RDB Group Project

Online Healthcare Service

Group 8:

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Project Description

Due to Covid-19 crisis, many patients can’t go to the hospital to consult their symptoms or receive medication followed by an appointment. Therefore, online service for health care is able to decrease this inconvenience.

Online healthcare service is the platform that provides many fundamental services to support patients. They can appoint the doctor for consulting online, receiving treatment advice, getting medication, and paying for treatment on the same platform.

Business Rules

1. Each user can register to online healthcare services for 1 time.
2. Patients can check the time schedule of the specific doctor before making an appointment .
3. Patients can make many appointments to consult with the doctor.
4. Patients can select an available time of doctor for an appointment and get the confirmation from the application.
5. Patients can view the consultation receipt for checking service charge rate.
6. Patients can view the medicine receipt for checking the unit of each medicine and price per unit.
7. Doctors can make the consultation summary after giving consultation to the patient

Maintained Data & Data Constraints

1. **User information:** Username, Password, Email, Status, Registered Date, Updated Date

2. **Patient's Information:** Patient Username, First Name, Middle Name, LastName, IdentityCard, IdentityCardType, DOB, Gender, Weight, Height, Mobile, Address, Updated Date

3. **Doctor's Information**: Doctor Username, First Name, Middle Name, Last Name, Doctor-License ID, Gender, Specialty, Consultation Cost, Registered Date, Status

4. **Medicine's Information:** Medicine ID, Name, Classification of medicine, Unit, Price, Manufactured Date, Expire Date

5. **Work Schedule (of doctors):** Schedule ID, Doctor ID, Work Start, Work End, Remark

Maintained Data & Data Constraints

6. **Appointment's Information:** Appointment ID, Patient ID, Doctor ID, ScheduleId, Detail, Created Date, Status, Remark, Updated Date

7. Consultation Information: ConsultID, PatientID, DoctorID, Symptom, Detail, Prescription, ConsultationDate

8. **Payments Information for consultation:** Receipt ID, Patient ID, Doctor ID, remark, Service Charge, Cashier Name, Payment Method, Issued Date

9. **Payments Information for medicine:** ID, Receipt ID, MedicineId, Unit, PricePerUnit, IssuedDate, CashierName

Operations & Transactions

Registration

1. Insert data of a new user when a new registration occurs.
2. Insert data of new patients when new registration occurs and user who registers is patient
3. Update the status of a doctor when the doctor resigned.
4. Update User Data (Email, Registered Date and Status) in User Table.

Make an appointment

1. Insert data of new appointments when patients prefer to make an appointment with a doctor
2. Update appointment schedule of each user.
3. Update appointment status when patient completes the consultation
4. Update the remark in Appointment of a patient.

Work Schedule

1. Update the work schedule of a doctor.
2. Delete the work schedule of a specific doctor when he /she has resigned.

Operations & Transactions

Patient consults with the doctor

1. Insert data of new consultation when doctors finish their consultation (using Appointments Data).
2. Update consultation details and symptoms when the doctor needs to edit (to make my query more reasonable).

Manage medicine that using for online service

1. Insert data of new medicines to add medicine that the hospital bought.
2. Update medicine price or availability.

Payment of Medicine

1. Insert new payment of medicine.

Important data inquiries & reports

1. Number of patients registered in the year 2021 and how many days passed.
2. Number of the appointments made in June - August 2021.
3. Number of symptoms that patients reported 7 days before the current date.
4. Number of each medicine that has sold and total price from January - June 2021.
5. Total consultation cost of each patient.
6. Number of patients who take any medicines within 1 month from now.
7. Total units of ‘Oxygen’ left in the stock (not yet expired).
8. Number of consultations of each doctor and their speciality and fee of them starting from January 2021.
9. Number of appointments that are rescheduled in February 2021.

