CHITTAGONG UNIVERSITY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Report - 2

Process Modeling of the Systems of IICT

COURSE CODE : CSE 354
COURSE NAME : SYSTEM ANALYSIS & DESIGN (SESSIONAL)

submitted by

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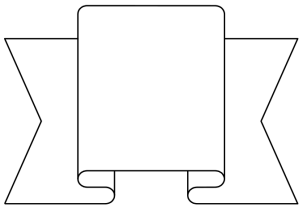

REMARKS

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Introduction

An organization is divided into many departments or section, with each department having an assigned functionality. A clear view of flow of instruction establishment is necessary for an organization to perform efficiently and effectively.
IICT has several departments to maintain their works in different levels. To depict the flow of documents through offices of IICT are reflected in smooth operation of their various functionality. Therefore the data flow diagram both physical and logical displays meets user's information requirements.

The Systems Development Life Cycle (SDLC)

An information system is a fundamental need of an organization is developed on various types of process and modeling system. These helps to build a stable and well documented system which offers modern needs such as intigrity, rigidness, relevant and significant. There are nine distinct phases in the development of an information system and these phases constitute what is known as the *Systems Development Life Cycle* or SDLC.

i. Requirements Determination: By consulting with the users the first step of SDLC is developed. And the requirements are expected to met by system being contemplated with necessary priority.

ii. Requirements Specification: An understandable plan of what the system will provide as output, and the needs of priorities by consensus among end end user is taken by analyst. The user involvement along with potential requirements are specified.

iii. Feasibility Analysis: The checking of feasibility to implement the items enlisted in previous steps are held with resource, cost, equipment is estimated by comparing availability of resources.

iv. Final Specification: After discussions between the analyst and end user along with organization the final specifications are drawn up by studing feasibility report and sugessions which is easily understandable.

v. Hardware and Software study: A configuration of hardware and essential support of software and other necessary tools are determined based on the final specification.

vi. System Design: The logical design of the proposed system including file, database, program etc. are made with proper test plan.

vii. System Implementation: Finally, the system is developed with creating program, database, graphical user interface with proper documentation. And the trail of system with test are run in parallel.

viii. System Evaluation: After resonable period the system is evaluated and a plan for its improvements with reports on the performance are drawn.

The following figure summerizes the system analysis and design procedure in symbolic manner.

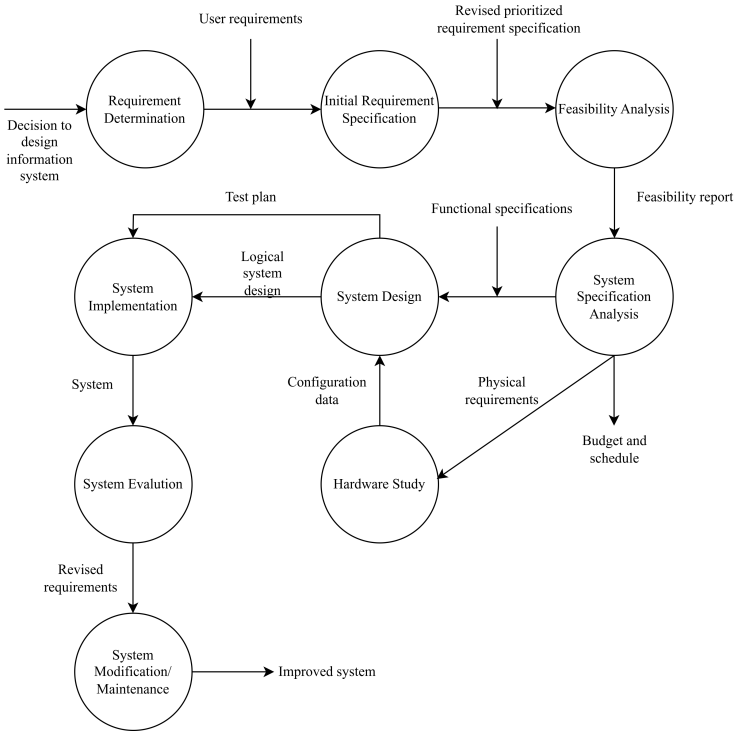

Figure 1: Stages in a System's Life Cycle

Data Flow Diagrams

A Data Flow Diagram (DFD) is a visual representation of data flows through a system or process. It is a graphical tool used to illustrate the movement and transformation of data between various components of a system.

