

**A) Three project Titles**

1.Hospital Patient Management System

2.Retail Shop Management System

3.University Student Registration Management System

**B) Current Business Processes**

(Manual/inefficient)

**1.Project one**

. Patients’ fill in forms at the reception (Patient registration and admission).

. Doctor jots down the patients’ symptoms, diagnosis, and medicine prescription on forms (prescription and medication administration)

. A cashier calculates and tallies a patient’s final bill after manually going through a patient’s files.

. Staff check stock of Medicines and note down items that are running low on a piece of paper.

**2. Project Two**

. Stock checking. Monitoring stock and noting down what is running

. After deliveries, Employees unpack the boxes and manually check the received items against the purchase order.

. The cashier makes accountability of the cash brought in and out and takes in records

**3. For Project Three**

. Filling in application forms for beginning students.

. Tuition clearance where students have to go to the accounts office and get cleared in order to access other services.

. Taking up Attendance in lecture rooms……

C)

**Project One**

- Poor Patient tracking. This is where you find medical mistakes, and worsened outcomes because doctors are unable to keep track of their patients and puts the hospital in a crisis due to billing errors. Billing errors which come about due to being unable to tell which patient has a debt or balance with the hospital.

-Doctorers have no centralized way of viewing previous prescriptions or lab test results.

-Loss or misplacement of paper-based patient records.

-Coordination between doctors, nurses and pharmacists is weak since records are not updapted in real-time.

-Difficulty in generating reports for hospital management e.g number of patients treated, most common illness, outstanding bills.

**Project Two**

-Inaccuracies when handling cash. Such incidents are seen when a cashier has a number of calculations to make with large sums of money or making a yearly accountability of the cash in the business, errors are made.

-Manual stock-taking is time-consuming and prone to human error.

-Shopkeepers often realise products are out of stock only after customers ask for them.

-Difficulty in detecting theft, mismanagement, or stock shrinkage.

-Sales data is not stored digitally, so its hard to analyse customer buying trends.

-Reordering stock is not systematic sometimes excess goods are bought, leading to wastage especially perishables.

**Project Three**

-Time consuming. This is because it takes a lot of time having students fill in forms and the administration having to go through a number of student files to check the forms out.

-Student records are scattered across different departments, leading to duplication and inconsistency.

-Tracking student academic performance over time is difficult because grades are stored in different files.

-Generating transcripts takes a long time and is prone to errors.

-Lack of integration makes it hard for lecturers, registrars, and administrators to access updated information.

-Security issues: student data can easily get lost, tampered with, or accessed by unauthorized persons.

D) **Project one**

-By introducing digital registration. Where you ask the first -time patients to fill in their information online or rather fill in their information online but with their guidance and for the usual patients by assessing them with a patient Id number to be able to track down their registration details always.

-Linking pharmaceuticals and billing to a patient. This will make it easy to track down all payments made by the patients and medicines given to patients.

-Doctors and nurses should update every patients’ details in the system every time they visit.

-Digital storage with cloud backup ensures records are safe and retrievable anytime.

-Real-time updates and notifications to relevant staff when a patient’s record is updated to solve the problem of poor coordination among staff.

-Built in reporting tools for patient statistics, revenue, and common treatments to solve the problem of difficulty in generating management reports.

**Hospital Patient Management System’s Entities and attributes**

Patient(PatientID,Name,Age,Gender,Contract,Address)

Doctor(DoctorI,Name,Speciality,Contact)

Appointment(AppointmentID,PatientID,DoctorID,Date,Diagnosis,Prescription)

Bill(BillID,PatientID,Amount,PaymentStatus,Date)

Medicine(MedicineID,Name,Quantity,Price)

**Relationships**

* A Patient can have many Appointments (1:M).
* A Doctor can attend to many Appointments (1:M).
* An Appointment can generate one Bill (1:1).
* A Bill can include multiple Medicines (M:N).

**Project Two**

-Use of barcodes to monitor the items and access costs. The barcode reader will be able to calculate the number of items in stock and much be able to ease the work of an employee and estimate the prices of each.

-Tracking all sales digitally and reconcile stock with inventory reports to identify discrepancies to solve the problem of theft or mismanagement not detected.

-All transactions recorded in the system; generates daily, weekly, and monthly reports to solve the probem of sales data not stored digitally.

-Automated reorder recommendations based on historical sale trends and current inventory levels.

**Relationships**

* A Customer can make many Sales (1:M).
* A Sale can have multiple Products through SaleItems (M:N).
* An Employee records many Sales (1:M).
* A Supplier provides many Products (1:M).

**Retail Shop Management System’s Entities and Attributes**

Customer(CustomerID,Name,Contact)

Product(ProductID,Name,Price,QuantityInStock)

Sales(SaleID,CustomerID,Date,TotalAmount)

Saleterm(SaletermID,SaleID,CustomerID,ProductID,Quantity,Subtotal)

Employee(EmployeeID,Name,Role,Contact)

**Project Three**

-Create different Portals for each and every student. This will enable students to register, and access their time tables online.

-Digitally / online application. Students will be able to apply for vacancies online.

-Creating an online E-Learning platform like Moodle. Where Students are able to access online lectures, notes, tests, and quizzes.

-System-generated transcripts that compile grades, attendance, and other relevant information instantly to solve the problem of transcript generation being slow and error prone.

-Unified platform connecting the registrar, finance, lecturers, and library systems for real time data sharing to solve the problem of lack of integration among departures.

-Role-based access control, data encryption and regular backups to prevent unauthorized access and data loss to solve the problem of security issues with student data.

**Entities and Attributes**

Lecturer(LectureID,LectureName,CourseID,ScheduleDate)

Course(CourseID,CourseName,LectureID)

Registration(RegistrationID,Date,StudentID,CourseID)

Student(StudentID,StudentName,CourseID,DOB,Gender)

E)

**For Project one**

Patient(PatientID,Name,Age,Gender,Contract,Address)

Doctor(DoctorI,Name,Speciality,Contact)

Appointment(AppointmentID,PatientID,DoctorID,Date,Diagnosis,Prescription)

Bill(BillID,PatientID,Amount,PaymentStatus,Date)

Medicine(MedicineID,Name,Quantity,Price)

**For Project Two**

Customer(CustomerID,Name,Contact)

Product(ProductID,Name,Price,QuantityInStock)

Sales(SaleID,CustomerID,Date,TotalAmount)

Saleterm(SaletermID,SaleID,CustomerID,ProductID,Quantity,Subtotal)

Employee(EmployeeID,Name,Role,Contact)

**For Project Three**

Lecturer(LectureID,LectureName,CourseID,ScheduleDate)

Course(CourseID,CourseName,LectureID)

Registration(RegistrationID,Date,StudentID,CourseID)

Student(StudentID,StudentName,CourseID,DOB,Gender)

Relationship between the Attributes