Important data inquiries and reports

10. Compare between the number of patients and doctors who registered between January - March 2021.

11. Number of patients in the range of ages (< 10, 25-35, 35-55, >50) include appointment and consultation.

12. Number of times that the same patient made an appointment in August 2021.

13. Most frequent symptoms during 2021.

14. Number of doctors who have a specialty for ‘General’.

15. Most prescribed medications.

16. Top 3 of expensive medicines.

17. Sum of each medicine from different units.

18. The names of medicines which have the highest lifespan and those of medicines which have the lowest lifespan.

Important data inquiries and reports

19. Ratio Between Completed and Missed appointments.

20. The information of the doctors who resigned but their work schedule are still in the record.

21. Number of medicine types bought, total cost and payment method by male and female patients.

22. number of male and female patients and names of their symptoms that are consulted in August 2021.

23. Contact Information of foreigners registered as patients in 2021.

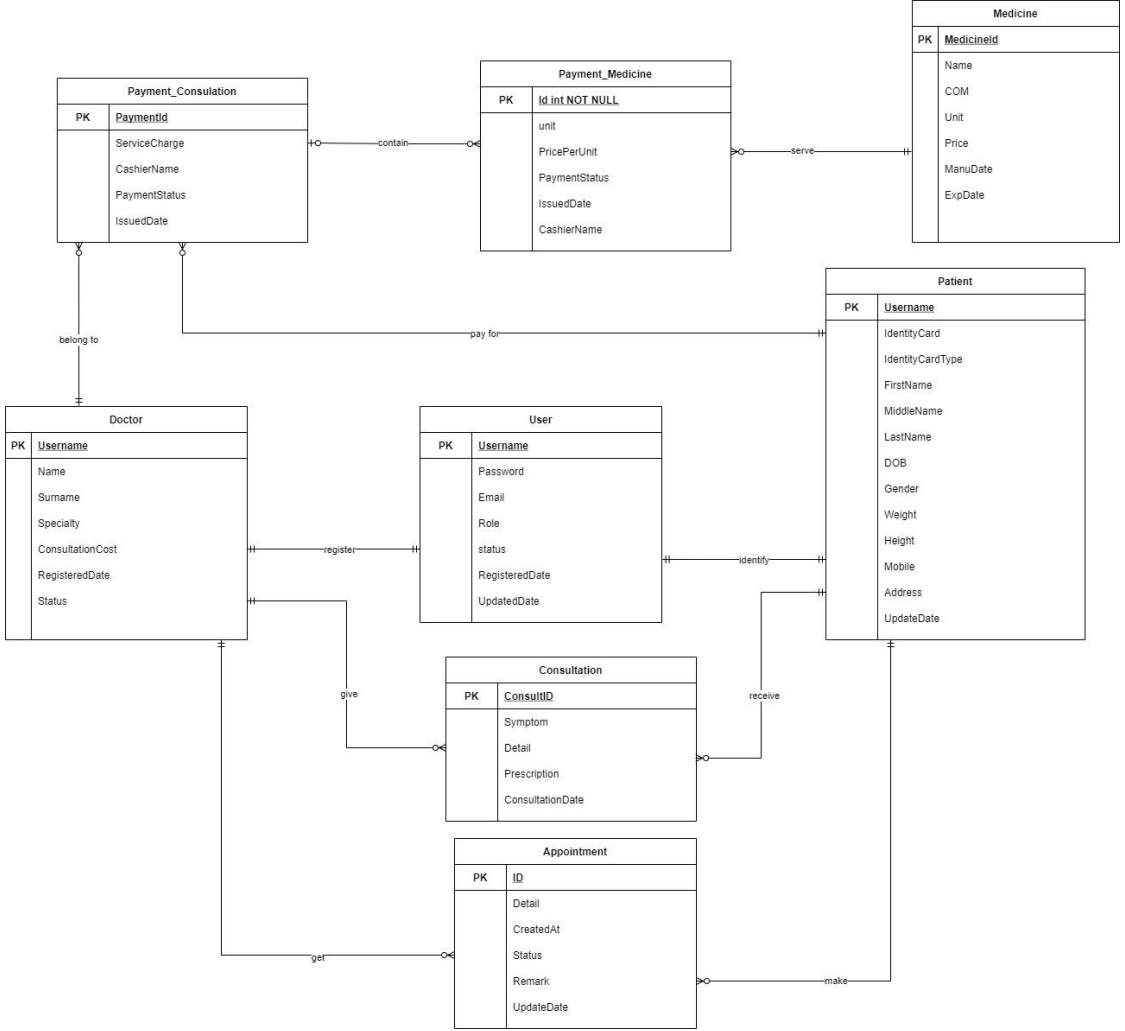
24. List of Top 5 users who recently registered in the system a month ago.

25. Number of Patients take at least one appointment.

26. Select top 3 of Consultations.

27. Price per Unit of each Medicine.

Conceptual Design



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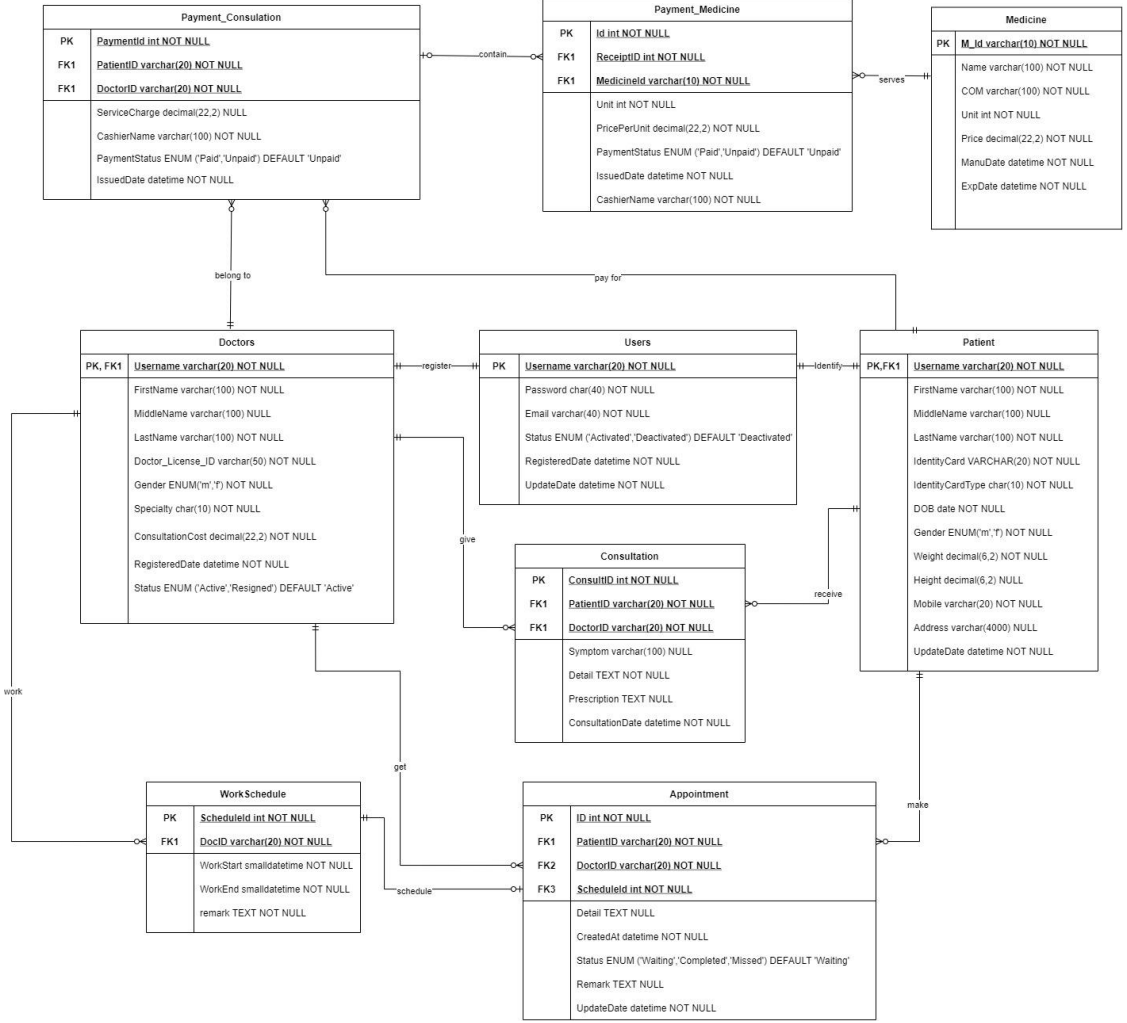
Logical Design



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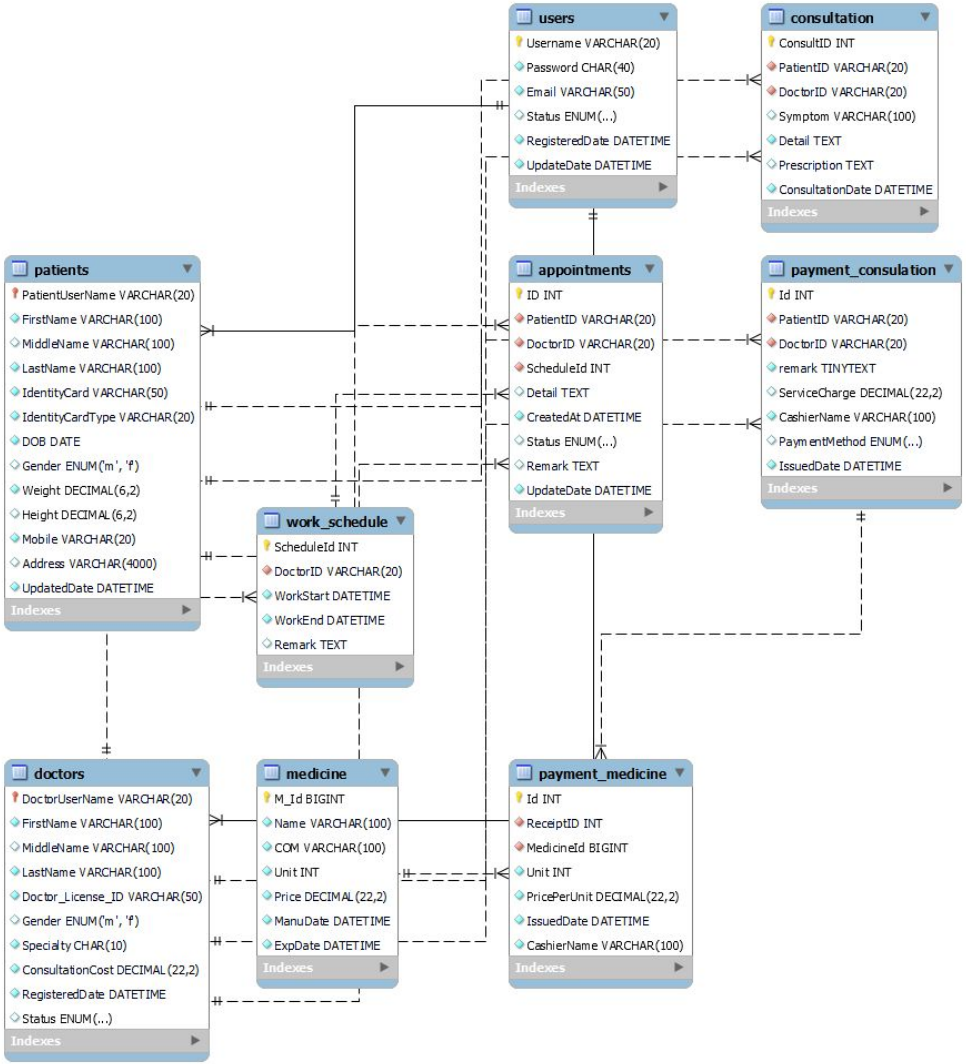
ER Diagram


users
Username VARCHAR(20)
Password CHAR(40)
Email VARCHAR(50)
Status ENUM(...)
RegisteredDate DATETIME
UpdateDate DATETIME
Indexes
consultation
ConsultID INT
PatientID VARCHAR(20)
DoctorID VARCHAR(20)
Symptom VARCHAR(100)
Detail TEXT
Prescription TEXT
ConsultationDate DATETIME
Indexes
patients
PatientUserName VARCHAR(20)
FirstName VARCHAR(100)
MiddleName VARCHAR(100)
LastName VARCHAR(100)
IdentityCard VARCHAR(50)
IdentityCardType VARCHAR(20)
DOB DATE
Gender ENUM('m', 'f')
Weight DECIMAL(6,2)
Height DECIMAL(6,2)
Mobile VARCHAR(20)
Address VARCHAR(4000)
UpdatedDate DATETIME
Indexes
appointments
ID INT
PatientID VARCHAR(20)
DoctorID VARCHAR(20)
ScheduleId INT
Detail TEXT
CreatedAt DATETIME
Status ENUM(...)
Remark TEXT
UpdateDate DATETIME
Indexes
payment_consulation
Id INT
PatientID VARCHAR(20)
DoctorID VARCHAR(20)
remark TINYTEXT
ServiceCharge DECIMAL(22,2)
CashierName VARCHAR(100)
PaymentMethod ENUM(...)
IssuedDate DATETIME
Indexes
work_schedule
ScheduleId INT
DoctorID VARCHAR(20)
WorkStart DATETIME
WorkEnd DATETIME
Remark TEXT
Indexes
doctors
DoctorUserName VARCHAR(20)
FirstName VARCHAR(100)
MiddleName VARCHAR(100)
LastName VARCHAR(100)
Doctor_License_ID VARCHAR(50)
Gender ENUM('m', 'f')
Specialty CHAR(10)
ConsultationCost DECIMAL(22,2)
RegisteredDate DATETIME
Status ENUM(...)
Indexes
medicine
M_Id BIGINT
Name VARCHAR(100)
COM VARCHAR(100)
Unit INT
Price DECIMAL(22,2)
ManuDate DATETIME
ExpDate DATETIME
Indexes
payment_medicine
Id INT
ReceiptID INT
MedicineId BIGINT
Unit INT
PricePerUnit DECIMAL(22,2)
IssuedDate DATETIME
CashierName VARCHAR(100)
Indexes

Data dictionary - User

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
Username	varchar(20)	Y	N	PK	
Password	varchar(40)	N	N		
Email	varchar(50)	Y	N		
Status	ENUM ('Activated','Deactivated')	N	N		
RegisteredDate	datetime	N	N		
UpdateDate	datetime	N	N		

Data dictionary - Patients

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
PatientUserName	varchar(20)	Y	N	PK, FK	Username of User table
IdentityCard	varchar(50)	Y	N		
IdentityCardType	varchar(20)	Y	N		
FirstName	varchar(100)	N	N		
MiddleName	varchar(100)	N	Y		
LastName	varchar(100)	N	N		
DOB	date	N	N		
Gender	ENUM ('m','f')	N	Y		
Weight	decimal(6,2)	N	N		
Height	decimal(6,2)	N	Y		
Mobile	varchar(20)	N	N		
Address	varchar(4000)	N	Y		
UpdateDate	datetime	N	N		

Data dictionary- Doctor

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
DoctorUserName	varchar(20)	Y	N	PK, FK	Username of User table
FirstName	varchar(100)	N	N		
MiddleName	varchar(100)	N	Y		
LastName	varchar(100)	N	N		
Doctor_License_ID	varchar(50)	Y	N		
Gender	ENUM ('m','f')	N	Y		
Specialty	char(10)	N	N		
ConsultationCost	decimal(22,2)	N	N		
RegisteredDate	datetime	N	N		
status	ENUM ('Active','Resigned')	N	N		

Data dictionary- Medicine

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
M_Id (Medicine ID)	bignit	Y	N	PK	
Name	varchar(100)	N	N		
COM (Classification)	varchar(100)	N	N		
Unit	int	N	N		
Price	decimal(22,2)	N	N		
ManuDate (Manufacturer Date)	datetime	N	N		
ExpDate (Expire date)	datetime	N	N		

Data dictionary- Work Schedule

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
ScheduleId	int	Y	N	PK	
DoctorID	varchar(20)	N	N	FK	DoctorUserName of Doctor table
WorkStart	datetime	N	N		
WorkEnd	datetime	N	N		
Remark	text	N	Y		

Data dictionary- Appointments

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
ID	int	Y	N	PK	
PatientID	varchar(20)	N	N	FK	PatientUserName of Patient table
DoctorID	varchar(20)	N	N	FK	DoctorUserName of Doctor table
ScheduleId	int	N	N	FK	ScheduleId of Work_Schedule table
Detail	text	N	Y		
CreatedAt	datetime	N	N		
Status	ENUM ('Waiting','Completed','Missed')	N	N		
Remark	text	N	Y		
UpdateDate	datetime	N	N		

