MIT World Peace University

Software Engineering and Testing
Second Year B. Tech, Semester 4

Performing Secure Systems Analysis And Design Drawing Data Flow Diagrams (Level 0, 1, 2)

Assignment 2

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Contents

1 Aim

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.

2 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.

3 Problem Statement

Draw DFD of level 0, level 1 and level 2 for The Following Problem:

The Purpose of an Attandence Assistant App is to help reduce the time taken for recording the attendance of a classroom in a school or college. The app will be able to record the attendance of a class in a matter of a few Seconds with minimum Energy Expended. It will record data on cloud, and be accessible to all the Teachers.

4 Theory

4.1 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.

4.2 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.

4.3 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.

4.4 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.

4.4.1 Level 0 DFDs

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

4.4.2 Level 1 DFDs

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.

4.4.3 Level 2 DFDs

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.

5 Difference between DFD and CFD

Data Flow Diagram	Control Flow Diagram
1. A data flow diagram (DFD) is a graphical representation of the "flow" of data through aninformation system, modeling its process aspects	1. It describe the control flow of a businessprocess, 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 is no such levels like DFD.
4. It will give idea about how data will passed and how output will be generated.	4. To indicate How the software behaves when an event is sensed.

6 Tables Generated

6.1 Students

Sr. No	Name of the Student	Face of the Student	Roll Number	PRN of the student
1	Krishnaraj Thadesar	<face_data_from_opencv>	20	1032210888
2	Devanshu Surana	<face_data_from_opencv>	37	1032201654
3	Parth Zarekar	<face_data_from_opencv>	15	1032210846
4	Rohit Jobish	<face_data_from_opencv>	89	1032210658

6.2 Classes

Class ID	School	Section	Panel
1001	SCET	CSE	A
1002	SCET	CSF	A
1003	SCME	Robotics	A

6.3 Programs

P. No	School	Program Name	Number of Panels
1	SCET	Computer Science and CyberSecurity	1
2	SCET	CSE Artificial Intelligence and DS	2

6.4 Professors

Professor ID	School	Subjets Taught	Name of Professor
1001	SCET	CN	Lalit Kulkarni
1002	SCET	[OS, SET]	Jyoti Gavhane

6.5 Subjects

Professor ID	School	Subjets Taught	Name of Professor
1001	SCET	CN	Lalit Kulkarni
1002	SCET	[OS, SET]	Jyoti Gavhane

6.6 Attendance

A.ID	Date	Subject Name	PRN of Present Students	PRN of Absent Students
1	25/2/2023	SET	[1032210888, 1032210553, 1032210937, ...1032210432]	[1032133234, 122312345]
2	25/2/2023	ADS	[1032210888, 1032210553, 1032210937, ...1032210432]	[1032133234, 122312345]

