

# Software Engineering

## Case studies for practice: “Entity Relationship Diagram”, “Data Flow Diagram” and “State Transition Diagram”

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**Draw “Entity Relationship Diagram (ERD)”. “Data Flow Diagram (Context Level and Level 1)” and “State Transition Diagram” for following case studies:**

### Case Study 1:

In the physician billing system, a physician examines a patient and inserts records into system about patient examination. This examination is verified and a valid fee is computed for patient. As the patient is availing the insurance, so he submits an insurance form, which holds all the detail about his insurance policy. It also describes that what amount will be paid by insurance company and what will be paid by the patient. Insurance details inserted are verified by the system. Based on valid fee and insurance form submitted, invoices for patient and insurance company are generated and are sent. Patient and insurance company make payments, which are verified by the system.

### Case Study 2:

In petrol pump management system, a customer comes and chooses type of fuel. His vehicle is refueled according to quantity asked. Pumping machine generates a bill whose one copy is given to customer and one is kept in record. On the other hand, record of supply of fuel is maintained and updated by petrol pump manager as quantity of fuel reaches at petrol pump or it is sold to customers. A report is generated on daily basis, which shows daily sale and purchase separately. At the end of month, all expenses like electricity charges, employee’s salary, and daily miscellaneous expenses are recorded. Net monthly profit and loss statement is generated by using sale, purchase and expenses recorded.

**Case Study 3:**

Congratulations Students!!!

At last the management of PUCIT has admitted that hot sunny weather is one of the major factors behind any student's poor performance. Moreover, the water coolers present in the campus are more effective in preparing tea as you can get as hot water as you want out of it.

After taking into account this serious matter, PUCIT has planned to place automatic 'soft drink dispenser machines' in the corridors (WOW!!!). So, the students can quench their thirst and refresh themselves after every lecture.

A student inserts coins in the machine. Machine must check the currency type of the coins (American coins are not allowed folks!!!). A menu is displayed on the screen. Student selects the desired drink and enters the number of bottles he/she wants. The machine checks the availability of the selected item. Once verified, the total amount is calculated and balance is returned to the customer. The machine then ejects the required drink so that you can attend the next lecture with all your six senses working properly.

**Case Study 4:**

In a courier management system, a customer reaches at courier shop and asks for dispatching of his goods. An attendee verifies his goods and allots an identification number to his goods. Along with this he calculates the amount, which will be charged from customer. After proper packing, a bill is generated whose one copy is given to customer and one copy is kept in record. All the goods received in a day are sorted out according to destination, which can be identified by unique ID number allotted to each courier order. All courier orders along with their documents are sent to their appropriate destinations. Destination courier centers receive these orders and record their entries. All courier orders are dropped to their destination, and a signature is taken from each receiving person of courier order. This is recorded in the system, which automatically updates the record at base center from where these courier orders are initiated.

**Best of Luck**