Data dictionary- Consultation

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
ConsultID	int	Y	N	PK	
PatientID	varchar(20)	N	N	FK	PatientUserName of Patient table
DoctorID	varchar(20)	N	N	FK	DoctorUserName of Doctor table
Symptom	varchar(100)	N	Y		
Detail	text	N	N		
Prescription	text	N	Y		
ConsultationDate	datetime	N	N		

Data dictionary- Payment Consultation

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
Id	int	Y	N	PK	
PatientID	varchar(20)	N	N	FK	PatientUserName of Patient table
DoctorID	varchar(20)	N	N	FK	DoctorUserName of Doctor table
remark	tinytext	N	N		
ServiceCharge	decimal(22,2)	N	Y		
CashierName	varchar	N	N		
PaymentMethod	ENUM ('Bank Transfer','QR scan')	N	N		
IssuedDate	datetime	N	N		

Data dictionary- Payment Medicine

Attributes	Data Type	Unique (Y/N)	Null (Y/N)	Key	Reference
Id	int	Y	N	PK	
ReceiptID	int	N	N	FK	ID of Payment Consultation table
DoctorID	varchar	N	N	FK	DoctorUserName of Doctor table
Unit	int	N	N		
PricePerUnit	decimal(22,2)	N	N		
IssuedDate	datetime	N	N		
CashierName	varchar	N	N		

Query Results (Min Khant Soe)

1. Number of consultation of each doctor and their speciality and fee of them starting from January 2021.

Doctors_Username	Doctor_Name	Specialty	ConsultationCost	No_of_Consultations_Done
cfloweth3	Aymer McCreedy	Pediatrics	1051.00	1
tingerfieldj	Mommy Keyzman	General	1226.00	1
arace4	Garrett Wyatt	General	1682.00	1
arosencwaigi	Rici Braam	General	314.00	2
kgrococka	Brandtr Rubinsohn	General	1862.00	3

2. Number of male and female patients and names of their symptom that are consulted in August 2021.

Symptom	Sympton_Names	Male	Female
Other specified injuries of right elbow, initial enc...	1	0	1
Adverse effect of local antifung/infect/inflamm ...	1	0	0
Amblyopia suspect	1	0	0
Pedl cyc driver injured in clsn w oth pedl cyc in t...	1	1	0

Query Results (Min Khant Soe)

3. Number of medicine types bought, total cost and payment method by male and female patients.

ReceiptID	No_of_Medicine_Types_Bought	Total_Cost	Male_Patients	Female_Patients	PaymentMethod
1	1	39.00	1	0	QR scan
2	2	101.00	0	0	QR scan
3	2	79.00	0	1	Bank Transfer
4	3	68.00	1	0	QR scan
6	1	53.00	0	0	Bank Transfer

4. Contact Information of foreigners registered as patients in 2021

Patient_Name	Email	IdentityCardType	Address	Mobile	RegisteredDate
Lonnie Worsalls	tosbiston24@squidoo.com	Passport	9 Lakeland Road	189-600-0546	2021-08-17 00:00:00
Jerry Earpe	mhylandsv@toplist.cz	Passport	18931 Michigan Hill	319-386-8866	2021-04-07 00:00:00
Finlay Kinnoch	vhogsden2j@reverbnation.com	Passport	0762 Green Ridge Street	258-625-9329	2021-01-23 00:00:00
Karly Engracia Dockrill	ccunnane4@etsy.com	Passport	1262 Anderson Center	154-731-3644	2021-09-01 00:00:00

Query Results (Min Khant Soe)

5. The information of the doctors who resigned but their work schedule are still in the record

No	DoctorUserName	Email	ScheduleId	Available_Work_Schedule	Status
1	cathersmithf	vchevesf@google.com.br	136	2021-10-02 10:00:00 - 2021-10-02 11:00:00	Resigned
2	cfloweth3	esollas3@cbslocal.com	64	2021-10-01 08:00:00 - 2021-10-01 09:00:00	Resigned
3	dfurtado1	barpino1@bravesites.com	2	2021-10-01 09:00:00 - 2021-10-01 10:00:00	Resigned
4	jhenrych6	sdixsee6@patch.com	127	2021-10-01 08:00:00 - 2021-10-01 09:00:00	Resigned

