

4. Draw DFD for order processing system.

DFDs are versatile diagramming tools. With only four symbols, you can use DFDs to represent both physical and logical information systems . DFDs do not share the problem of premature physical design because they do not rely on any symbols to represent specific physical computing equipment. They are also easier to use than flowcharts because they involve only four different symbols.

There are two different standard sets of DFD symbols (see Figure 7-2); each set consists of four symbols that represent the same things: data flows, data stores, processes, and sources/sinks (or external entities). One set of symbols was devised by Gane and Sarson (1979). The other standard set was developed by DeMarco (1979) and Yourdon (Yourdon and Constantine, 1979).

Data store

Data at rest, which may take the form of many different physical representations.

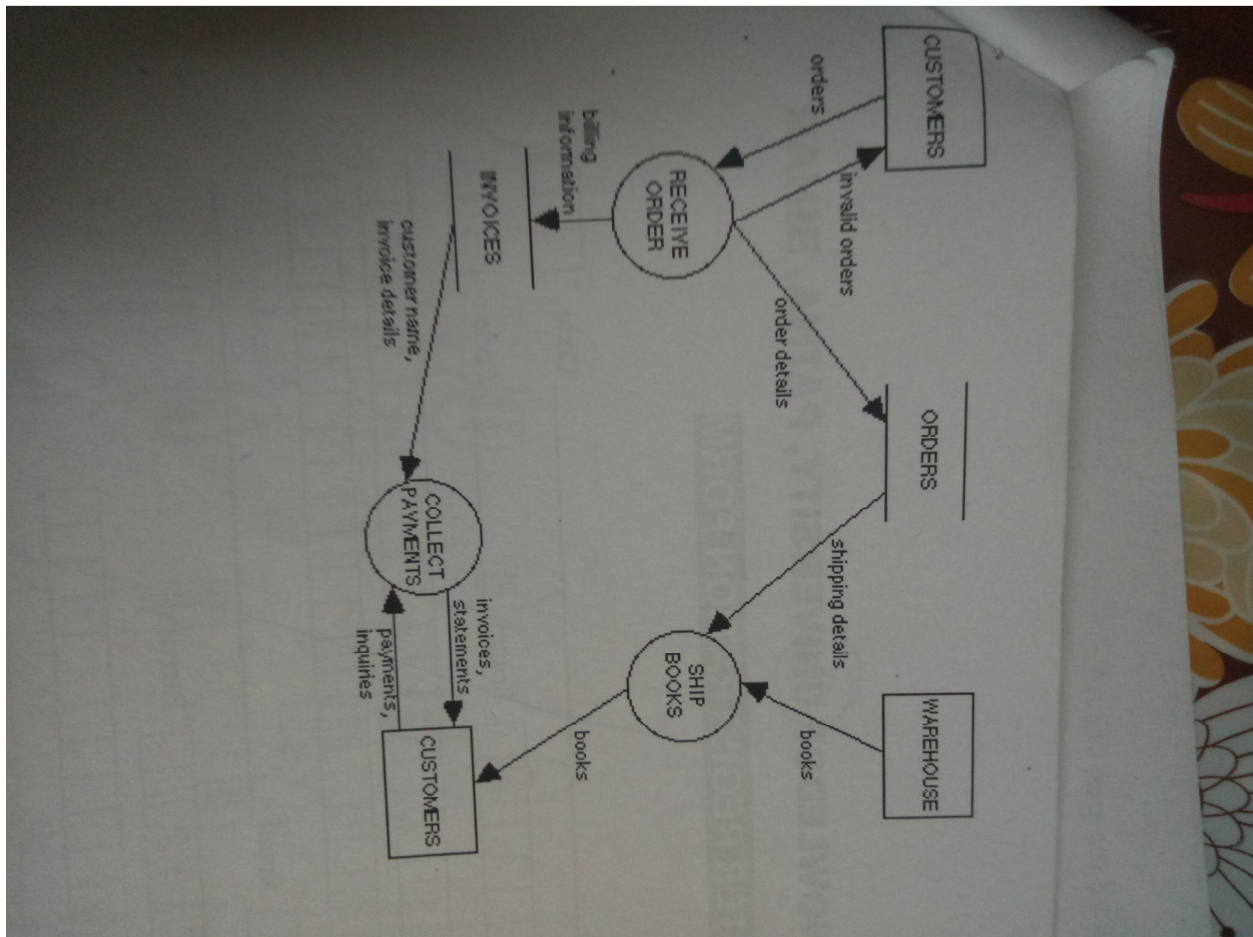
Process

The work or actions performed on data so that they are transformed, stored, or distributed.

