STRUCTURED SYSTEMS ANALYSIS AND DESIGN

Assignment No: 2

Title:

Perform the Structured Systems Analysis and Design (SSAD)- Draw the DFD MODEL (Level 0, Level 1 and Level 2). Use an open-source tool for the same.

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ASSIGNMENT NO: 2

Aim:

Perform the Structured Systems Analysis and Design (SSAD) - Draw the DFD MODEL (Level 0, Level 1 and Level 2). Use an open-source tool for the same.

Problem Statement:

Draw DFD of level 0, level 1 and level 2 for library management system using open-source tool like **draw.io**. A student comes to a library to borrow a book. The student makes the book request by giving book title and author name. The student has to submit his details/credentials to the library. Sometimes students may simply give topic and demand for a book. The library information system maintains a list of authors, list of titles, and list of topics. This system also keeps records of topics on which books are available with the system. The system maintains information about the shelf number on which books are located. Finally, the list of demanded books should be displayed on the console for ease of selection.

Objectives:

1. To understand the different levels of DFD in Library management system.
2. To choose and use levels DFD.
3. To learn and understand the different concept structured system design.

Theory:

Data flow diagrams:

Data flow diagrams are used to describe data flow within a system. They can depict transformations on data as well as storage locations. They trace the route that data travels in a system, from start to finish.

Symbols Used (Yourdon and Coad)
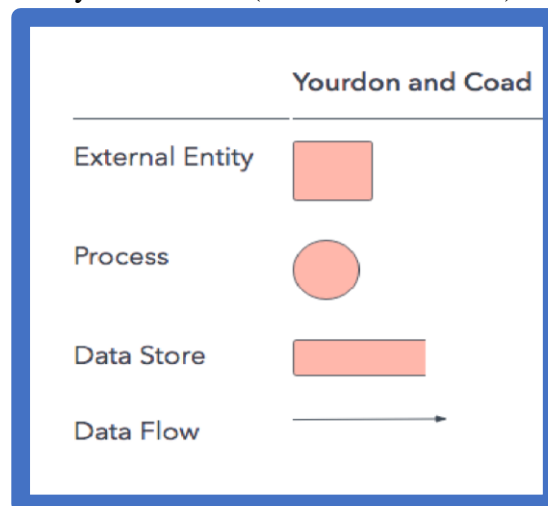
1.   **External Entity:** An external entity, which are also known as terminators, sources, sinks, or actors, are an outside system or process that sends or receives data to and from the diagrammed system. They're either the sources or destinations of information, so they're usually placed on the diagram's edges.

2.   **Process:** Process is a procedure that manipulates the data and its flow by taking incoming data, changing it, and producing an output with it. A process can do this by performing computations and using logic to sort the data or change its flow of direction.

3.   **Data Store:** Data stores hold information for later use, like a file of documents that's waiting to be processed. Data inputs flow through a process and then through a data store while data outputs flow out of a data store and then through a process.

4.   **Data flow:** Data flow is the path the system's information takes from external entities through processes and data stores. With arrows and succinct labels, the DFD can show you the direction of the data flow.

Rules of DFD:

1. Each process should have at least one input and one output.

2. Each data store should have at least one data flow in and data flow out. 3.
   A system's stored data must go through a process.

4. All processes in a DFD must link to another process or data store.

DFD Level 0, 1, 2:

Data flow diagrams are also categorized by level. Starting with the most basic, level 0, DFDs get increasingly complex as the level increases.

Level 0 DFDs, also known as **context diagrams**, are the most basic data flow diagrams. They provide a broad view that offers little detail. Level 0 data flow diagrams show a single process node and its connections to external entities.

Level 1 DFDs are still a general overview, but they go into more detail than a context diagram. In a level 1 data flow diagram, the single process node from the context diagram is broken down into sub processes.

Level 2+ DFDs simply break processes down into more detailed sub processes. Level 3 data flow diagrams are detailed enough that it doesn't usually make sense to break them down further.

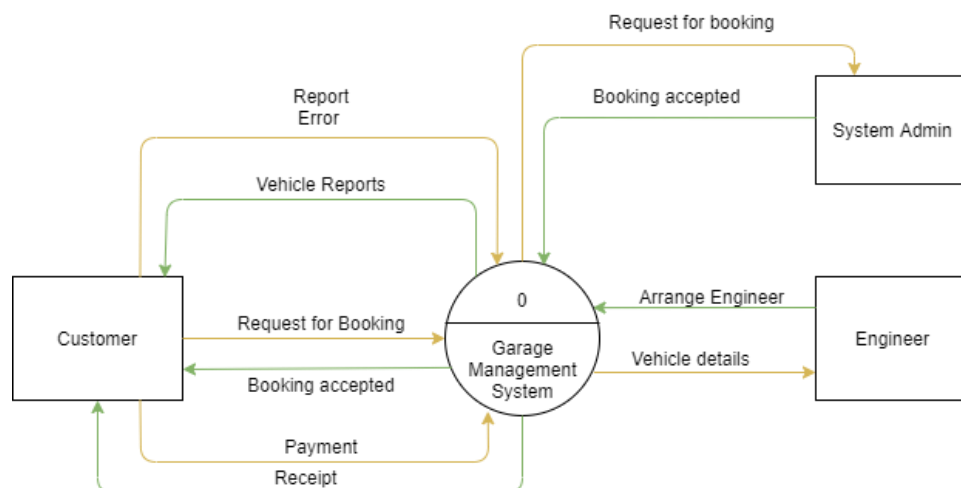## Explain the difference between DFD and CFD diagrams.

Data Flow Diagram	Control Flow Diagram
1. A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects	1. It describes the control flow of a business process, process or program.
2. It contains external entity, process and data dictionary	2. It contains Control Specification (CSPEC) and Process Specification (PSPEC).
3. It contains various levels like level 0, level 1 etc.	3. There are no such levels like DFD.
4. It will give ideas about how data will pass and how output will be generated.	To indicate How the software behaves when an event is sensed.

Conclusion:

Hence, I understood the data flow diagram of level 0, level 1, level 2 diagram.

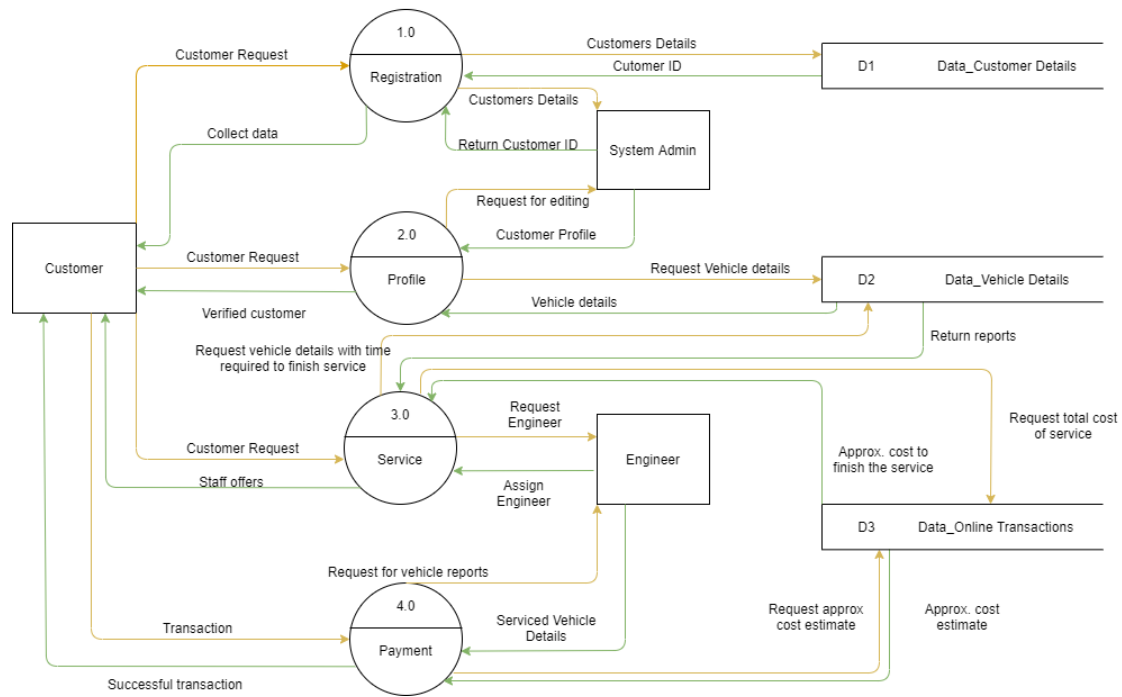## FAQs: (Kindly refer for pictures of the handwritten answers at end)

