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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

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1 Information System

1.1. Introduction

Information System is a method of analytical research with particular regards to information and corresponding hardware and software networks for collecting, filtering, processing, generating, and transferring data through individuals and organizations. A knowledge infrastructure with a definite border, participants, processor, storages, input, outputs, and the networking networks referred to above emphasizes. (*Jessup & Valacich, 2008*) It is a form of communication mechanism in which data reflects and is viewed as human behaviors. An information system may also be defined as a mode of semi-formal communication that helps in human decision-making and action. Many computer systems rely on information technology, which are usually designed to allow humans to perform activities for which the human brain is not well qualified, such as processing vast volumes of information, conducting complicated calculations, and managing many processes at the same time. (*Beynon-Davies, 2009*)

1.2. Data Processing Model

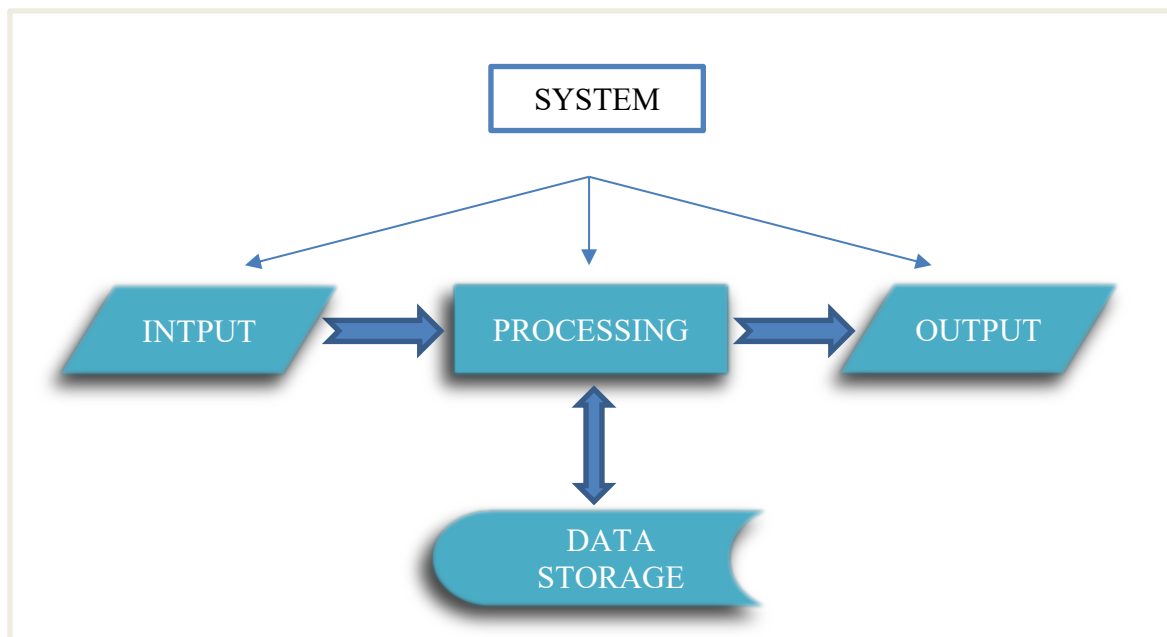


Figure 1: Data Processing Model

The data processing cycle is composed of phases in which original data is inserted into a machine that generates quality data. Each step is performed in a specified sequence, but the procedure is performed in a cyclic pattern. The output of the very first data analysis stage can be saved and used as the reference for the subsequent cycle. (Duggal, 2021)

1.2.1. Operands of Data Processing Model.

a. Input

After sorting and refining the raw data to eliminate redundancy and verifying that only the best quality data is passed into the main processor. The raw data is translated into machine-readable form before loading into the main processor. This can be done by using a keyboard, scanner or some kind of input device.

b. Processing

To obtain the desired results, the raw data is evaluated under different data processing techniques, including machine learning and artificial intelligence algorithms. Depending on the source of data being generated and the expected use of the output, this stage can differ slightly from process to process.

c. Output

After the information has been finalized in a comprehensible format, such as graphs, charts, audio, clip, documentation, and son on, it is possible to interpret or display the output. This is accomplished by the user or software for added value. This performance can be collected and evaluated as part of the upcoming data collection process.

d. Storage

Data and metadata are archived for further use as the final phase of the compilation process. This allows for quick access and information extraction as required, as well as direct use of the data as an input in the next cycle.