Source/sink

The origin and/or destination of data; sometimes referred to as external entities.

A *data flow* can be best understood as data in motion, moving from one place in a system to another. A data flow could represent data on a customer order form or a payroll check; it could also represent the results of a query to a database, the contents of a printed report, or data on a data entry computer display form.



6. Consider a marketing based system. Analyze strategic, managerial and operational trends. Assign various tasks to entities like product, customer, city and departments. Draw also DFD for the above.

The system would need to access two additional data sources. First, in order to produce an online product catalog, the system would need to access the inventory database. Second, to store the items a customer wanted to purchase in the Webstore's shopping cart, a temporary database would need to be created. Once a transaction is completed, the shopping cart data can be deleted. With this information, we are able to develop the level-0 DFD for the Webstore system, which is shown in Figure. we then felt that we had a good understanding of how information would flow through the Webstore, of how a customer would interact with the system, and of how the Webstore would share information with existing PVF systems. Each of these high-level processes would eventually need to be further decomposed before system design could proceed. Yet, before doing that, we wanted to get a clear picture of exactly what data were needed throughout the entire system.

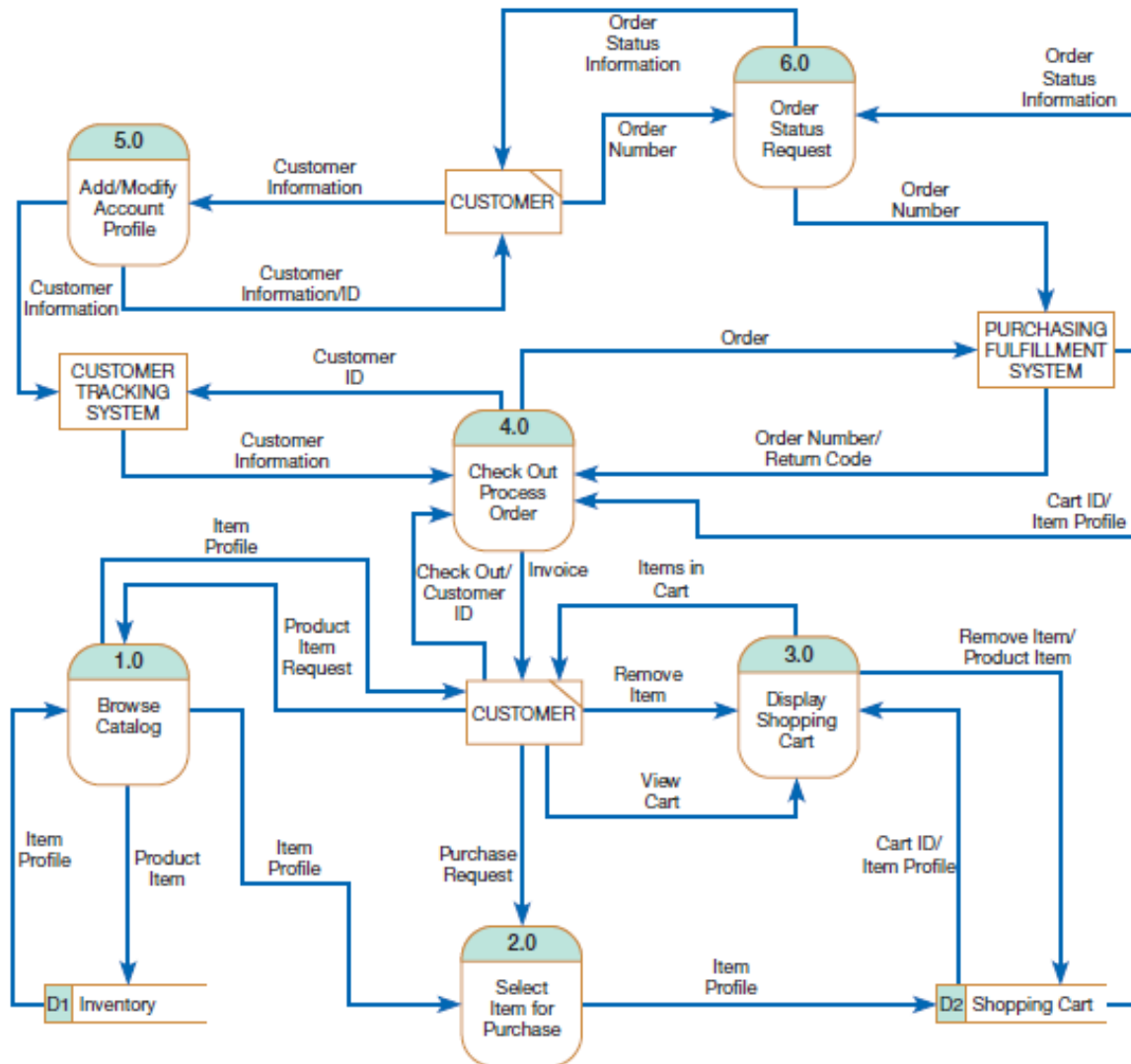
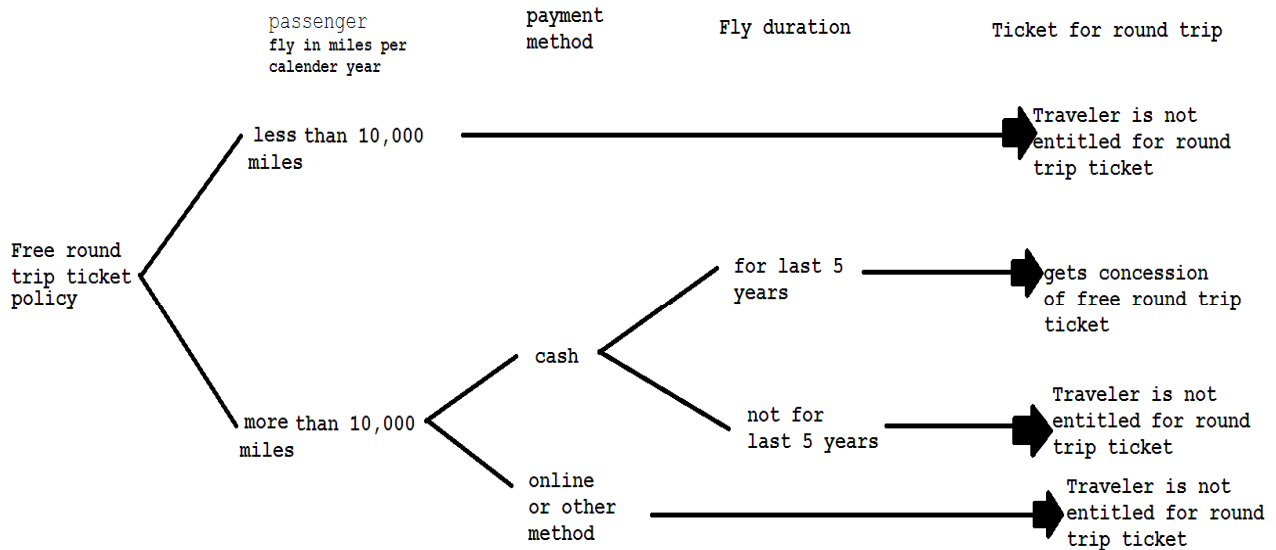


FIGURE 7-22
Level-0 DFD for the WebStore

5. An international airlines initiated a policy for a traveler. The information is as follows:- Passengers who fly more than 10,000 miles per calendar year and pay cash and have been flying for last 5 years, the get concession of free round trip ticket otherwise traveler is not entitled for round trip ticket. (a) Draw suitable decision tree for the above. (b) Draw decision table for the above.

A decision tree is a sketch of logical structure which is easy to construct and understand. It is a very useful way of depicting policy in brief.

DECISION TREE



PTO

~ 5 remaining ~

A decision table is a diagram of process logic where the logic is reasonably complicated. All of the possible choices and the conditions the choices depend on are represented in tabular form.

Here, the conditions are :

Passenger flight distance - L - less than 10,000 miles per calendar year

M - More than 10,000 miles per calendar year

Payment method - O – online or other

C – Cash

Fly Duration - F - Flying for last 5 years

A – Not Flying for last 5 years

Possible actions are :- Eligibility – Yes/No

Possible combinations of conditions are the combination of three possible conditions.

Condition 1 has 2 possible values

Condition 2 has 2 possible values

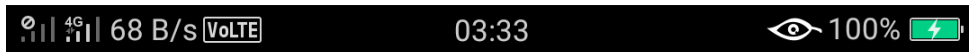
Condition 2 has 2 possible values

Total combinations possible are therefore $2 \times 2 \times 2 = 8$.

Rules	1	2	3	4	5	6	7	8
Conditions								
Passenger Flight distance	L	L	L	L	M	M	M	M
Payment method	O	O	C	C	O	O	C	C
Fly Duration	F	A	F	A	F	A	F	A
Actions								
Eligibility	N	N	N	N	N	N	Y	N

A Decision Table

7. Take hospital management system. Explain PCR(Parent Child Relationship) in Hierarchical/ relational DBMS. Create a data dictionary for the same.



HIERARCHICAL DATABASE MODEL

Hierarchy is based on Parent-Child Relationship

- Parent-Child Relationship Type is basically 1:N relationship
- The schema for a hierarchy has a single root
- To represent M:N relationship in a hierarchical structure, we must allow duplication of child record instances.

HIERARCHICAL OCCURENCE TREE

The main concepts are:

Type indicators such as D, E, W. etc.

Descendent of a node

Subtree of a node

Level (0, 1, 2, etc.)

Hierarchical sequence

(used to linearize a tree)

Complete hierarchical path

(from root to a leaf)

Child pointer

Parent pointer

Twin pointer (sibling pointer)



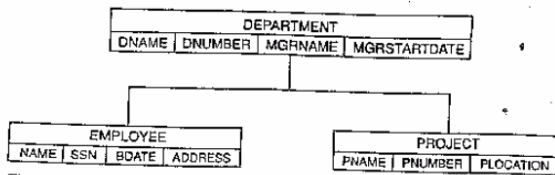
(from root to a leaf)

Child pointer

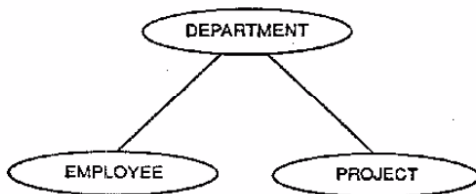
Parent pointer

Twin pointer (sibling pointer)

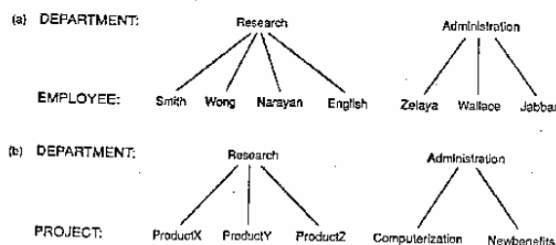
For example, the following is the hierarchical schema of a company database:



The tree representation of the above hierarchical schema is shown below:



The two occurrences of the PCR type (DEPARTMENT and EMPLOYEE) are shown in (a), and the two occurrences of the PCR type (DEPARTMENT and PROJECT) are shown in (b).



DATA DICTIONARY

- Data Dictionary is a collection of the data that are used as a part of the system.
- In simple language data dictionary is a record of data about data.

Table Name:- Appointment

Primary Key:- AppointmentId

Foreign Key:- EmployeeId , PatientId

Appointment Table				
Fields	DataType	Size	Constraints	Description
AppointmentId	bigint	-	PrimaryKey	AutoNumber
EmployeeId	bigint	-	ForeignKey	It Indicates Employee Information in This Table As ForeignKey
PatientId	bigint	-	ForeignKey	It Indicates Patient Information in This Table As ForeignKey
PatientName	varchar	50	-	It Defines Who Take Appointment
AppointmentDateAndTime	datetime	-	-	When Appointment Taken
DateOfAppointmentTaken	datetime	-	-	Given Date Of Appointment
AppointmentTakenById	bigint	-	-	Which Employee Give Appointment to The Patient

- This table is used to identify at which time & date Patient take appointment and which Employee given the appointment.

Table Name:- Company
Primary Key:- CompanyId

Company Table				
Fields	Data Type	Size	Constraints	Description
CompanyId	bigint	-	PrimaryKey	AutoNumber
CompanyName	varchar	50	-	It Defines Company Name Of Medicine

- This table indicates the Medicine Company name.

Table Name:- Case
Primary Key:- CaseId
Foreign Key:- EmployeeId , PatientId, AppointmentId

Case Table				
Fields	Data Type	Size	Constraints	Description
CaseId	bigint	-	Primary key	AutoNumber
EmployeeId	bigint	-	Foreign key	It Indicates Which Employee (Doctor) Study The Patient Case
PatientId	bigint	-	Foreign key	It Indicates Indoor/Outdoor Patient Detail of The Case
AppointmentId	bigint	-	Foreign key	It Identifies When Patient Takes Appointment
DateAndTime	Date time	-		It Defines Time Of The Case
PreviousSurgery	varchar	150		History About The Patient
Payment	decimal	18,0		Payment Of Doctor's Fees

TemperaturePulseRespiration	varchar	5	-	Count The Pulse
BloodPressure	varchar	5	-	It Measure The BloodPressure
RespiratoryAndCardioVascularSystem	varchar	20	-	Its display the cardio vascular.
PerAbdomen	varchar	20	-	Check with Normaly
PerVaginal	varchar	20	-	Check By Fingure
PerSpeculum	varchar	20	-	Check By Using Instrument/Machine
IsDiabitiseMelitus	Bit	-	-	For Checking Diabitise
IsHighBloodPressure	Bit	-	-	For Checking BloodPressure
IsThyroid	Bit	-	-	For Checking If Patient Have Thyroid or Not
IsAllergy	Bit	-	-	It is Used For Checking Of Any Type of Allergy of Patient's

- This table identifies all the detail of Patient and also include in which time Patient case entered.
- It also includes the previous history of the Patient.

Table Name:- Complain
Primary Key:- ComplainId

Complain Table				
Fields	DataType	Size	Constraints	Description
ComplainId	bigint	-	PrimaryKey	AutoNumber
ComplainName	varchar	50	-	It Uses For Complain Which Patient Have

- This table identifies a Patient Complains when the Patients are first time come for checking.

Table Name:- Employee
Primary Key:- EmployeeId
Foreign Key:- DesignationId

Employee Table				
Fields	Data Type	Size	Constraints	Description
EmployeeId	bigint	-	Primary key	AutoNumber
EmployeeFirstName	Varchar	50	-	It Identifies Employee FirstName
EmployeeLastName	Varchar	50	-	It Identifies Employee LastName
DesignationId	bigint	-	Foreign key	It Identifies Employee Designation Which Directly Connect From The Designation Table As ForeignKey
Qualification	Varchar	50	-	It Defines Qualification Of Employee
Address	Varchar	150	-	Address Of Employee
ContactNo1	Varchar	13	-	ContactNo Of Employee's Home

ContactNo2	varchar	13	-	ContactNo Of Employee's Mobile
UserName	varchar	50	-	UserName Of Employee
Password	varchar	50	-	Password Of Employee
IsActive	Bit	-	-	It Defines Employee Is Active Or Not
IsAdmin	Bit	-	-	It Defines If Employee Is Admin

- This table identifies Employee's full information and also defines the Designation of Employee which directly connected from the Designation table.

Table Name:- Designation
Primary Key:- DesignationId

Designation Table				
Fields	DataType	Size	Constraints	Description
DesignationId	bigint	-	PrimaryKey	AutoNumber
DesignationName	varchar	50	-	It Is Used For Define The Designation Of Employee

- This table is used for identifying the Employee Designation such as Doctor, Visitor Doctor, Nurse, Ward Boy.

Table Name:- Gynaec
Primary Key:- GynaecId
Foreign Key:- CaseId

Gynaec Table				
Fields	DataType	Size	Constraints	Description
GynaecId	bigint	-	PrimaryKey	AutoNumber
CaseId	bigint	-	Foreign Key -	When Doctor Enter The CaseId Of The Patient They Can See The Detail of Patient History
Uterus	varchar	50	-	It Is Used For Check The Size Of Uterus
Myometrium	varchar	50	-	Uterus wall
Endometrium	varchar	50	-	Inside Uterus wall
LeftOvary	Varchar	50	-	It Is Used For Check The Size of LeftOvary
RightOvary	Varchar	50	-	It Is Used For Check The Size of RightOvary
PouchOfDoughes	varchar	50	-	It is used to check the deases inside pouch.

Table Name:- Medicine

Primary Key:- MedicineId

Foreign Key:- MedicineTypeId , CompanyId

Medicine Table				
Fields	DataType	Size	Constraints	Description
MedicineId	bigint	-	PrimaryKey	AutoNumber
MedicineName	varchar	50	-	It Identifies Medicine Name
MedicineTypeId	bigint	-	Foreign key	It Identifies Medicine Type Such As Capsule, Tablet, etc....
CompanyId	bigint	-	Foreign key	It Is Used For Identifies The Company Of Medicine

- This table identifies Medicine detail. In this MedicineTypeId includes type of Medicine such as tablet, capsule, powder, searup and also CompanyId which is directly connect with Company table.

Table Name:- MedicineType

Primary Key:- MedicineTypeId

Medicinetype Table				
Fields	DataType	Size	Constraints	Description
Medicine type id	Bigint	-	PrimaryKey	AutoNumber
Medicine type name	varchar	20	-	It Identifies Medicine Type

- This table indicates the details of MedicineType such as tablet, capsule, powder and searup.

Table Name:- Obstetric

Primary Key:- ObstetricId

Foreign Key:- CaseId

Obstetric Table				
Fields	DataType	Size	Constraints	Description
ObstetricId	bigint	-	PrimaryKey	AutoNumber
CaseId	bigint	-	Foreign key	It Identifies The Patients History When They Last Time Comes For a Checkup
GestationalSac	Varchar	20		Check the size of sac.
CRL	Varchar	20	-	It check inside of sac.
AverageMaturity	Varchar	20	-	It Is Used To Measure The AverageMaturity of Child Month Wise
ChorionicPlate	varchar	20	-	It Is Used For Measure The Size of Plate
CervicalLength	Varchar	20	-	Used to check a length
ExpectedDateOfDelivery	Datetime	-	-	It Defines Date Of Delivery

▪ This table is used for checking a pregnant woman.

▪ In this table CaseId is used for detail of Patients previous checkup.

Table Name:- Operation

Primary Key:- OperationId

Foreign Key:- EmployeeId , PatientId, OperationTypeId

Operation Table				
Fields	DataType	Size	Constraints	Description
OperationId	bigint	-	PrimaryKey	AutoNumber
EmployeeId	bigint	-	ForeignKey	It Identifies Which Employee(Doctor) Do The Operation
PatientId	bigint	-	ForeignKey	It Identifies The Patient Full Detail Who Are Operated
OperationDate	Datetime	-	-	It Defines Date Of Operation
OperationStartTime	Datetime	-	-	It Defines Start Time Of Operation
OperationEndTime	datetime	-	-	It Defines End Time Of Operation
OperationTypeId	bigint	-	ForeignKey	It Identifies The Type Of Operation Such As Normal, Cesarian, etc...

▪ This table indicates the details of Patients Operation which is done by a specific Employee (Doctor) and also date & time of Operation.

Table Name:- OperationType
Primary Key:- OperationTypeId

Operation Type Table				
Fields	DataType	Size	Constraints	Description
OperationTypeId	Bigint	-	PrimaryKey	AutoNumber
OperationTypeName	Varchar	50	-	It Identifies Operation Type Name

- This table identifies the Operation Types which are used in Operation.
- The OperationType such as Normal, Cesarian.

Table Name:- Patient
Primary Key:- PatientId

Patients Table				
Fields	DataType	Size	Constraints	Description
PatientId	bigint	-	PrimaryKey	AutoNumber
PatientFirstName	varchar	50	-	It Identifies Patient First Name
PatientLastName	varchar	50	-	It Identifies Patient Last Name
DateOfBirth	datetime	-	-	It Identifies Date Of Birth Of Patient
Address	varchar	150	-	Address Of Patient
ContactNo1	varchar	13	-	ContactNo Of Patients Home
ContactNo2	varchar	13	-	ContactNo Of Patients Mobile

- This table identifies full detail of Patient.

Table Name:- PatientComplain

Primary Key:- PatientComplainId

Foreign Key:- PatientId, ComplainId

Patients Complain Table				
Fields	Data Type	Size	Constraints	Description
Patientcomplain Id	bigint	-	PrimaryKey	AutoNumber
Patients Id	bigint	-	Foreign key	It Identifies Patient Detail Which Is Already Indoor
Complain Id	bigint	-	Foreign key	It Is Used For Checking The Complain When Patient Last Time Come
Description	varchar	200	-	It Is a Description About Patient Complain

- This table identifies the Complain of Indoor Patients which is under treatment.
- It uses to check the previous detail of Patient Complain

Table Name:- PrescriptionMedicine

Primary Key:- PrescriptionMedicineId

Foreign Key:- PrescriptionId , MedicineId

Prescription Medicine Table				
Fields	Data Type	Size	Constraints	Description
PrescriptionMedicineId	bigint	-	PrimaryKey	AutoNumber
PrescriptionId	bigint	-	Foreign key	It Identifies Prescription Of Patients Complain
MedicineId	bigint	-	Foreign key	It Identifies The Detail Of Medicine
MedicineDose	varchar	20	-	It Identifies Dose Of Medicine
MedicineTime	datetime	-	-	Time Of Taken Medicine

- This table identifies the Prescription and detail of Medicine which is given by Doctor.

Table Name:- WardType
Primary Key:- WardTypeId

Ward Type Table				
Fields	DataType	Size	Constraints	Description
WardId	bigint	-	Primary key	AutoNumber
Ward Name	varchar	20		It Identifies Ward Type

- This table is identifies the WardType such as Special, General.

Table Name:- Prescription
Primary Key:- PrescriptionId
Foreign Key:- PatientId, EmployeeId

Prescription Table				
Fields	DataType	Size	Constraints	Description
PrescriptionId	bigint	-	PrimaryKey	AutoNumber
EmployeeId	bigint	-	Foreign key	It Identifies Which Employee(Doctor) Prescribes to The Patient
PatientId	bigint	-	Foreign key	It Defines The Patient Detail
PrescriptionDate	datetime	-	-	It Defines Date Of Prescription
NextVisitDate	datetime	-	-	It Identifies Next Visit Date Of Checkup

- This table includes the Prescription of Patient which is given by Doctors

Table Name:- Ward

Primary Key:- WardId

Foreign Key:- WardTypeId

Ward Table				
Fields	DataType	Size	Constraints	Description
WardId	bigint	-	Primary key	AutoNumber
WardTypeId	bigint	-	Foreign key	It Identifies WardType Directly From WardType
WardNumber	int	-	Foreign key	It Identifies Word Number

- This table identified detail of Ward like WardType and Number of Ward.