Query Results (Pranpreya Samasutthi)

1. Number of patients registered in the year 2021 and how many days passed.

PatientName	RegisteredDate	DaysPassed
Testing Me The Tester	2021-09-15 02:40:05	0
Cliff Ivetts	2021-09-03 00:00:00	12
Karly Engracia Dockrill	2021-09-01 00:00:00	14
De Mitchael Scown	2021-08-29 00:00:00	17
Kennan Brundrett	2021-08-28 00:00:00	18

2. Number of each medicine that have sold and total price from January - June 2021.

M_ID	MedicineName	UnitUsed	TotalPrice
2	Foam Antibacterial Hand Wash	15	1275.00
3	Triadine	62	310.00
5	HOUSE DUST	16	1168.00
6	Vancomycin Hydrochloride	10	770.00
8	ANTIBACTERIAL WIPES Fresh Aloe	96	4032.00

Query Results (Pranpreya Samasutthi)

3. Total consultation cost of each patient

PatientUserName	PatientName	ConsultationCost
sfolkes18	Marys Catha Tigwell	500.00
kgledhall2e	Tabbatha Flemming Weekes	200.00
kmorsey12	Lorain Edsall	100.00
rweepers1m	Nomi Kobisch	300.00

4. Compare between number of patients and doctor who registered between January - March 2021.

Year	Month	Patient	Doctor
2021	1	7	4
2021	2	4	0
2021	3	8	1

Query Results (Pranpreya Samasutthi)

5. Number of patients in range of ages (< 10, 25-35, 35-55, >55)

Patients	ChildrentoTeen	EarlyAdults	Adults	Elderly	Total
Amount	0	35	58	8	101
Appointment	0	51	79	11	141
Consultation	0	39	57	5	101

Query Results (Pyae Sone)

1. Number of symptoms that patients reported 7 days before the current date.

ConsultID	PatientID	DoctorID	Symptom	ConsultationDate
2	dfairleigh2i	jhenrych6	Flexion deformity	2021-09-09 00:00:00
101	anorcutt17	mhorleyc	Illness	2021-09-15 02:40:11

2. Number of the appointment made in June - August 2021.

ConsultID	PatientID	DoctorID	Symptom	ConsultationDate
8	gmoffattr	rantoniakd	Other specified injuries of right elbow, initial enc...	2021-08-29 00:00:00
17	ifrugier2r	cfloweth3	Biliary cyst	2021-06-06 00:00:00
18	rraoult9	mmolines0	Adverse effect of local antifung/infect/inflamm ...	2021-08-01 00:00:00
23	jwaplington1j	mlawleee	Dislocation of unspecified thoracic vertebra, init...	2021-07-29 00:00:00

Query Results (Pyae Sone)

3. Sum of each medicine from different unit.

M_Id	Name	Unit
31	Cinnamon Spice Antibacterial Foaming Hand Wash	996
9	Sore Throat	989
1	Benzphetamine Hydrochloride	988
57	Gilotrif	966

4. Top 3 of expensive medicines.

M_Id	Name	Unit	Price
60	Potion X	300	500.00
7	Bermuda Grass Smut	518	100.00
11	Metoprolol Tartrate	576	99.00

Query Results (Pyae Sone)

5. Number of appointments that are rescheduled in February 2021.

	ID	PatientID	ScheduleId	Status
*	NULL	NULL	NULL	NULL

6. Most prescribed medications.

	M_Id	Name	Price	COM	Unit
▶	48	Imipramine Hydrochloride	89.00	Prescribed	124
	47	Calendula	8.00	Prescribed	132
	27	Lamotrigine	44.00	Prescribed	274
	60	Potion X	500.00	Prescribed	300

7. The names of medicines which have the highest lifespan and those of medicines which have the lowest lifespan.

	M_Id	Name	ExpDate	ManuDate
▶	60	Potion X	2025-09-01 00:00:00	2021-09-01 00:00:00
	13	Oxygen	2021-09-07 00:00:00	2020-10-08 00:00:00
	48	Imipramine Hydrochloride	2021-09-05 00:00:00	2021-07-27 00:00:00
	15	Mesmerize for Men	2021-09-05 00:00:00	2020-10-26 00:00:00