1. What is meant by context diagram?
2. What are the different levels of the Data flow diagram?
3. What are the data stores in the context diagram of the garage management system? (With respect to our Problem statement).
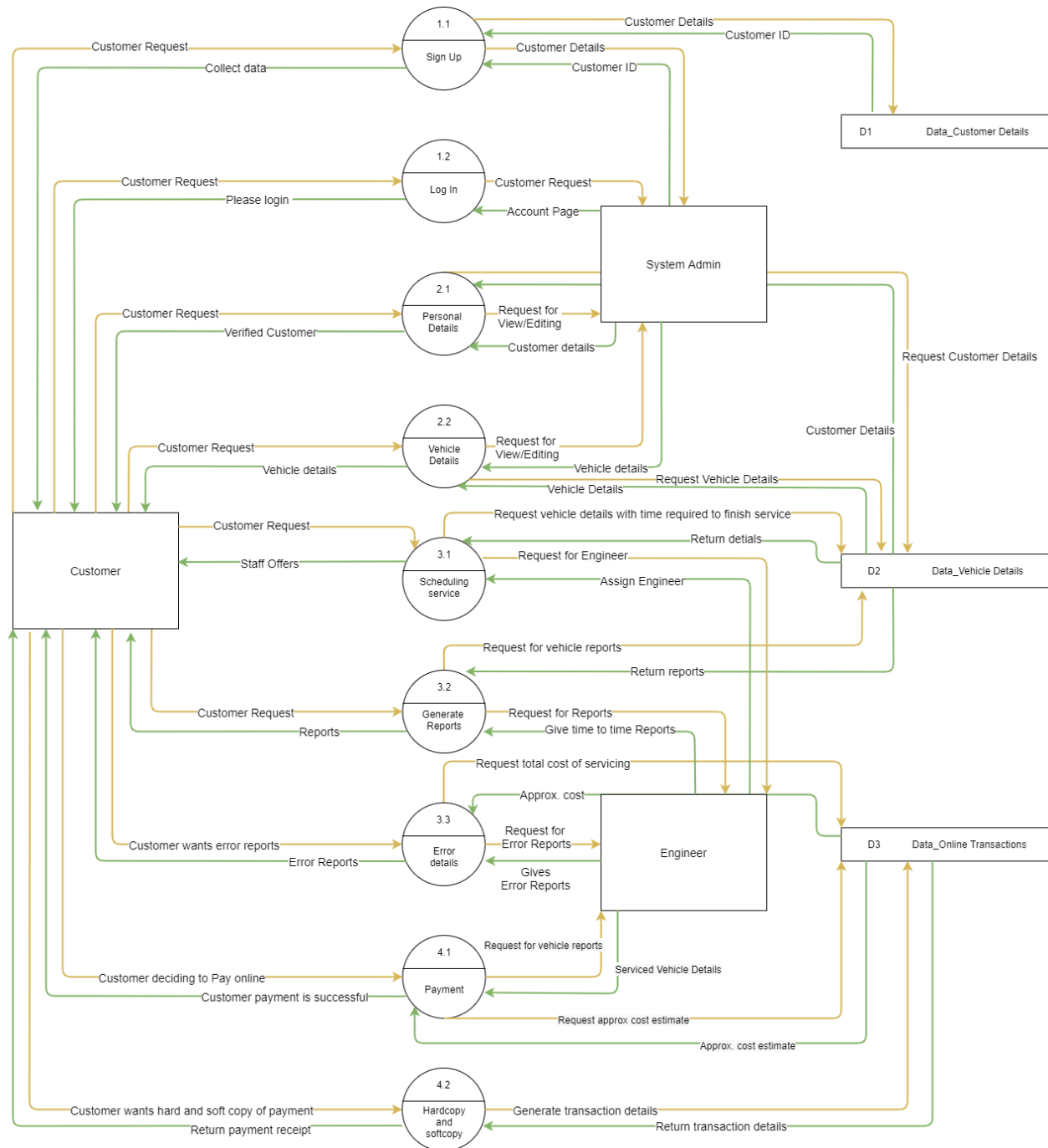

Fig1: Level 0 data flow diagram

Fig2: Level 1 data flow diagram

Topic: Data flow diagram
Level: 1

1.0
Registration

Customer Request

Customers Details

Cutomer ID

D1   Data_Customer Details

Collect data

Customers Details

Return Customer ID

System Admin

Request for editing

Customer Profile

2.0
Profile

Customer

Customer Request

Request Vehicle details

D2   Data_Vehicle Details

Verified customer

Vehicle details

Return reports

Request vehicle details with time
required to finish service

3.0
Service

Request
Engineer

Request total cost
of service

Customer Request

Engineer

Approx. cost to
finish the service

Staff offers

Assign
Engineer

D3   Data_Online Transactions

Request for vehicle reports

4.0
Payment

Serviced Vehicle
Details

Request approx
cost estimate

Approx. cost
estimate

Transaction

Successful transaction

Fig3: Level 2 data flow diagram