Context Diagram

A context diagram, also known as a context-level data flow diagram (DFD), is a high-level overview of a system or process. It provides a visual representation of the system boundaries which shows how the system interacts with external entities. The context diagram on the total functionalities of IICT is given below. The context diagram shows various entities

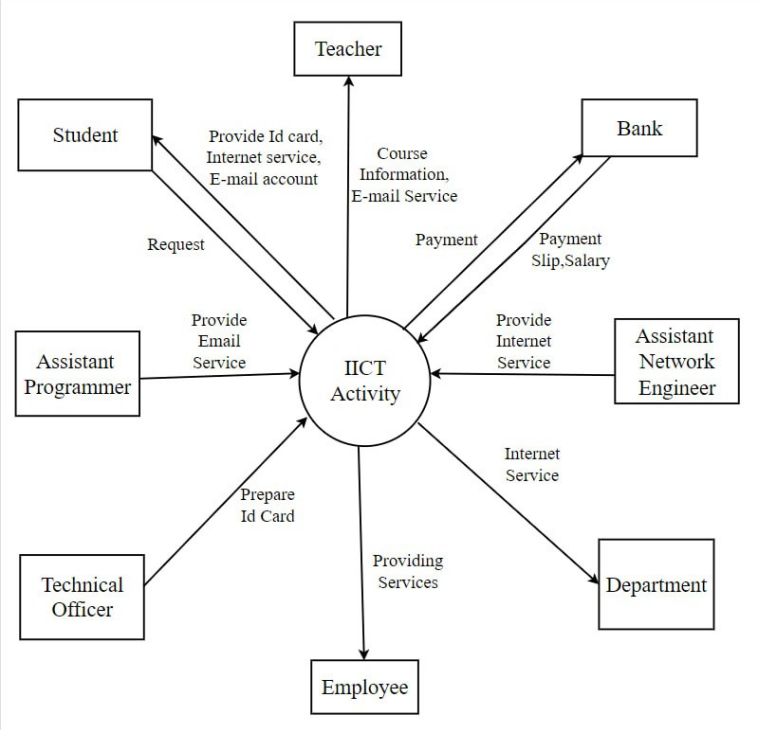

Figure 2: Context Diagram

Logical DFDs

In a logical DFD, the emphasis is on the functional aspects of the system, illustrating how data is processed and transformed as it flows through different processes. It helps to understand the system's functionalities, dependencies, and data requirements.

Course Registration

Students can register course through online registration system. To do this, he/she has to send a requet with tnx id. If it validates, the registration system waits for hall, advisor and department approval and finally stores in corresponding database and gives confirmation.

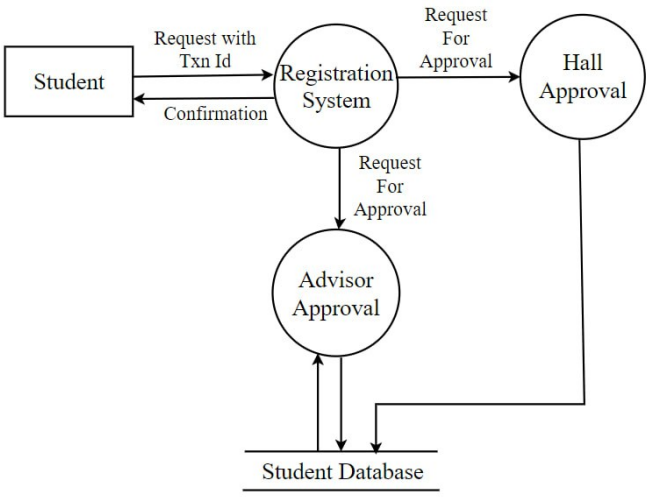

Figure 3: Logical DFD of Course Registration

Opening E-mail Account

IICT provides the official email service of CUET where all the officials, faculties and students get their personal email account and other co-services such as google cloud. Every new user asks for approval from department except students which is given by the department itself. The list is sent and system provides those services in time.

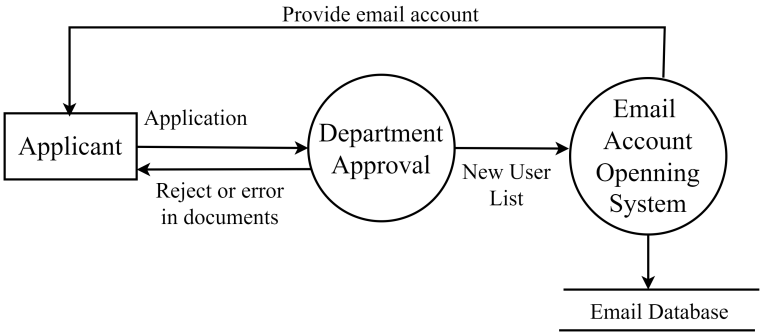

Figure 4: Logical DFD of Opening E-mail Account

Issuing ID Card

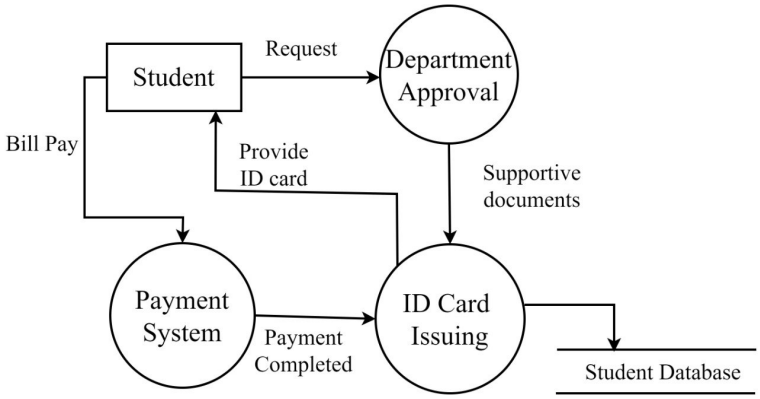

Figure 5: Logical DFD of Issuing ID Card

To get ID card of the university student has to pay a certain amount to the payment section and gives it to the IICT system. With the approval from department, the system provides the ID card to them individually.

Internet Providing System

The internet service in the whole campus is managed by IICT, which is done at internally. Entity such as new hall, official and academic buildings etc. pays the bill from their project fund and request for the internet service. Then internet providing system provides the services with necessary activities.

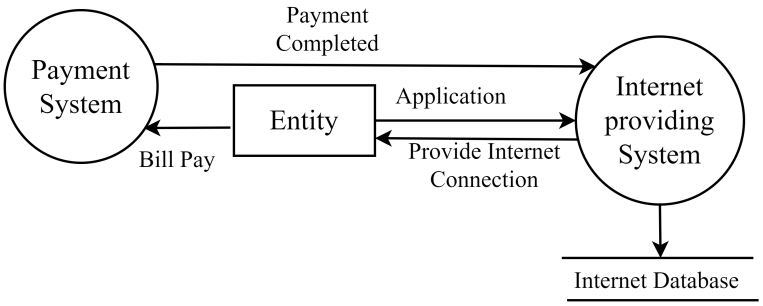

Figure 6: Logical DFD of Internet Providing System

Online Payment System

The department confirms the necessary data of the officials and faculties and the payment system provides the payment to the banking system.

