager._instance is None:
            DatabaseManager._instance = DatabaseManager(user,
password, dsn)
        return DatabaseManager._instance

    def __init__(self, user, password, dsn):
        if DatabaseManager._instance is not None:
            raise Exception("This class is a singleton! Use `get_instance()`"
to get an instance.")
        self.user = user
        self.password = password
        self.dsn = dsn
        self.connection = None

    def connect(self):

```

```

"""Establish a database connection."""
if not self.connection:
    print("Database connection established.")
    self.connection = True # Simulated connection

def close(self):
    """Close the database connection."""
    if self.connection:
        print("Database connection closed.")
        self.connection = None

```

Command Pattern:

- Encapsulates a request as an object, allowing clients to issue different requests without knowing the details.
- Decouples the invoker of an operation (DatabaseManager) from the logic of execution.
- Example usage includes database operations like SELECT, INSERT, UPDATE, DELETE.

Code :

```

# Abstract Command
class DatabaseCommand:
    """Abstract base class for database commands."""
    def execute(self, db_manager):
        raise NotImplementedError("Each command must implement an
execute method")

# Concrete Commands
class SelectCommand(DatabaseCommand):
    def __init__(self, query):
        self.query = query

    def execute(self, db_manager):
        print(f"Executing SELECT: {self.query}")
        # Simulated execution
        return "Results of SELECT query"

class InsertCommand(DatabaseCommand):
    def __init__(self, query):
        self.query = query

```

```

def execute(self, db_manager):
    print(f"Executing INSERT: {self.query}")
    # Simulated execution

class UpdateCommand(DatabaseCommand):
    def __init__(self, query):
        self.query = query

    def execute(self, db_manager):
        print(f"Executing UPDATE: {self.query}")
        # Simulated execution

class DeleteCommand(DatabaseCommand):
    def __init__(self, query):
        self.query = query

    def execute(self, db_manager):
        print(f"Executing DELETE: {self.query}")
        # Simulated execution

```

Context Manager Pattern:

- Simplifies resource management by ensuring resources (e.g., database connections) are properly initialized and cleaned up.
- Uses Python's `with` statement to handle setup and teardown.
- Example: Automatically connecting to and closing a database connection.

Code:

```

class DatabaseManager:
    def __init__(self, user, password, dsn):
        self.user = user
        self.password = password
        self.dsn = dsn
        self.connection = None

    def __enter__(self):
        """Establish the connection when entering the context."""
        self.connect()
        return self

    def __exit__(self, exc_type, exc_value, traceback):