1.3. Components of Information System.

An information system is a collection of hardware, software, and telecommunication networks that people create in order to gather, create, and transmit valuable data, mostly within a company. It establishes the knowledge flow within the system. An information system's goal is to provide relevant information to users, as well as to collect, store, and transmit data. ([GeeksforGeeks, 2021](#))

a. Hardware

Hardware refers to the physical devices that are used for input, output, and production. It includes the input and output unit, OS, processor, and media players. The hardware structure is determined by the organization's form and scale.

b. Software

These are hardware-based systems. The software for controlling and coordinating hardware components. It is used to analyze and evaluate the data. The software is divided into two main groups, system software and applications software.

c. System software

The hardware is made accessible by system software. Windows, Mac OS, and Google's Android on a smartphone are examples of system software.

d. Application software

Specialized software for completing business activities, such as Microsoft Excel, banking systems, and so forth, is referred to as applications software.

e. Data

A set of information is referred to as data. Bits of data aren't particularly useful on their own. However, as data is aggregated, processed, and compiled into a database, it

can be a valuable weapon for companies. Software is used to organize and serve data to users, as well as manage physical media storage and virtual services. In the same way, as hardware cannot function without software, the software requires data to function. Organizations gather and analyze a wide range of data in order to make decisions.

f. Procedure

Procedures are the principles that determine how a programming code works. Citizens, such as users, contractors, and so forth, create protocols.

g. People:

These are the people who use the computer system to keep track of their daily business transactions. From front-line customer service representatives and systems engineers and designers, all the way up to the chief information officer (CIO), The staff who work in information technology is a crucial component. The support staff in the ICT department generally ensures that the infrastructure is up and running.

1.4. Role of Information system in business environment

I. New Products and Services

Any business that seeks to enhance and protect its future must develop a wider outlook by using an information system that is well planned and organized. The IS facilitates the analysis of independent systems such as information in order to create valuable goods or services, as well as structured work tasks. As a result, an IS can provide a strategic edge to an organization by evaluating how it manufactures, produces, and sells its goods or services. It ensures that the primary objective would be prioritized.

II. Information Storage

Any organization requires reports of its operations to identify the source of challenges and implement appropriate solutions. When it comes to preserving operating files, correspondence logs, documentation, and revision histories, information structures come in handy. Manual data storage can take up a lot of time for the business, particularly when looking for detailed information. Data is stored in a robust and sophisticated database in a quality management system, making the task of locating it easy. An organization may use this data to determine how such activities impacted the market and to plan expense assessments and predictions.

III. Easier decision making

The adequacy of a company's business plans determines its long-term performance. The executive committee of a company uses computer technology to develop business strategies and make decisions that can ensure the company's sustainability and stability. Information systems are used by the company to analyze data from all sources, including data from various sources such as the Associated Press and Google, which provide data on the general economy. This industry pattern research and evaluation aids companies in determining the adequacy and consistency of their business choices.

IV. Business Operations Management

Your experience has an impact on how you manage your company's operations. Information technology can allow you to manage your company more efficiently by providing you with more reliable and up-to-date data. Information technology can be used to gain a cost advantage over competitors or to differentiate yourself by offering better customer service. Sales data will help you understand what your customers are buying and will allow you to stock or produce high-demand items. With the help of the information system, your operations will be optimized.

V. Business Communication Systems

Gathering and disseminating information is an essential part of the business, and information technology can help by helping administrators to interact more quickly. Email is fast and reliable, but administrators can make more use of information systems by saving records in directories that they share with the workers who need it. Employees may interact in a coordinated manner using this method of contact.

By making modifications that the machine monitors, each employee will share additional information. The boss gathers the feedback and delivers the updated text to his intended audience. ([ecpi university](#), n.d.)

1.5. Conclusion

Information System is a method of analytical research with particular regards to information and corresponding hardware and software networks for collecting, filtering, processing, generating, and transferring data through individuals and organizations. Many computer systems rely on information technology, which is usually designed to allow humans to perform activities for which the human brain is not well qualified, such as processing vast volumes of information, conducting complicated calculations, and managing many processes at the same time. The data processing cycle is composed of phases in which original data is inserted into a machine that generates quality data. An information system is a collection of hardware, software, and telecommunication networks that people create in order to gather, create, and transmit valuable data, mostly within a company. An information system's goal is to provide relevant information to users, as well as to collect, store, and transmit data.

2.

2.1. Database

A database is a compilation of data that has been designed to make it easy to view, maintain, and upgrade. Data archives or files containing information about sales purchases or contacts with individual customers are usually stored in computer libraries.

In a database system, Database Management Software (DBMS) is used for storing, processing, and handling records, such as format, data types, and document and file structures. Users may use a DBMS to build their own databases to meet their business needs. For instance, dBase was one of the first database management systems (DBMS) for microcomputers. Database architecture also aids in the development, design, execution, and upkeep of an enterprise data management system. It is composed of a set of programs that handle database management. The DBMS accepts a data request from an application and instructs the operating system to include the data. Customers and other third-party systems use a database management system (DBMS) to store and retrieve data within vast databases. ([Guru99, n.d.](#))

2.2. Database is required for following reasons:

a) Simplified data sharing

A database management system's most significant function is that it allows users to exchange data by implementing correct authorization protocols. It provides operators with access to well-managed data. As a consequence, they will respond rapidly to changes in precipitation.

Since the data is well handled and up-to-date, database management software allows you to respond quickly to unscheduled requests. The database management program returns an answer to the application in the case of some informal query.

b) Enhanced Data safety

When several users access the account, the risk of data vulnerability violations increases. With managed user access, information management software allows for better enforcement of data confidentiality and security guidelines. Only licensed users are allowed to access the database.

c) Improved data integration.

Data integrity in the database ensures that the data in the database is accurate and reliable. It is achieved in databases by using multiple data constraints. A DBMS promotes a holistic view of the company's data. The corporation can immediately see how one division's operations affect other divisions.

d) Better decision making

Access to well-managed information is one of the objectives of database management tools, which allows users to make reliable and timely decisions. It provides a standardized platform for data quality programs, improved data collection practices, and higher-quality data.

e) Improved Efficiency

Operators will make fast, informed decisions thanks to integrated data access software and tools that turn data into valuable intelligence. Accessing and researching data in a database is very convenient. It is accomplished by the use of Data Query Languages (DQL), which allow for the scanning and evaluation of any data in a database. It boosts the performance and reliability of a database. (Naeem, 2021)

2.3. Applications of the database based on different sectors.

Sectors	Use of database
➤ Universities	Student records, course registrations, schools, and grades can all be found here.
➤ Banking	Student records, course registrations, schools, and grades can all be found here.
➤ Finance	For holding storage, selling, and purchasing details for financial instruments such as stocks and bonds.
➤ Airlines	Reservations and timetable updates are found here.
➤ Sales	Data about customers, products, profit, and transactions are stored in this database.
➤ Telecommunication	It aids in the keeping of call logs, monthly bills, and managing balances, among other things.
➤ Manufacturing	It's used to keep track of item output and control the supply chain. Warehouse inventory status.
➤ HR Management	For information on jobs, salaries, payroll, deductions, pay check generation, et cetera. (Guru99, n.d.)

Table 1: Application of Databases.

2.4. Conclusion

A standardized database is a set of structured records or data, which is usually stored on a computer server electronically. Typically, a database is managed using a database management system (DBMS). The data and the database management system and the related programs are called a database structure together, which is sometimes reduced into a single database. Any corporation or organization has a decent database. Since all the relevant business information is stored in the archive. ([Anon., n.d.](#))

3.**A. Scenario of the Care & Cure Hospital**

Hospitals are essential aspects of our lives since they provide medical care to people suffering from various physical and emotional ailments. It's a massive operation that employs a large staff and treats a wide range of patients during the day. As a result, it must keep records of its staff, patients, and day-to-day operations.

The hospital has adequate records of patients and employees from the units where they are admitted. It is grouped into several departments, each of which is overseen by a department head. The department's director is in charge of all of the department's activities. Employees at the hospital are divided and organized based on their areas of specialization and departmental needs. A cardiologist, for example, would work in a cardiology department, while a dentist would work in a dental department, and so forth. The number of patients admitted to a department would be high. As a result, the department has a range of rooms to accommodate the demands, and many patients are housed in one room. Also, to diagnose a patient's disease, several examinations must be administered, or a particular procedure can be performed on several patients. A doctor examines and treats a large group of patients admitted to their department under which the patient may be provided one or more prescriptions by the doctor also one or more patients may be treated with a single prescription. During their stay in the hospital, each patient can have one or perhaps more visitors. A patient is admitted to a room in a department where they will be treated by staff.

➤ Rules and Regulations of the Care & Cure Hospital

- Visitors can only visit the patient during visiting time i.e., 2 pm-4 pm.
- Patients can only be discharged between 9 am-2 pm .
- Observe absolute silence at all times.
- No smoking policy must be strictly observed inside hospital premises.
- Only two visitors are limited per patient at one time.
- Spitting on floors and windows is prohibited.
- Avoid visiting in hallways in patient care areas.
- Kids below 14 years should not be encouraged for hospital visits.

B. Entities of the Care & Cure Hospital

I. Departments

A hospital has many divisions, including a surgery department, a pharmacy department, a radiology department, an information technology department, and many more. The Head of The Department is in charge of the whole department and is also responsible for its operations. Each department has its area of expertise, such as the surgical department for surgery, the IT department for technical support, et cetera. The division of the hospital into units facilitates patients in determining which department they can attend for care. It also aids the organization in keeping track of its patients, employees, supplies, rooms, and other assets, as well as making the operation less time-intensive hence, each department is only responsible for one situation.

II. Staff

A hospital department employs both physician and non-medical personnel. Health personnel such as surgeons, radiologists, gynecologists, dentists, and nurses, as well as non-medical personnel such as assistants, helpers, cleaners, and guards, are employed. The hospital medical staff was assigned to various jobs based on their credentials. For example, a receptionist records the patient's admission and departure, a doctor handles the patient in his department, a nurse cares for the patient until they are discharged, a technician resolves mechanical issues in the company, a cleaner cleans the department to ensure sanitation, and so on.

III. Rooms

A hospital has several rooms in various units, and each room can contain one or more beds. Patients are referred to and handled in a specific room within a particular department. The hospital maintains track of the rooms using information supplied by the departments.

IV. Tests

To diagnose the patient's disease, a department conducts a series of tests. Without first diagnosing the illness that the patient is suffering; a doctor cannot perform surgery or administer medication. The test may be done either before or after the patient is admitted to a specific department. The patient is referred to the department that deals with such cases after the test results are published. The doctor then administers medication to the patient following his or her needs.

V. Patients

Any person who receives health care treatment from healthcare providers is referred to as a patient. Every day, a large number of patients are treated and released from a hospital. A patient may have one or more health problems. As a result, doctors conduct the necessary testing to diagnose their problem before treating the patients appropriately. They are cared for by hospital personnel until they are recovered and released.

VI. Medicines

Medicines are drugs or substances that are used to treat, avoid, or heal disease, as well as to relieve symptoms and help in the diagnosis of illnesses. Medicine has advanced to the point that doctors can now treat certain illnesses and save lives. Only a physician's or a licensed nurse's order can be followed before taking medicine.

VII. Visitors

Visitors are an essential part of the recovery process because they can help the patient recover faster. They can help to alleviate patient pain. It is, however, the patient's option whether or not to have guests. Since the patient requires rest and have personal time, the hospital only invites visits after visiting hours.

VIII. Specialties

Any hospital employee is assigned to one of several units, which are organized according to their specialties. For a specific specialty, an entire department is created. A neurologist, for instance, works in the neurology department, and a gynecologist works in the Gynecology department, and so on. To become a specialist in any sector, any member of the team must undergo the requisite training.

C. Attributes of each entity

I. Departments

- **Department ID:** Department ID is the Primary Key of the department entity. It aids in the differentiation and division of function in an organization. The chore is only assigned to the relevant section at the hospital. It is written in integer datatype.
- **Department Name:** Each department has its very own name. Departments are usually named for the jobs they perform. Since the hospital is such a large institution, naming units lets hospital personnel and patients become acquainted with the departments. It is written in string datatype.
- **Head of Department:** A unit head is in charge of each department. A department's highest position is that of the head of the department. The department's head provides guidance and assistance to employees in the area of performance improvement. The department's head is in charge of making efficient use of departmental resources and prompt execution of assigned cases. It is written in string datatype.
- **Location:** A department needs to designate its position so this allows patients to access the department that handles their cases. A hospital is a vast enterprise, and locating a specific department without a guide is both tedious and time-consuming. It is written in VARCHAR datatype.

II. Staff

- **Staff ID:** Staff ID is the primary key of the staff entity. A staff id is a unique identification code given by the organization. A staff id has every detail like department, specialty, posts, et cetera. of the staff. Providing staff id also helps the hospital to keep a record of every employee working in the organization. It is written in integer datatype.
- **Staff Name:** A hospital keeps track of its employees' names in order to remember them. They keep track of the Staff's name along with the rest of the Staff's information. It is written in integer datatype.
- **Department:** Department is a foreign key in the staff entity. The hospital assigns a staff member to a certain department based on their specialization or the requirements of the hospital. It is written in integer datatype.
- **Position:** A hospital hires staff in a variety of roles. Team members are assigned to hospital positions based on their qualifications and expertise. Tasks delegated to the department are often given to staff members based on their position within the department. It is stored in integer datatype.
- **Address** The medical staff's addresses are recorded and stored so that the company can easily access them in an emergency. It is stored in the VARCHAR data type.
- **Contact Number:** The hospital stores the confidential contact information of the staff in a centralized manner just so the hospital can contact them in case of an emergency. It is written in integer datatype.
- **Specialty:** Specialty is a foreign key in staff entity. A member of staff is assigned to each case based on their area of expertise. To become a professional, a member of staff must complete the required courses and achieve the objectives for the following positions. It is written in string datatype.

- **Salary:** The sum of money paid to hospital staff is referred to as a pay check. Salary is determined by the employee's level. It is written in the Float data type.

III. Patients

- **Patient ID:** Patient ID is the primary key of the patient entity. Since there are several patients admitted to a hospital, it is a one-of-a-kind code to distinguish each one. It's there to keep track of the patient's information uniquely. It is written in integer datatype.
- **Patient Name:** To recognize a patient, a hospital stores the patient's identity. They keep the patient's name along with his or her other details. It is written in string datatype.
- **Record:** A hospital is required to maintain medical records such as admissions, discharges, and treatments. Such that physicians or health care providers can access them later if the patient requires even further medication. It is written in VARCHAR datatype.
- **Gender:** A hospital wants to know whether the patient is male or female in order to have the appropriate care and medication dosage. It is written in VARCHAR datatype.
- **Medicine:** Medicine is a foreign key in the patient entity. A doctor will administer medications to a patient based on the treatment they are providing. It is written in String datatype.
- **Test:** Test is a foreign key of the patient entity. A series of tests are performed to diagnose the illness of the patient. Doctors or health care providers can only begin treatment after the test results are collected. It is written in string datatype.

IV. Tests

- **Test ID:** Test Id is the primary key of the test entity. Each test is assigned a unique identifier. It is used to keep records of the results of the survey that the hospital performs every day, which number in the thousands. It is written in int datatype.
- **Test Name:** Any test is assigned a unique name based on its function, such as blood test, urine test, and the like, to make it easier to identify. It is written in string datatype.
- **Patient:** The patient is a foreign key of the room entity. Before undergoing any medications, a patient is subjected to a series of examinations. The doctor conducts tests to confirm the patient's condition, and only then can they be treated. It is written in string datatype.
- **Department:** In a single day, a hospital performs multiple checks. A specific procedure is administered in a particular department of a hospital to make it as simple as possible. It is written in string datatype.

V. Rooms

- **Room ID:** Room ID is the primary key of the room entity. Per room has the code that identifies it. It helps to keep track of the room's specifics, such as where it belongs in the department if that is occupied, and so on. It makes it easier for the hospital to keep track of their records. It is written in integer datatype.

- **Patient:** The patient is a foreign key of the room entity. According to the care they are undergoing, a patient is admitted to a specific room or transferred to another room. It is written in string datatype.
- **Location:** Since a hospital has many rooms, it is necessary to include the coordinates of the rooms. As a result, places should be given to make life convenient for both patients and the hospital staff. It is written in string datatype.
- **Department:** A hospital contains numerous rooms in different departments. To make things easier for patients and hospital personnel, descriptions of the bed, as well as the name of the department should be given. It is written in string datatype.