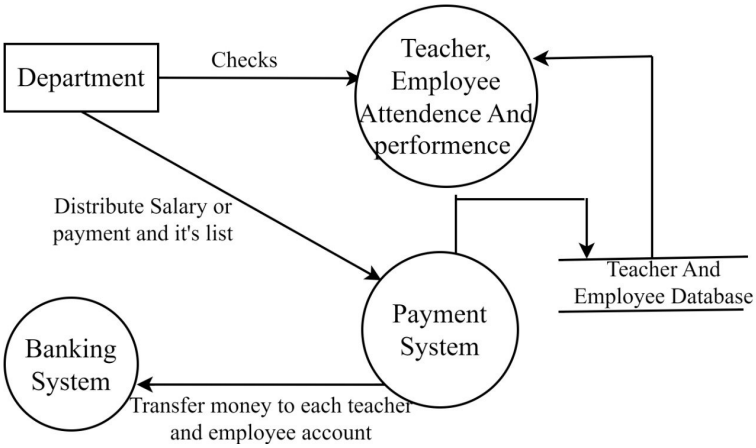

Figure 7: Logical DFD of Online Payment System

Technical Course Offering

IICT offers some courses where applicant's eligibility is checked and enrolled to the course. After completing course the progress evalution and commencement of training process provides certificate and stores data.

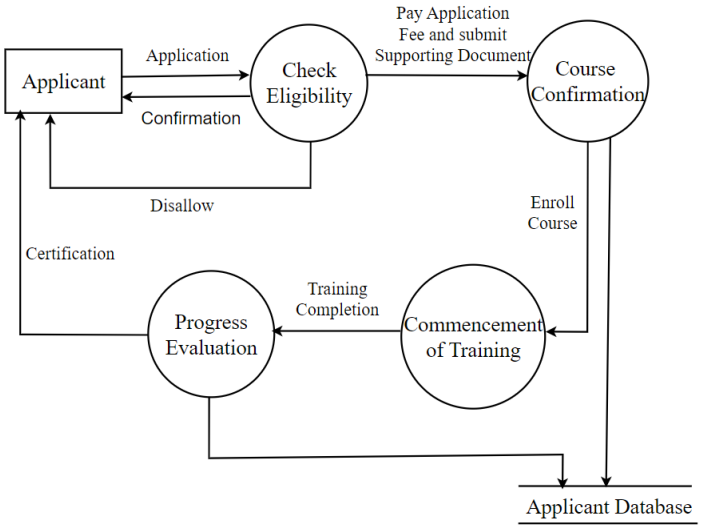

Figure 8: Logical DFD of Technical Course Offering

Surveillance System

The surveilling of the whole university is provided by IICT and can be accessed by selective personels after completing some formalities.

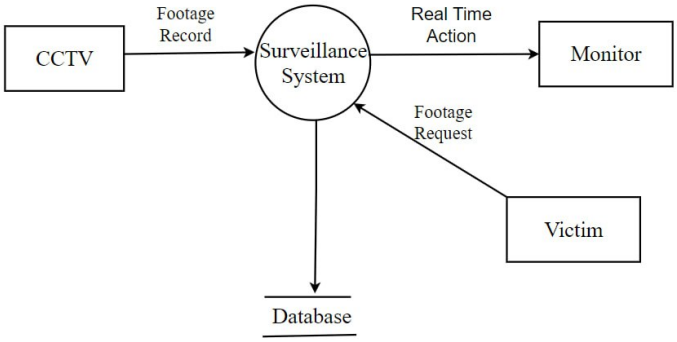

Figure 9: Logical DFD of Surveillance System

Physical DFDs

Physical Data Flow Diagram (DFD) is a visual representation of the flow of data wich provides a detailed view of how the system operates, including hardware, software, databases, and other physical elements involved in data processing and storage.
While a logical DFD focuses on the logical relationships and transformations of data, a physical DFD dives into the technical details of how the system is implemented and the physical components that enable data flow.

Course Registration

The student course registration system involves to the request of students with appropriate tnx ids taken from payment system. The registration system asks department, hall authority and advisor for approval and after successfull information the student is approved and data is stored and a confirmation is given to the student.

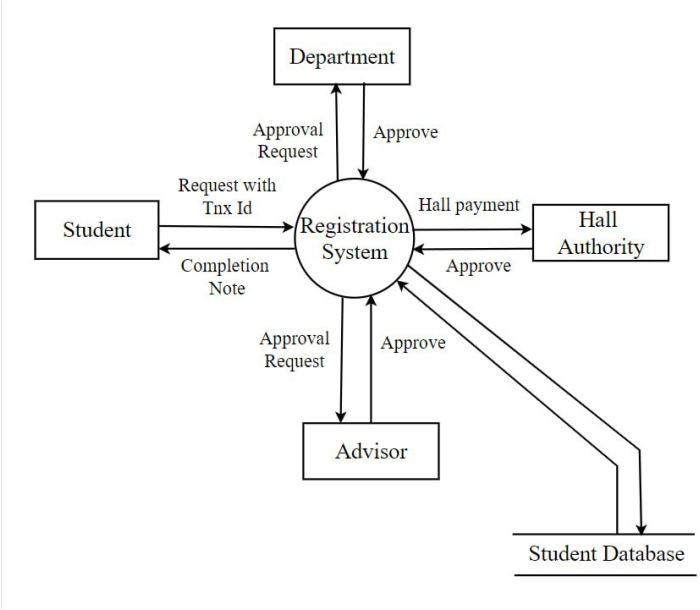

Figure 10: Physical DFD of Course Registration

Opening E-mail Account

Email account opening system takes student user list from department as bulk amount and several request for new employees from department approval process. The assistant programmer creates those accounts and supplies to the corresponding users.

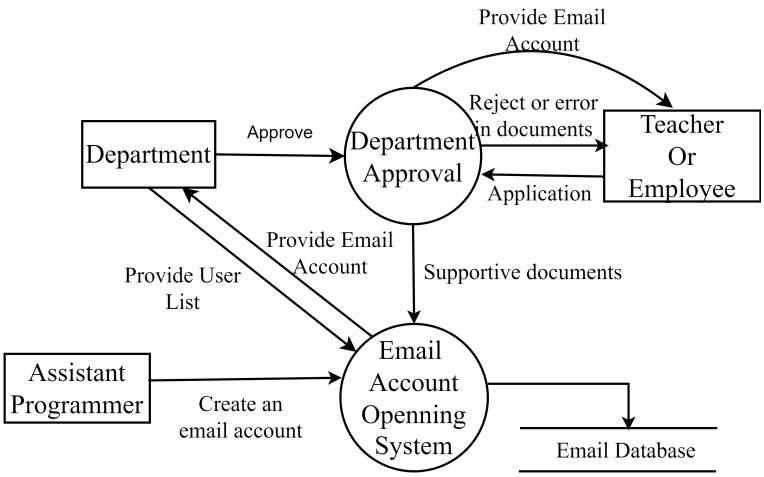

Figure 11: Physical DFD of Opening E-mail Account

Issuing ID Card

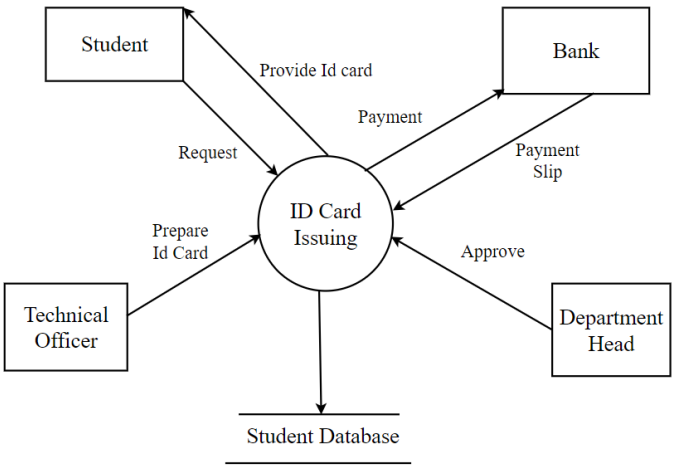

Figure 12: Physical DFD of Issuing ID Card

Issuing ID card is another process where student request with necessary steps and the bank gives payment slip. Wth the help of department heads approval the technical officer takes necessary steps to provide ID card with the help of student database.