Query Results (Tanapat Samakit)

1. Number of patients who takes any medicines within 1 month from now.

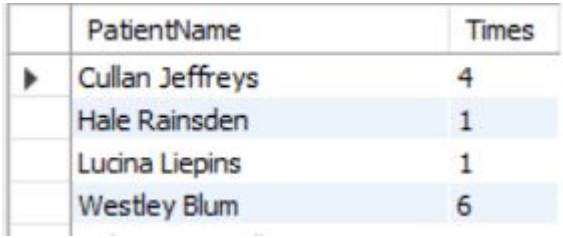
MedicineId	Name	Patient(s)
36	HEADACHE/MIGRAINE RELIEF	1
32	COUGH AND COLD NIGHTTIME FORMULA KIDS ...	1
43	Standardized Orchard Grass	1
45	Hydrocodone Bitartrate and Acetaminophen	1

2. Total units of ‘Oxygen’ left in the stock.

Rank	Name	COM	Day(s) Left	Unit(s) Left
1	Oxygen	Prescribed	8	669
2	Eye Injuries and Infections	Normal	8	144
3	Mesmerize for Men	Prescribed	10	365
4	Imipramine Hydrochloride	Prescribed	10	93

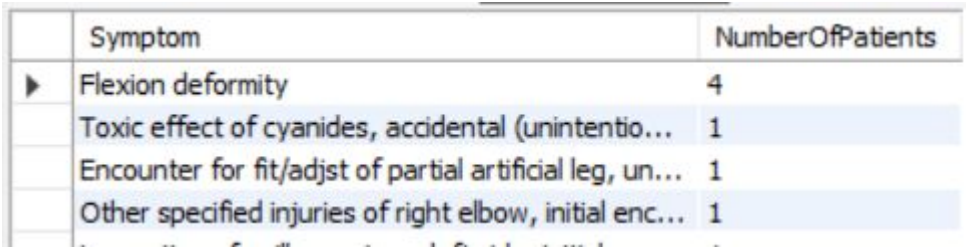
Query Results (Tanapat Samakit)

3. Number of time that the same patient made appointment in August 2021



	PatientName	Times
▶	Cullan Jeffreys	4
	Hale Rainsden	1
	Lucina Liepins	1
	Westley Blum	6

4. Most frequent symptoms during 2021



	Symptom	NumberOfPatients
▶	Flexion deformity	4
	Toxic effect of cyanides, accidental (unintentio...	1
	Encounter for fit/adjst of partial artificial leg, un...	1
	Other specified injuries of right elbow, initial enc...	1

Query Results (Tanapat Samakit)

5. Number of doctors who has specialty for ‘General’

	Specialty	Male	Female
▶	General	8	5
	Pediatrics	3	5

6. Ratio Between Completed and Missed appointments.

	Year	Month	Completed	Missed	CompletedRatio	MissedRatio
▶	2021	February	37	2	94.87 %	5.13 %
	2021	May	22	11	66.67 %	33.33 %
	2021	October	42	5	89.36 %	10.64 %
	2021	##TOTAL##	101	18	84.87 %	15.13 %

Query Results (Saima Ashraf)

1. List of Top 5 users who recently registered in system before month ago.

Username	Password	Email	Status	RegisteredDate	UpdateDate
IamPatient	Test12345	tester1@hotmail.com	Deactivated	2021-09-15 02:40:05	2021-09-15 02:40:05

2. No. of Patients take at least one appointment.

No. of patients taken at least one appointment
73

Query Results (Saima Ashraf)

3. Select top 3 of Consultations.

	ConsultID	No. of Consultation
▶	1	1
	2	1
	3	1

4. Price per Unit of each Medicine

	Medicine	ReceiptId	PricePerUnit
▶	Aspirin	87	1.00
	Lobelia Inflata	33	1.00
	Metoprolol Tartrate	51	1.00
	Zep FS Antimicrobial Hand Cleaner	69	1.00

Thank you