VI. Medicines

- **Medicine Code:** Medicine Code is the primary key of the medicine entity. It is yet another code used to store all of the information about the drug. Keeping the code makes it simpler and less time-consuming to obtain the description of the drug. It is written in an integer data type.
- **Medicine Name:** A drug has a distinct identity that is used to describe it. It familiarizes both the patients and the nurses with the medication. It is written in string datatype.
- **Patient:** According to the patient's illness and the medication they are undergoing, health care providers administer medicine to them. It is written in string datatype.
- **Price:** The cost of purchasing the medicine is referred to as the price. It is written in int datatype.
- **Medicine Date:** Before purchasing a drug, make sure to verify the date of manufacturing. Before handing it to the patient, confirm the date of manufacturing

and expiration. Carelessness will wreak havoc on a patient's health and leave them ill. It is written in date datatype.

VII. Specialties

- **Specialty ID:** Specialty ID is the primary key of the specialty entity. It is another code to identify the departments, staff, or patients' specialties. It is written in integer datatype.
- **Specialty Name:** Each specialty has its name, such as neurologist, cardiologist, or gynecologists. It is written in string datatype.
- **Course:** A healthcare professional must complete the required course to become an expert in a particular field. It also assists in evaluating the position of the staff. It is written in string datatype.

VIII. Visitors

- **Visitor ID:** Visitor ID is the primary key of the visitor entity. It is yet another code used to identify visitors to a hospitalized patient. It stores the visitor's information and assists in ensuring the patient's and hospital's security. It is written in integer datatype.
- **Patient:** The patient is a foreign key in the visitor entity. It aids in the identification of the patient to whom the visitor is paying a visit. It is written in string datatype.
- **Contact Number:** A visitor's contact information is recorded and stored in the hospital in case of an emergency or whether any information about the patient has to be shared with the visitor. It is stored in integer datatype.

D. List of the primary keys.

- **Department ID is the primary key of Departments.**

It is preferred as a primary key because it requires a unique code or ID to identify each department. It also makes it easy to store data from multiple departments.

- **Staff ID is the primary key of Staffs.**

It is preferred as a primary key because it requires a unique code or ID to identify each staff. It assists in gaining access to all of the staff's information.

- **Patient ID is the primary key of Patients.**

It is preferred as a primary key because it requires a unique code or ID to identify each patient. It keeps track of the patient's ailments, medications, and other details. It also aids if the patient requires further care in the future.

- **Test ID is the primary key of Tests.**

It is used as a primary key since each test is uniquely identified by its unique code or ID. It makes keeping track of procedures done in the hospital simpler.

- **Room ID is the primary key of Rooms.**

It is selected as a primary key because it requires a unique code or ID to identify each test. It makes keeping track of the procedures done in the rooms much clearer.

- **Medicine ID is the primary key of Medicines.**

It is selected as a primary key because it uniquely identifies every medicine with its unique code or ID. It stores every detail of the drugs and also provides the details later for further purchase.

- **Specialty ID is the primary key of Specialties.**

It is selected as a primary key because its distinctive code or ID specifically recognizes the specialties of the hospital's staff or units. It keeps track of the medications that are available in the hospital.

- **Visitor ID is the primary key of Visitors**

It was selected as the primary key because it uses a unique code or ID to recognize each visitor. It aids in the storage of visitor data and the identification of the patient to whom the visitor is paying a visit.

E.

I. List of Foreign keys

- **Department Reference Departments (Department ID)**

Department ID is the primary key in Department entity and foreign key in Staff, Rooms and Test entities.

- **Staff Reference Staffs (Staff ID)**

Staff ID is the primary key in Staff entity and foreign key in Staff_Patient entity.

- **Patient Reference Patients (Patient ID)**

Patient ID is the primary key in Patient entity and foreign key in Rooms, Staff_Patient, Visitors, Tests, and Medicine entities.

- **Test Reference Tests (Test ID)**

Test ID is the primary key in Test entity and foreign key in Test_Patient and Patient entities.

- **Room Reference Rooms (Room ID)**

Room ID is the primary Key in Room entity and foreign key in Patient entity.

- **Medicine Reference Medicines (Medicine Code)**

Medicine ID is the primary key in Medicine entity and foreign key in Patient_Medicine and Patient entities.

- **Specialty Reference Specialties (Specialty ID)**

Specialty ID is the primary key in Specialty entity and foreign key in Staff entity.

- **Visitor Reference Visitors (Visitor ID)**

Visitor ID is the primary key in Visitor entity and foreign key in Patient entity.