Internet Providing System

For internet service the internet providing system works with assistant network engineer. It asks for approval and payment from the director and the project fund respectively. The entity such as new constructed buildings and others establishments applies to the system and creates necessary funds.

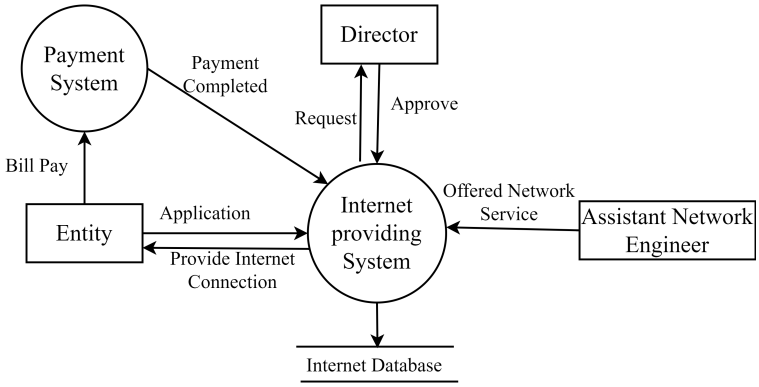

Figure 13: Physical DFD of Internet Providing System

Online Payment System

The technical part of the payment system of officials and faculties is provided by the organization simply by confirming the individuals list from department and supplies the information to finance management where they does the payment quickly.

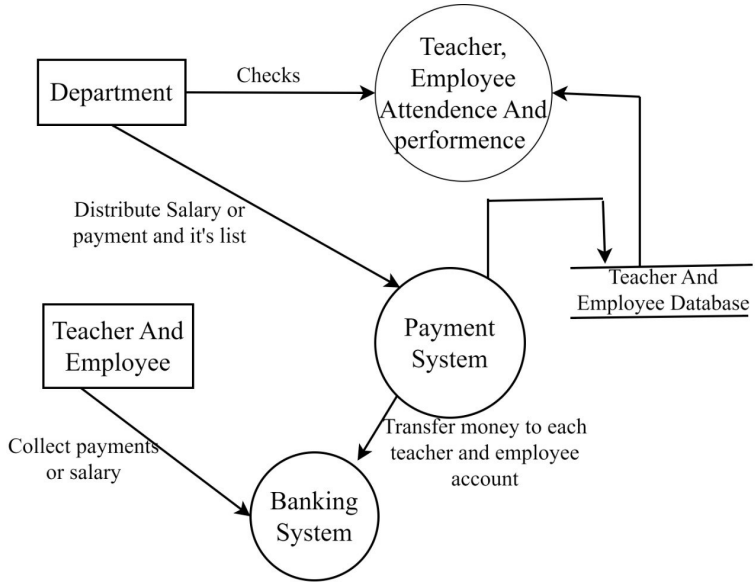

Figure 14: Physical DFD of Online Payment System

Technical Course Offering

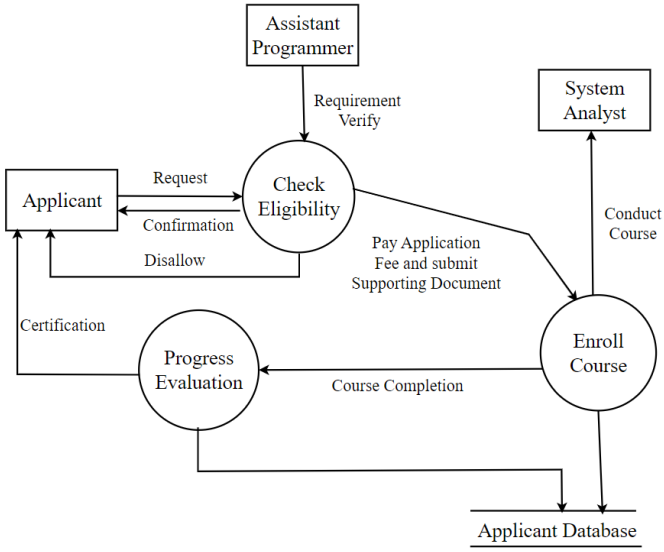

Figure 15: Physical DFD of Technical Course Offering

The course offering system works by the application request from applicants including university students and outsider indivudals. The eligibility is checked by the officers