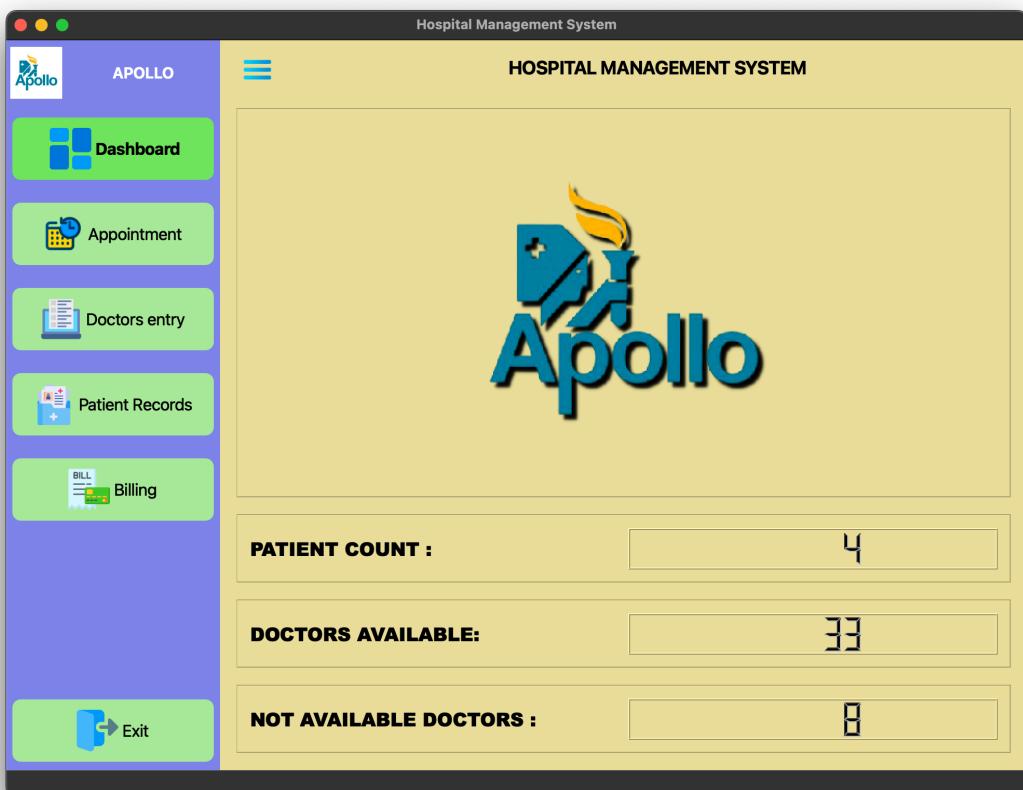
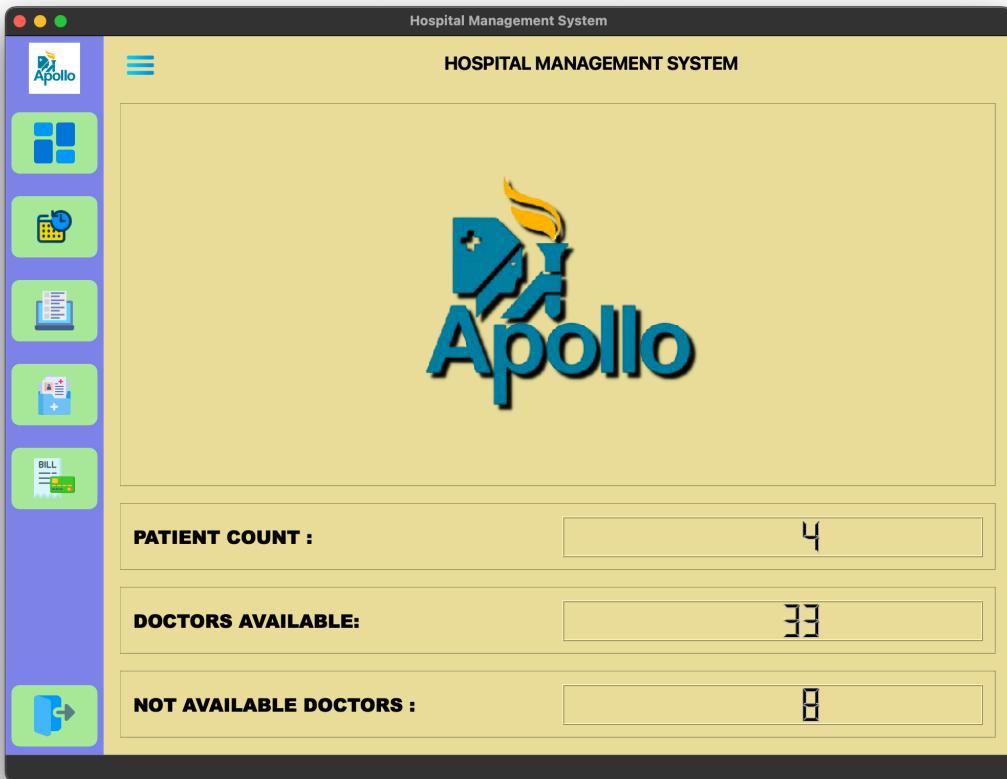
```

```
"""Close the connection when exiting the context."""
self.close()

def connect(self):
    """Simulate establishing a database connection."""
    if not self.connection:
        print("Database connection established.")
        self.connection = True