II. Relation between the entities

- **Staff works Departments => N : 1**

Several staffs work in one department however one staff member cannot work in several departments so, the relation between the staff and the department is many to one.

- **Staff acquire specialties => 1 : 1**

One staff acquires one specialty and one specialty is acquired by one staff so, the relation between the staff and the specialty is one to one.

- **Department performs Test => 1 : N**

One department performs several tests though one test cannot be carried out by several department so, the relation between the department and the test is one too many.

- **Department contains rooms => 1 : N**

One department contains several rooms though one room cannot be in several departments so, the relation between the department and the room is one to many.

- **Patient is admitted in room $\Rightarrow N : 1$**

Several patients are admitted in one room though one patient cannot be admitted in several rooms so, the relation between the patient and the room is many to one.

- **Staff treats Staff_Patient $\Rightarrow 1 : N$**

One staff treats one or more than one patient. So, the relation between the staff_Patient and the patient is one to many.

- **Staff_Patient treats Patients $\Rightarrow N : 1$**

Several patients are treated by one staff. So, the relation between the staff_patient and the patient is many to one.

- **Patient consumes Patient_Medicine $\Rightarrow 1 : N$**

One patient can consume none more than one medicine. So, the relation between the patient and the Patient_Medicine is one to many.

- **Medicine consumes Patient_Medicine $\Rightarrow N : 1$**

One medicine is consumed by one or more patients. So, the relation between the Medicines and Patient_Medicine is many to one.

- **Visitor visits Patient $\Rightarrow N : 1$**

Several visitors visit one patient though one visitor cannot visit several patients so, the relation between the visitor and the patient is many to one.

- **Patient undergoes Test_Patient $\Rightarrow 1 : N$**

One patient undergoes one or more tests. So, the relation between the patient and the Test_Patient is one to many.

- **Tests performs Test_Patient $\Rightarrow 1 : N$**

One test is performed on one or several patients. So, the relation between the tests

➤ **Composite entity**

A "bridge" entity is another name for a composite entity. This "bridge" is used to navigate many-to-many partnerships that the standard institution was unable to manage. This composite object is located between the two entities of interest, and it shares the primary keys from both linking tables. Since it has the features of both an individual and a relationship, this composite entity is also known as a "gerund. ([Fandom, n.d.](#))"Staff_Patient, Patient_Medicine, Test_Patient entities are the composite entities of Staff and patient , Patient and Medicine and Test and Patient entities

4. This is the ER Diagram of the Care & Cure Hospital that contains the entities and attributes that was mentioned prior to the section.