and with proper documents the applicants are enrolled under the supervison of system analyst by himself. The progress evaluation process keeps tracks of the updates in database and finally certifies the applicant on their performance.

Surveillance System

The surveillance system automatically monitors the real time feeds of various places of university from CCTV footage recordings. This can be accessed by individuals with the approcal from DSW and director of IICT.

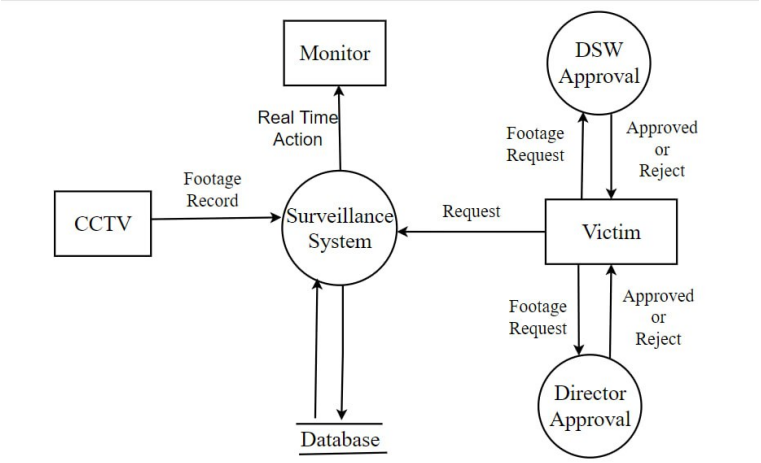

Figure 16: Physical DFD of Surveillance System

Validating The Data Flow Diagrams

Validating a Data Flow Diagram involves ensuring that the diagram accurately represents the system or process being modeled and that it meets the intended requirements. The validation process helps to identify errors, inconsistencies, or missing elements in the DFD and ensures its reliability as a representation of the system. There are several concepts that has to be maintained to be an acceptable as an DFD.
Data can flow from:

- Process to Process
- Process to Store and Back
- Process to External entity
- External entity to Process

Data cannot flow from:

- Store to Store

- Store to External entity
- External entity to Store
- External entity to External entity

Illegal Constructs in DFD :

- No loops are allowed in DFD
- A single data flow should not be divided into many flows with different labels
- No data flow allowed between data stores
- A process cannot be pure decision

These rules and regulations are followed while drawing the data flow diagram for the IICT system. As all the diagrams doesn't violate any of the rules, all the data flow diagrams show activities of IICT properly.

Process Descriptions

There are various types of process in IICT system that perform seamlessly to maintain the operational, tactical, strategic tasks. Some of them are enlisted below.

Process	Description
Registration system	Takes request from student and confirms with approval from hall, department, advisor.
Hall/Advisor/Department approval	Provides the approval for users on various occations.
Email account opening system	With necessary authorization, it provides email service to user.
Payment system	Takes several authentucation and performs payment on various occations for students, faculties, officials etc.
Id card issuing	Provides Id card to the users.
Internet providing system	Implements new and repairs old internet connections on appication basis.
Commencement of training	Performs training course related work such as enrolement, evalution etc.
Surveillance system	Monitors the university area and provides documents on request with necessary compliance.

Conclusion

The context diagram focuses on the interactions between the system being analyzed and its surrounding environment.
Collecting all the flow of the data was really challenging & difficult. Therefore, It consumes a bit of time to draw all the data flow diagrams because they are doing some complex regular activity. Afterall, we overcome all the challenges & made an almost accurate data flow diagram of IICT, CUET.