def close(self):
    """Simulate closing a database connection."""
    if self.connection:
        print("Database connection closed.")
        self.connection = None
```

UI OUTPUT SCREENSHOTS :



Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Book Appointment

Entry cancel appointment completed

search... search

Appointment ID	Patient ID	Patient Name	Doctor ID	Medical Condition	Appointment Date
1 A24	P24	sriram p	D22	heart_problems	2024-11-13 ...
2 A23	P23	C.ARJUN	D5	fever	2024-11-13 ...
3 A21	P21	santhoshkumar	D9	headache	2024-11-12 ...
4 A22	P22	K DINESH ARAVIND	D7	cough	2024-11-12 ...

Delete

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Book Appointment

Entry cancel appointment completed

name
DOB
01/01/00
gender
medical condition
email
Appointed Date
13/11/24
House no

Book

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Book Appointment

Entry cancel appointment completed

search... search

	Appointment ID	Patient ID	Patient Name	Doctor ID	Medical Condition	Appointment Date
1	A4	P4	Rahul Joshva	D27	cancer	2024-11-07 ...
2	A14	P14	mohit	D9	headache	2024-11-08 ...
3	A18	P18	keerthi reddy	D3	cold	2024-11-09 ...
4	A13	P13	shaam	D22	heart_problems	2024-11-08 ...
5	A1	P1	kalanidy	D5	fever	2024-11-07 ...
6	A3	P3	khaN	D17	eye_problem	2024-11-07 ...
7	A15	P15	jayakanth	D43	hypertension_ma...	2024-11-08 ...
8	A16	P16	mohit reddy	D3	cold	2024-11-08 ...
9	A19	P19	Jai Darira	D17	eye_problem	2024-11-09 ...
10	A2	P2	Sanjay	D6	fever	2024-11-07 ...

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Doctors Availability

not available Available working add doctor delete doctor

search... search

	id	Doctor Name	Specialization	Contact
1	D1	Dr. Arun Kumar	general_checkup	9876543210
2	D10	Dr. Karan Mehta	fatigue	9876543219
3	D12	Dr. Deepak Shah	stomach_pain	9876543221
4	D15	Dr. Manish Tiwari	allergy	9876543224
5	D16	Dr. Alok Sinha	back_problem	9876543225
6	D17	Dr. Smita Das	eye_problem	9876543226
7	D18	Dr. Veena Reddy	skin_problem	9876543227
8	D2	Dr. Riya Singh	general_checkup	9876543211
9	D20	Dr. Neha Sharma	muscle_pain	9876543229
10	D21	Dr. Sanjay Joshi	joint_pain	9876543230
11	D23	Dr. Anil Kapoor	arrhythmia	9876543232
12	D24	Dr. Rohit Chandra	epilepsy	9876543233

mark not available

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Doctors Availability

[not available](#) [Available](#) [working](#) [add doctor](#) [delete doctor](#)

search...

	id	Doctor Name	Specialization	Contact
1	D11	Dr. Pooja Deshmukh	nausea	9876543220
2	D13	Dr. Rahul Verma	sore_throat	9876543222
3	D14	Dr. Kavita Kapoor	diarrhea	9876543223
4	D19	Dr. Ravi Shastri	ear_problem	9876543228
5	D29	Dr. Radhika Sen	icu_heart	9876543238
6	D36	Dr. Parag Jain	chronic_obstructive_pulmon...	9876543245
7	D37	Dr. Usha Mehta	pulmonary_embolism	9876543246
8	D45	Dr. Gaurav Patel	gastroesophageal_reflux_dis...	9876543254

[mark available](#)

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Doctors Availability

[not available](#) [Available](#) [working](#) [add doctor](#) [delete doctor](#)

search...

	id	Doctor Name	Specialization	Contact
1	D1	Dr. Arun Kumar	general_checkup	9876543210
2	D10	Dr. Karan Mehta	fatigue	9876543219
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4	D15	Dr. Manish Tiwari	allergy	9876543224
5	D16	Dr. Alok Sinha	back_problem	9876543225
6	D17	Dr. Smita Das	eye_problem	9876543226
7	D18	Dr. Veena Reddy	skin_problem	9876543227
8	D2	Dr. Riya Singh	general_checkup	9876543211
9	D20	Dr. Neha Sharma	muscle_pain	9876543229
10	D21	Dr. Sanjay Joshi	joint_pain	9876543230
11	D23	Dr. Anil Kapoor	arrhythmia	9876543232
12	D24	Dr. Rohit Chandra	anemia	9876543222

[mark not available](#)

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Doctors Availability

not available Available working add doctor delete doctor

search...

	id	Doctor Name	Specialization	Contact
1	D22	Dr. Priyanka Gupta	heart_problems	9876543231
2	D5	Dr. Vinod Gupta	fever	9876543214
3	D7	Dr. Sunita Rao	cough	9876543216
4	D9	Dr. Priya Iyer	headache	9876543218

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Doctors Availability

not available Available working add doctor delete doctor

contact info
Doctor name
Department
House no
state
salary
city

add

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Manage Patients Records

Current Records Past Records Delete record

search... Enter

	id	Patient Name	medical_condition	Allotted Doctor
1	P24	sriram p	heart_problems	Dr. Priyanka Gupta
2	P23	C.ARJUN	fever	Dr. Vinod Gupta
3	P21	santhoshkumar	headache	Dr. Priya Iyer
4	P22	K DINESH ARAVIND	cough	Dr. Sunita Rao

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Manage Patients Records

Current Records Past Records Delete record

search... Enter

	id	Patient Name	medical_condition	Allotted Doctor
1	P4	Rahul Joshva	cancer	Dr. Leela Nair
2	P14	mohit	headache	Dr. Priya Iyer
3	P18	keerthi reddy	cold	Dr. Meera Sharma
4	P13	shaam	heart_problems	Dr. Priyanka Gupta
5	P1	kalanidy	fever	Dr. Vinod Gupta
6	P3	khaN	eye_problem	Dr. Smita Das
7	P15	jayakanth	hypertension_management	Dr. Swati Desai
8	P16	mohit reddy	cold	Dr. Meera Sharma
9	P19	Jai Darira	eye_problem	Dr. Smita Das
10	P2	Sanjay	fever	Dr. Sneha Nair

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

Manage Patients Records

Current Records | Past Records | Delete record

	id	Patient Name	medical_condition	Allotted Doctor
1	P24	sriram p	heart_problems	Dr. Priyanka Gupta
2	P23	C.ARJUN	fever	Dr. Vinod Gupta
3	P21	santhoshkumar	headache	Dr. Priya Iyer
4	P22	K DINESH ARAVIND	cough	Dr. Sunita Rao

search...

Hospital Management System

HOSPITAL MANAGEMENT SYSTEM

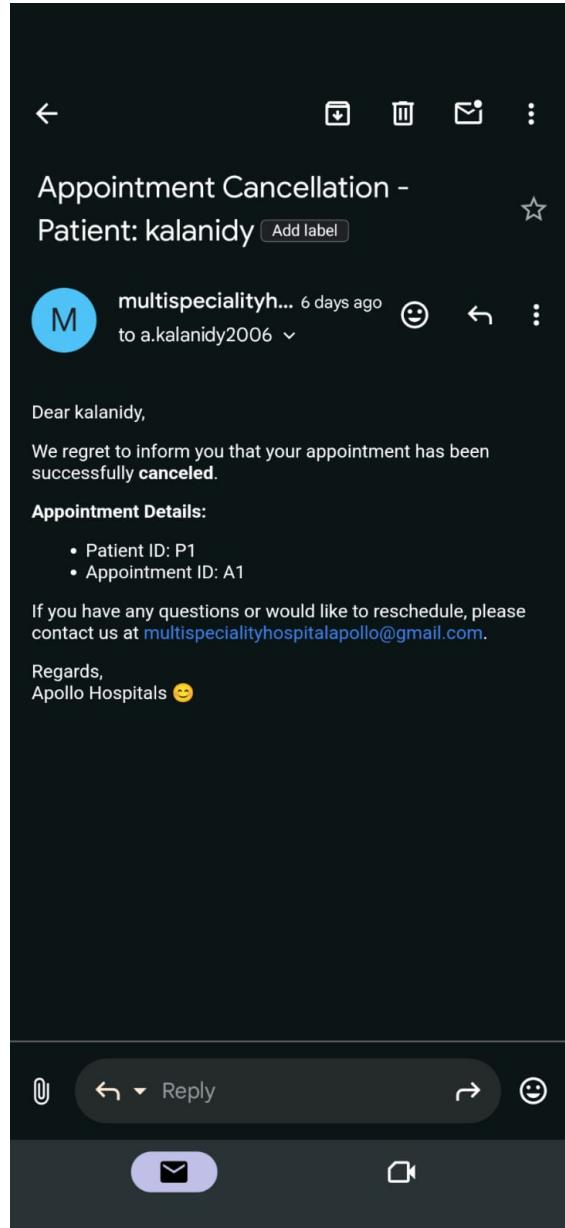
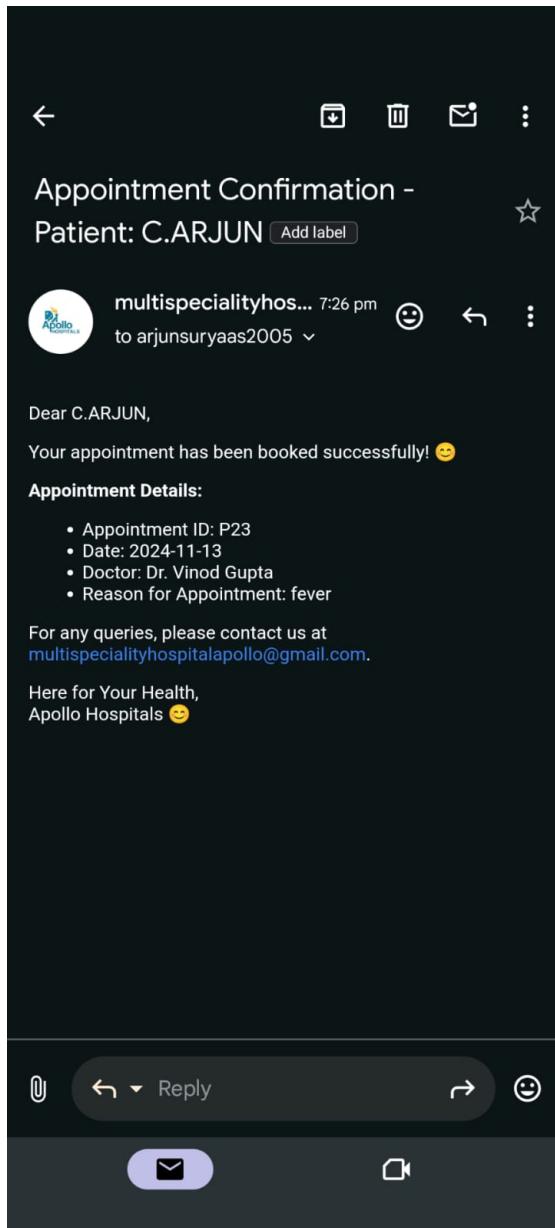
Billing

search...

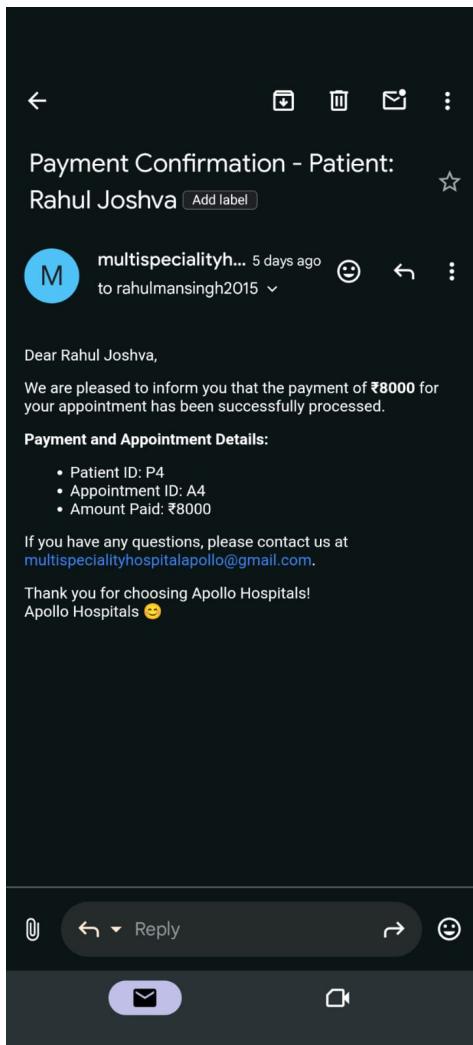
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3	A21	P21	santhoshkumar	D9	headache	2024-11-12 ...
4	A22	P22	K DINESH ARAVIND	D7	cough	2024-11-12 ...

1 day
₹ 2000
₹ 2000 only

APPOINTMENT CONFIRMATION AND CANCELLATION



PAYMENT PART :



Result :

The Hospital Management System (HMS) will provide an organized and efficient way to manage and track hospital data, including patient records, doctor information, and appointment scheduling.