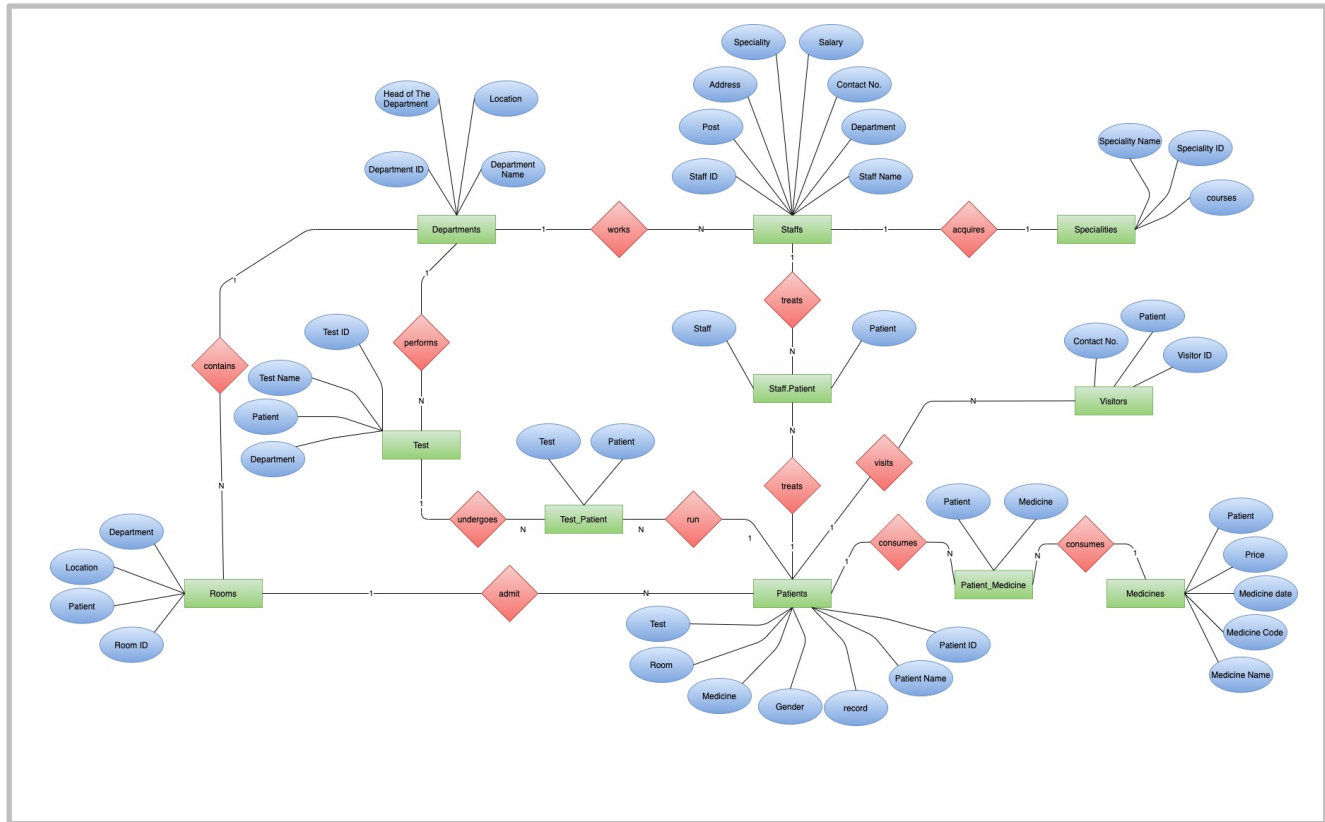


Figure 2: ER Diagram of Care & Cure Hospital.

5. Personal Reflection

As a biology student, I had never seen myself studying in a technical field. To be honest, I doubted I would ever understand something that was so new to me. I had no idea how I was going to approach the subjects. Choosing this course was totally outside of my comfort zone. Since I had to start from the very beginning, it was complicated and challenging at first.

"The key to pursuing excellence is to embrace an organic, long-term learning process, and not to live in a shell of static, safe mediocrity. Usually, growth comes at the expense of previous comfort or safety."— Josh Waitzkin

Before starting college, I had not taken any additional classes. I attempted to learn about the module in order to grasp the fundamentals. I researched the organization's database examples, learned the fundamentals of HTML, and learned a bit more about Information Systems. I looked at how an information system works and how imperative it is for any business or organization to have one. An organization retains and preserves a large number of records, which it uses to stay consistent and updated. I also used basic HTML to make my first webpage. It was both perplexing and entertaining. Also, since coding and programming are so prevalent in today's world, I've always been intrigued by them.

Information System is one of the modules that we are learning in our first semester. Information structures are made up of a series of program codes as well as basic standards and entities. I believed that the module included databases, websites, and other subjects. Understanding the module was more important to me than having any expectations from it. Databases, Database management Systems, Entity Relation Diagram, Information Systems, and MySQL, among other topics, have been discussed in the class. I also learned about ER diagrams, database creations, and the interaction between the entities of organizations and their attributes during the lectures and workshops. Entity connections and databases have piqued my curiosity, and it's interesting to see how various aspects of an organization collaborate with one another to keep their enterprise safe and up to date with the outside world, as well as how a corporation can maintain and share vast volumes of data with less effort and with less time. In the coming lessons, I'm interested to learn more about HTML, CSS, and JavaScript.

To this day, the learning process is convenient and efficient. The eagerness of the teachers to train us on the module has sped up the learning process. I'd be misleading if I said the module was simple to grasp. Since the notation is difficult to understand, I had difficulty recalling the databases. The module has become a bit simpler and more intuitive after around a month of attending lectures. Though it is always daunting for me, I am sure that my effort will make things easier.

In order to learn more about this module, I have taken references from some websites and books including Murach's MySQL and computer science, and so on. Aside from that, I'm having no trouble learning about the module. Our professor and tutor extensively outlined the program and helped us with any issues that arose during the course. They also have lecture slides in case we have any questions during the lecture or want to review it again later.

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