

Analysing the Existing system.

Views	Traditional Approach (structured approach)	Object Oriented Approach (Modern Approach) (UML- Unified Modelling Language) 7-9 Diagrams
Functional View	DFD (Data Flow Diagram)	Use Case Diagram
Structural View	ERD (Entity Relationship Diagram)	Class Diagram, Object Diagram
Dynamic View	ELH (Entity Life Histories)	State transition Diagram, Sequence Diagram

Exercises

Exercise 1 This exercise relates to the case study ‘Correspondence Courses’ which is outlined below.

Produce (and state any assumptions made):

- a context diagram
- a level (0/1) data flow diagram
- ER Diagram (crowfoot or Chen Notation)
- Use case diagram

Case–study

Correspondence courses A college offers correspondence courses to students. Each course lasts 20 weeks and is based on a weekly study module and progress test. At the end of the course students sit an invigilated examination.

The college Registrar deals with enquiries and applications, and students applying who have sufficient qualifications are asked to register by completing and submitting an application form.

After approval by the Academic Director, the application form is returned to the Registrar who creates a student file. The Accounts department receive the application form and using information from the student file creates an invoice that is sent to the student. Payments made are registered on the invoice file. The first batch of student material and tests is issued from the library only to students who have paid fees (this information is taken from the invoice file).

Progress tests are marked by academic staff and the results, together with comments, are sent out with next week’s study block. The library will only issue study material/progress tests when a student has returned test answers from the previous week.

Exercise 2 This exercise relates to the case study 'Animal Park' which is outlined below.
Produce (and state any assumptions made):

- a) a context diagram
- b) a level (0/1) data flow diagram
- c) ER Diagram (crowfoot or Chen Notation)
- d) Use case diagram

Case-study

Animal Park The **keepers** in an animal park look after the feeding of the **animals**. Each animal is located in a different **area** of the park. Each area has its own keeper who reports to the **head keeper**.

The head-keeper maintains a record of the sorts of **food** that each animal species or type in the park should be fed, and in what quantities. There is no distinction made between different animals of the same species. The keepers access the information so they know what to feed each animal type. Each animal type may be given more than one type of food, and each type of food may be fed to a number of animal types. Each day the keepers will take out the food needed for the animals in their care and record this on the information system. These food types can be perishable or non-perishable according to their shelf life. For example, fresh fruit and vegetables would be perishable where tinned produce or cereals would be considered to be non-perishable.

The **office staff** keep a track of the food supplies. They monitor which foods are running low every two or three days and draw up a list of that which needs to be ordered. In order to help them, the information system contains details about re-order quantities and re-order levels. Sometimes they may need to readjust their re-order levels.

A number of **suppliers** are used, and their names, addresses and telephone numbers are kept in the system. Because of the large quantities required and the difficulty of obtaining some foods at certain times of the year, there is more than one possible supplier for each type of food. Most of the ordering is done via the telephone. A standard **order form** is then created. The order form usually contains details of more than one food type to be ordered from a particular supplier. The order also contains details of the date of the order and what quantities are required for each food type.

When deliveries are received, the keepers check the **delivery note** against the goods received, amend it if necessary and pass it on to the office. Here it is checked against the orders placed. If they agree, this is recorded in the system. The office staff check the received orders against an **invoice** sent by the supplier. If they agree, payment is made. Any discrepancies are taken up with the supplier, and the supplier's response is noted in the system. Most suppliers send an invoice each month.

Exercise 3

Lincoln Pizza's ordering system DFD

Lincoln Pizza is a small restaurant on Lincoln Ave. Most of its **customers** are EIU students. In the current manual ordering system, the restaurant **employees** have to go through three different activities in order to process a pizza order. The first activity, called **Receiving the order**, consists in **getting customers' information** (such as name, phone number, and address), and **getting orders' information** (such as the pizza size, the type of crust, and the ingredients needed to make the pizza). The same process also **checks the availability** of the **ingredients** needed before setting the status of the pizza order as "valid". When a pizza order is valid, the employee in charge of Receiving the order provides the valid order information to the **cooks** who make the pizza. The second activity, **Making the pizza**, consists in getting the ingredients needed (from containers in the kitchen) and actually cooking the pizza. At the end of that process, the cooks have to update the manual file that keeps track of the ingredients. They, then, provide the **drivers** in charge of delivering the pizza with the (completed) status of the order. The, final activity **Delivering the pizza**, done by the drivers consists in getting address and payment information from the employee in charge of Receiving the order, and actually delivering the pizza. The drivers provide the customers with a receipt and get the **payment**.

Produce:

- a) a context diagram
- b) a level (0/1) data flow diagram
- c) ER Diagram (crowfoot or Chen Notation)
- d) Use case diagram

Reference

- https://shms-prod.s3.amazonaws.com/media/editor/143160/Lab_5_Case_study-_correspondence_courses.pdf
- https://www.academia.edu/17384106/DFD_Exercise_critical_thnking