7 Data Flow Diagram Level 0

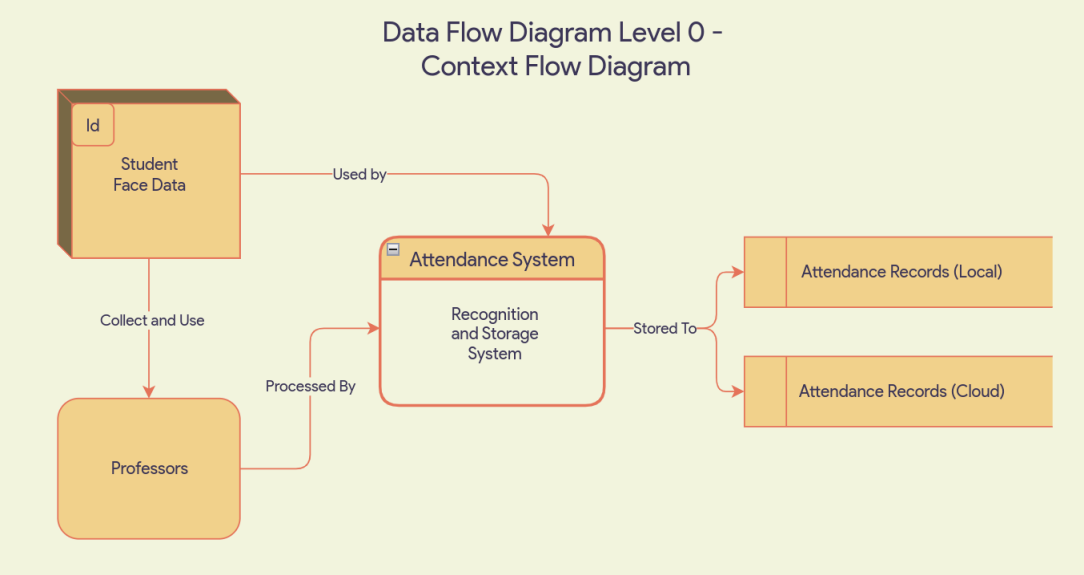

Figure 1:

8 Data Flow Diagram Level 1

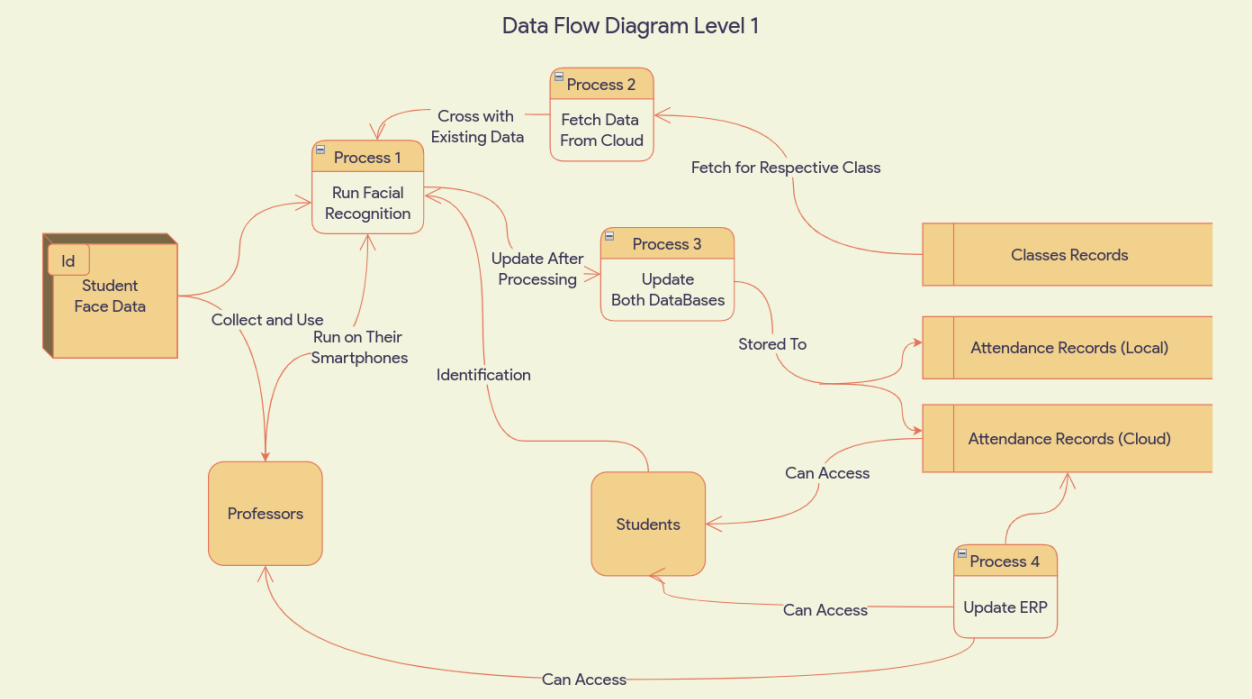

Figure 2:

9 Data Flow Diagram Level 2

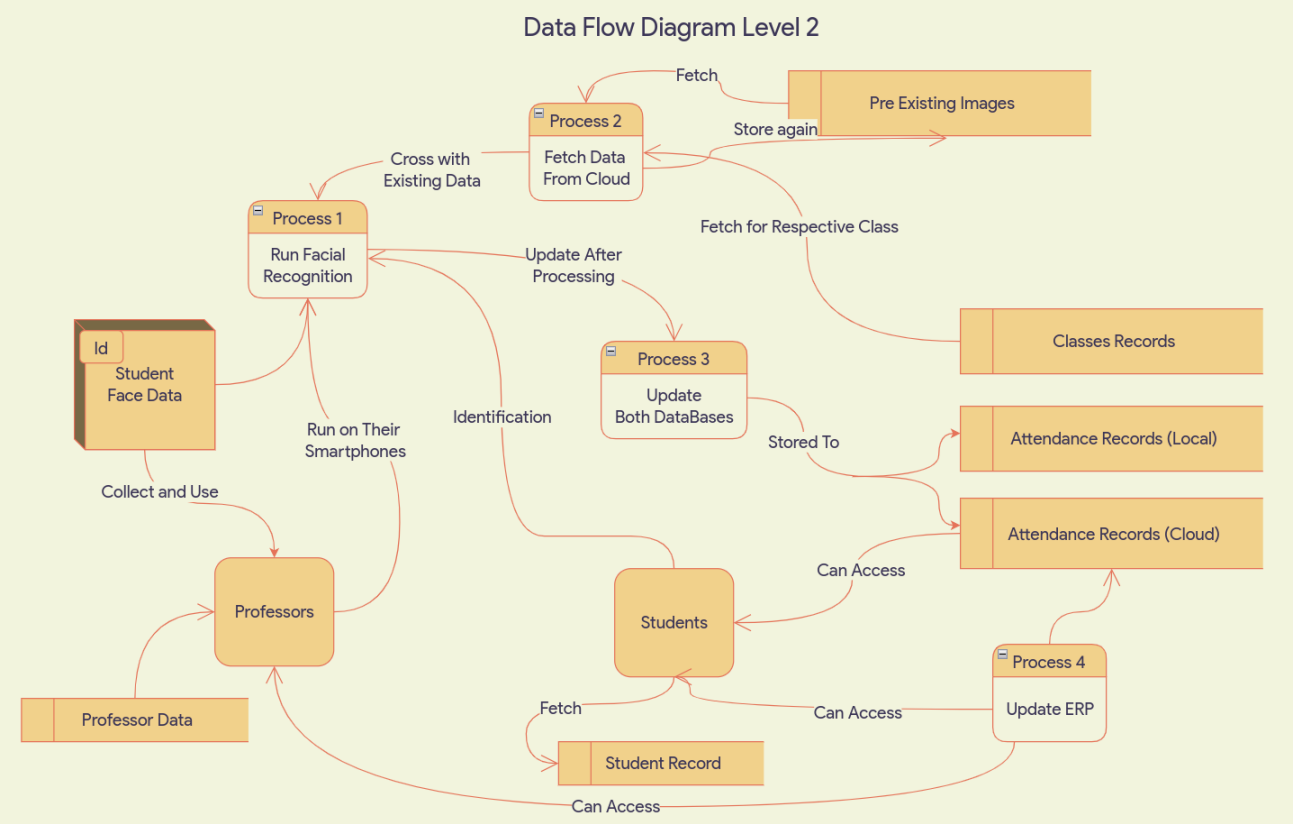

Figure 3:

10 Conclusion

Hence, learned to draw data flow diagram of level 0, level 1 ,level 2 and control flow diagram.

11 FAQ

1. What is meant by context diagram?
   DFD Level 0 is also called a Context Diagram. It's a basic overview of the whole system or process being analyzed or modeled. It's designed to be an at-a-glance view, showing the system as a single high-level process, with its relationship to external entities. It should be easily understood by a wide audience, including stakeholders, business analysts, data analysts and developers.

2. What are different levels of Data flow diagram?

   A data flow diagram can dive into progressively more detail by using levels and layers, zeroing in on a particular piece. DFD levels are numbered 0, 1 or 2, and occasionally go to even Level 3 or beyond. The necessary level of detail depends on the scope of what you are trying to

accomplish. Level 0 is just a basic overview, Level 1 is a more detailed view, and Level 2 is the most detailed view.

3. What are the data stored in the context diagram of problem Statement?
   The Context Diagram of Problem Statement contains the following data: