FACULTY OF COMPUTING
UTM Johor Bahru

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Subject   : **Database (SECD2523)**

Section   : **06**

Task   : **Phase 2**

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Group   : **05**

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1. Introduction

Currently in today's age, it is quite useful and helpful to adopt technology and let it simplify lives. In recent years, the world has undergone a transformation as it has now become an important aspect of almost everything. Our university is one of those places where it is also a key area of concentration.

Many of the students on the UTM campus suffer from either lack of access or sometimes even the complete absence of updated relevant information about the various clubs and societies. So students tend to miss events, opportunities and stay out of the loop a lot because of the current forms of communication like campus group mass messages being cluttered. In addition, a lot of clubs are not very well known, which Increasingly prevents the students from participating in different activities.

Our team has embarked on a project to tackle these challenges through the development of a mobile application that will allow the Students to access Clubs Platforms and Explore various clubs Activities , Get in Touch with Clubs Announcements, and Registers for Events . The result will be a new dimension as it will provide students with options of engaging into many activities outside classes .

2. Data Flow Diagram (DFD) (to-be)

2.1 Context Diagram
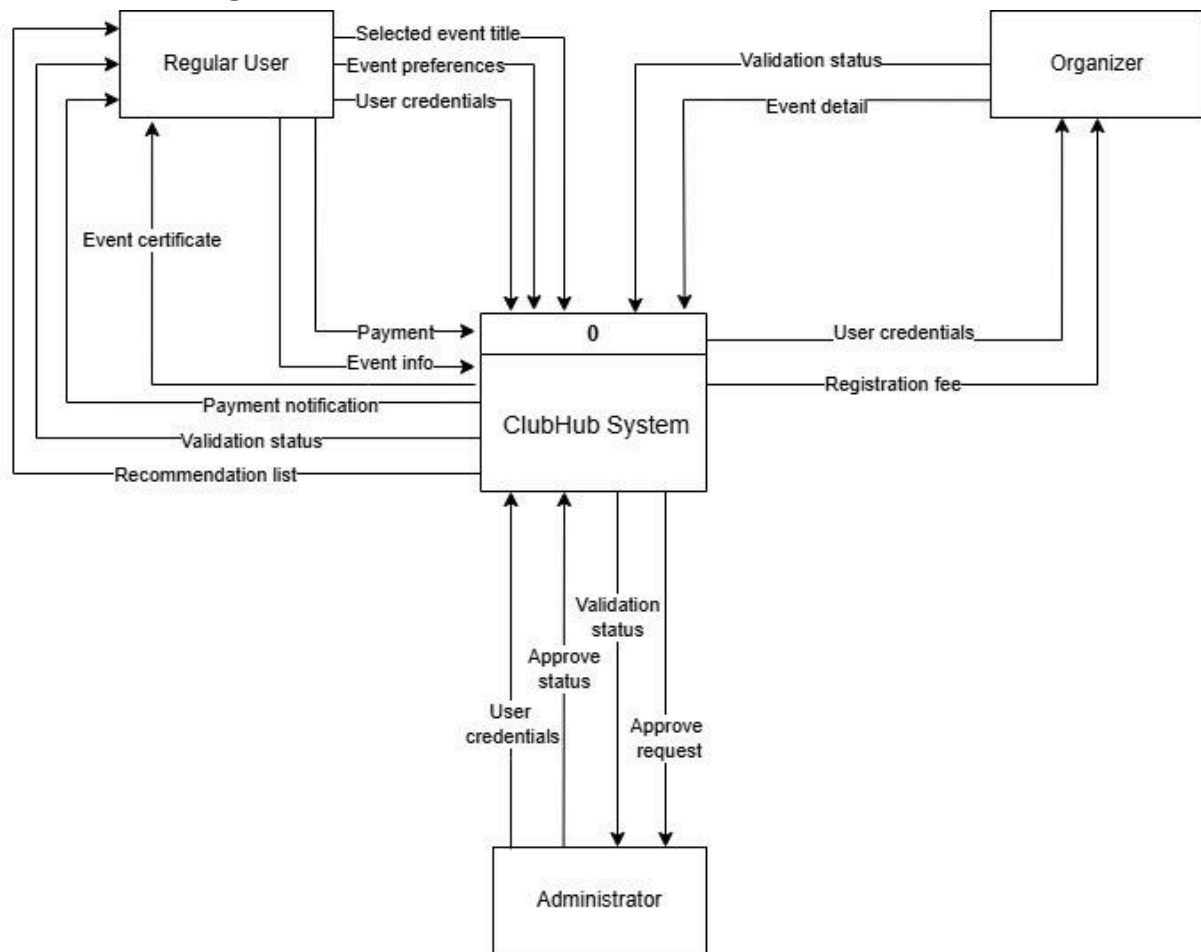
2.2 Parent Diagram (Level 0)
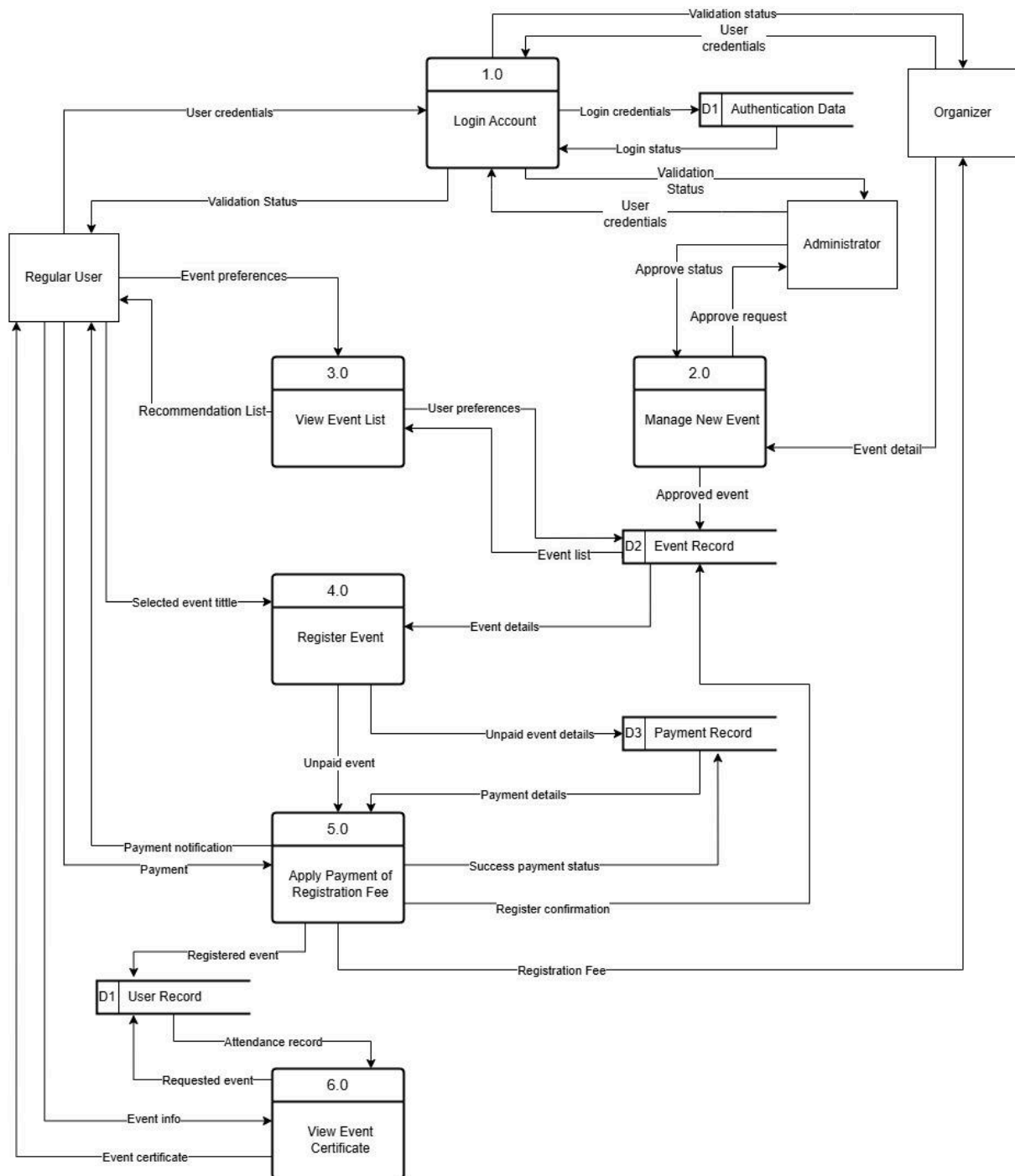
2.3 Child Diagram (Level 1)
2.3.1 Process 1.0 <Login account>
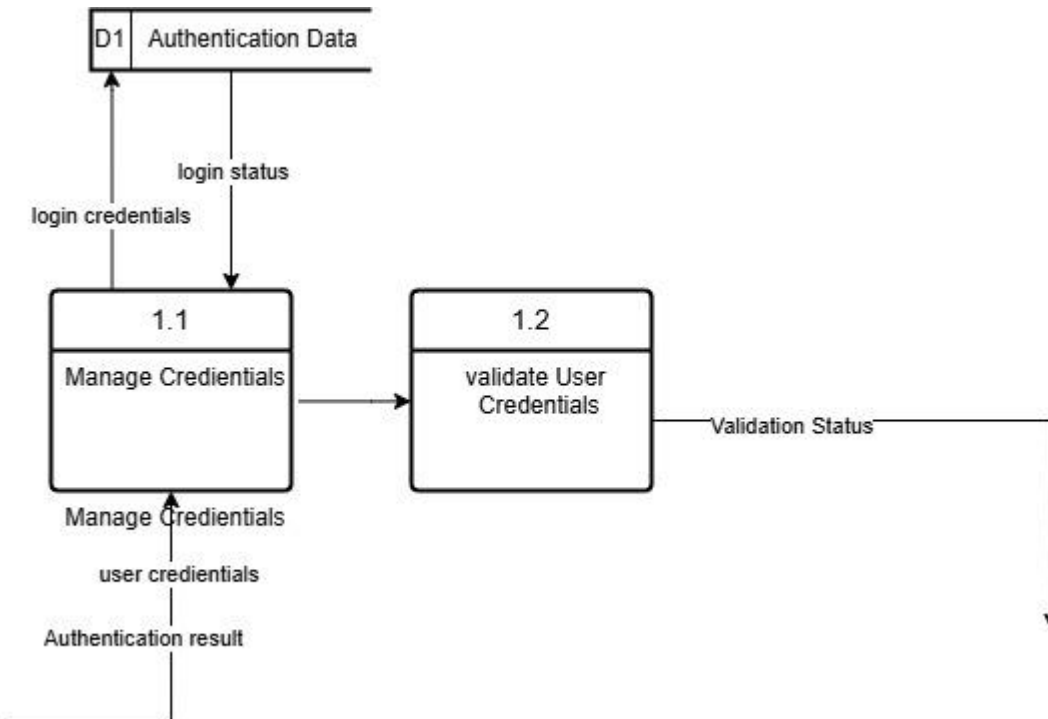
2.3.2 Process 2.0 <Manage event>

2.3.3 Process 3.0 <View event list>

Event preferences

D2 | Event Record

Event details

Event availability

3.1

Filter event

— Filtered events →

3.2

Check events availability

— Recommended list →

2.3.4 Process 4.0 <Register event>

D2 | Event Record

Event details

Selected event title

4.1

Validate the event existence

Validated event

4.2

Register user for the validated event

Unpaid event

Unpaid event details

D3 | Payment Record
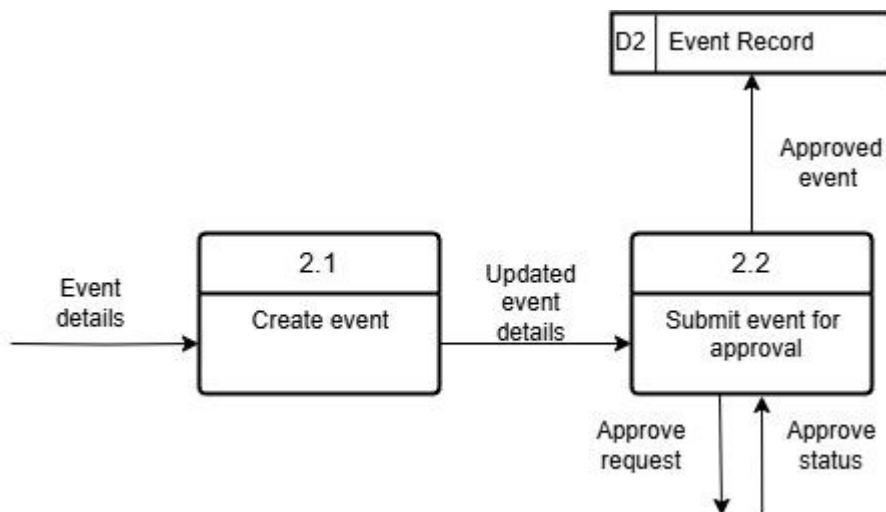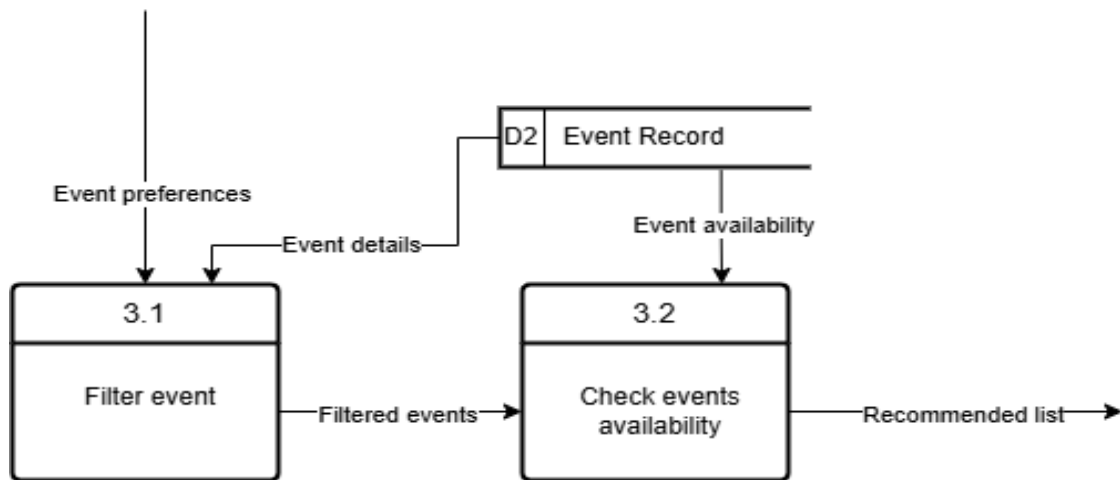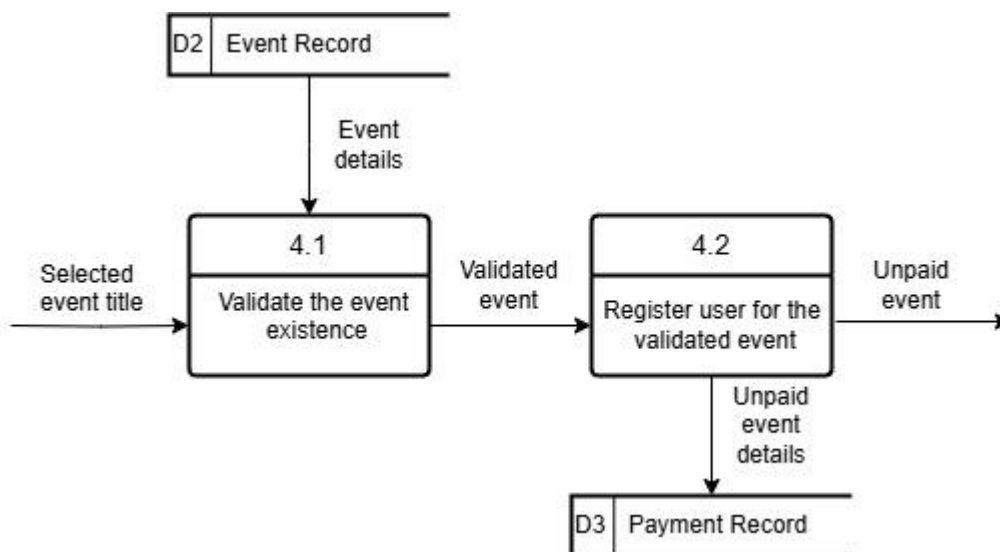
2.3.5 Process 5.0 <Apply payment for registration fee>
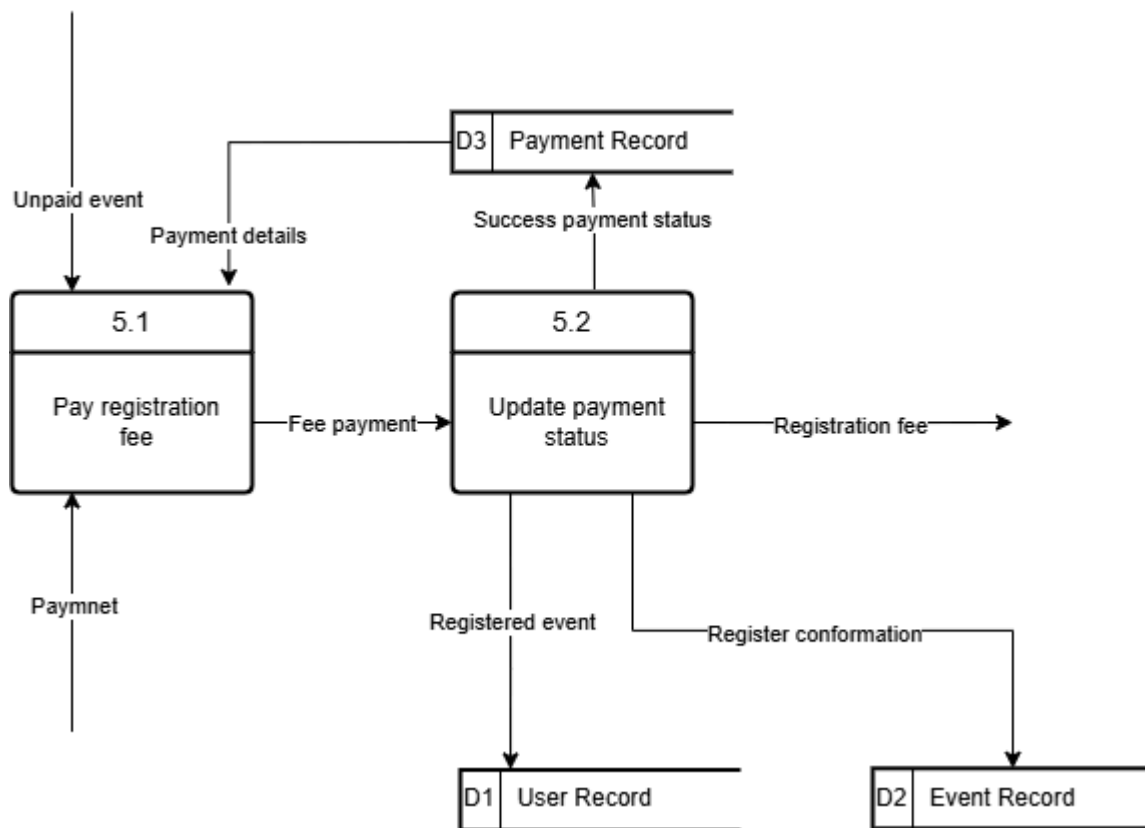
2.3.6 Process 6.0 <View event certificate>
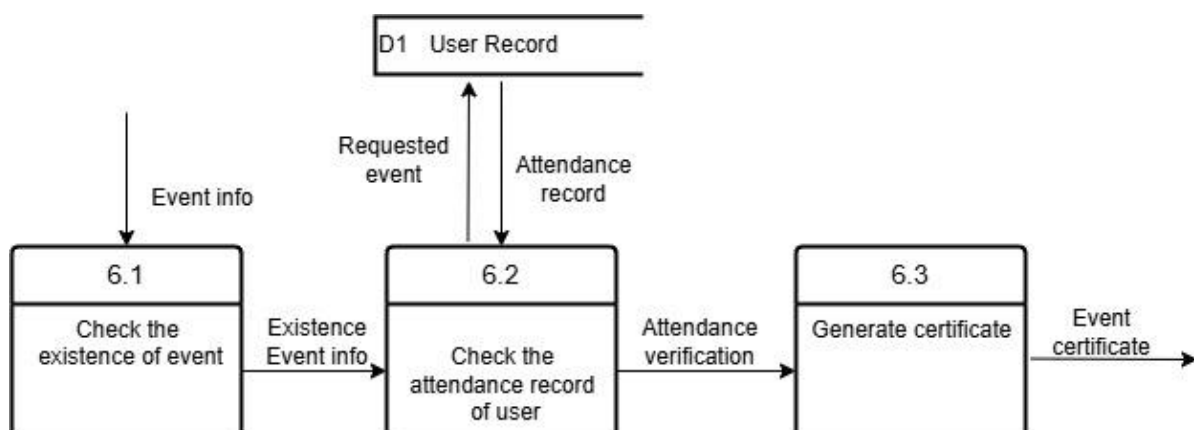
3. Data & Transaction requirement :
3.1 Proposed business rule :

Regular User :

- View a list of all approved events .
- Can filter the event based on preferences like category , cost or date .
- Can view the event details such as the title, requirement of joining the activity, cost, description of the activity, total capacity .
- Receive a recommendation list based on their preferences by the system .
- Register for the event by providing event details .
- Do an online payment for an event that they registered for .
- View details by their profiles of their registered events , Notifications about event, attendance record , Event certificates .

Organizer :

- Create new events with details like title, description, requirement, cost .
- View The Validation Status of an Event.
- Provide Instruction of User Credentials to Login .
- Track the attendance and communicate with the participants .
- Review the student's Registration payment .

Administrator :

- Can approve or reject events submitted by the Organizer .
- Update the status of an event .
- Manage User credentials to Log in .

3.2 Proposed data & transactional

3.2.1 Proposed Data Requirement :

Student :

The data stored in the student entity includes StudentID , Username , Password , Email , Phone Number , Faculty , Full Name , First Name , Last Name and Date of Birth . The StudentID is defined as the primary key Uniquely identifies each Student. Full Name is Composite Attribute consists of first name and last name . A Student can Register by One Organizer for one or more events , A Student can state one or more preferences , A Student can Access one or more participation certificates , A Student can make one or more payment , And a Student can be managed by more than one administrator .

Preferences :

The data stored in the Preferences includes Category , Participation Cost , Location and Date associated with one student . Preferences can be Stated by one Student and it shows one or more events.

Events :

The data stored in the Events includes EventID , Event Description , Event Date , Event Location and Event Cost , EventID is defined as the primary key as it Uniquely identifies each event . An Event can be managed by One Club , Events shown by one or more preferences , Events can be Registered by more than one Student , Events are managed by one Club .

Participation Certificates :

The data stored in the Participation Certificates includes CertificateID , Certificate Description , Certificate Issued Date , Event Name . CertificateID is defined as the primary key . Participation Certificates can be issued by One Organizer , Participation Certificates can be Accessed by One Student .

Clubs :

The data stored in the Clubs entity includes ClubID , Club Name , Category , Member Size and Club Descriptions . The ClubID is defined as the primary key as it Uniquely identifies each Club , Club has one or more Events , Clubs are managed by one or more Organizers .

Payment :

The data stored in the Payment includes ReceiptID , Total Amount and SenderID . generated for a specific event registration and is associated with one student , payment can be made by one Student and can be Accessed by one or more Organizers .

Organizer :

The data stored in the Organizer includes Organizer ID , Username , password , Email , phone number, and role , The OrganizerID is defined as the primary key as it Uniquely identifies each Organizer . An Organizer can manage one or more Clubs , Organizer can Register one Student in on more Events , An Organizer can Access one or more Participation Certificates , An Organizer Create more than one Announcement , An Organizer can Access one more Registration Payment , An Organizer is managed by more than one Administrator .

Administrator :

The data stored in the Administrator includes AdministratorID , Username , password , Email , phone number , role , OrganizerID , StudentID . AdministratorID is defined as the primary key as it Uniquely identifies each Administrator , OrganizerID and StudentID will be used as the foreign key with reference from the Organizer entity and the Student entity . An Administrator manages more than one Student , An Administrator manages more than one Organizer .

Announcement :

The data stored in the Announcement includes announcement description, announcement title, and announcement category. An Announcement is created by one Organizer.

Data Entry :

1. Enter the details of Students personal information , such as Full name , User Name , Password , Faculty , phone number , Email and Date Of Birth for new Students records Creation .
2. Enter the details of Organizer personal information, such as User name, Password , phone number , Email and Role for new records creation .
3. Enter the details of Administrator personal information , such as User name, Password , phone number , Email and Role for new records creation .
4. Enter the details of the Club by specifying the Name , Description , the Category of the club and Member size .
5. Enter the details of the Event with specifying Description , Location , Date and Cost.
6. Enter the details of the Announcement with specifying title , Description ,and the category of the Announcement .
7. Enter the payment details according to the Attended Events Total Cost .
8. Enter the details of preferences with specifying the Category , Location , Date and the Participation Cost .
9. Enter the details of the Participation Certificate with specifying the Description, the Certificate issuing date and the Name of the attended Event .

Data update/delete:

1. Update/Delete the details of the Students information .
2. Update/Delete the details of the Organizer's information .
3. Update/Delete the details of the Administrator's information .
4. Update/Delete the details of the Club's Information .
5. Update/Delete the details of the Event's Information .
6. Update/Delete the details of the Announcement's Information .
7. Update/Delete the instructions of User Credentials .
8. Update/Delete the Events Recommendation list according to Student's Preferences.
9. Update/Delete the details of Student events Attendance Record.
10. Update/Delete the payment status according to the Student's Attended Events participation.

Data Queries:

1. Display the list of Student's information.
2. Display the list of Organizer's information.
3. Display a list of all the club's within UTM .
4. Display a list of all the upcoming events associated with a specific club .

5. Display a list of all the events that a specific student has participated in .

6. Display the attendance list of each Student or Event .

7. Display the latest Announcements for clubs .

8. Display a Recommendation list of Events based on Student preferences .

9. Display a list of registration fees Associated with All Events.

10. Display a list of Participation Certificates Associated with specific Student or Event.

11. Identify and display the status of total unpaid fees according to the Student's Attended Events participation.

10. Identify and display the status of total paid fees referring to the Student's Attended Events participation .

4. Database conceptual design
4.1 Conceptual ERD

Access>

1..*

Student

StudentID {pk}

Username

password

Email

Phone Number

Faculty

Full_Name

First_Name

Last_Name

DOB

1..*   States >   1..1

Preferences

Category

Paticipation cost

Location

Date

1..*

shows>

1..1

1..*   *..*

Make>

1..1

Payment

RecieptID {PK}

Total_amount

SenderID

1..*

Manages

1..*

Adminstrator

AdminstratorID {PK}

Role

Email

Phone Number

password

Username

OrganizerID {FK}

StudentID {FK}

< Access

registers

1..*

Organizer

OrganizorID {PK}

Username

password

Phone Number

Email

Role

..

create >

1..1

Announcement

Announcement Description

Announcement_title

Announcement category

1..*

..

1..*

1..*   *..*

Manages

1..*

Events

EventID {Pk}

Event_description

Event_Date

Event_Location

Event_cost

1..1

1..1

has >

1..*

1..*

Clubs

ClubID{PK}

Club_name

Category

members_size

Club_descriptions

1..*

1..1

Participation Certificates

CertifcateID {PK}

Certificate_description

Certificate_issued_date

Event Name

1..1

issues>

4.1 Enhanced ERD

5. Data dictionary
5.1 Description of Entity

Entity	Description	Occurrence
Student	Student's Information	The Student states preferences and then he can access his participation certificates after he Registers in the Events and after he Makes payment for Registration , A Student is Managed by an Administrator .
Events	Events Information	Events are made by Clubs and they are managed by Clubs .
Clubs	Clubs Information	Clubs have Events and the Clubs are managed by the Organizer.
Announcement	Announcement Information	Announcement is created by the Organizer .
preferences	Preferences Information	Preferences are stated by Student and it shows the Events .
Organizer	Organizer's Information	The Organizer manages Clubs and he is managed by the Administrator , the Organizer Registers the Student in Events .
payment	Payment's Information	Payment is made by the Student and it can be accessed by the Organizator.
Administrator	Administrator's Information	Administrator manages both the Organizer and the Student .
Participation Certificates	Participation Certificates Information	Participation Certificates are issued by the Organizer and can be accessed by the Student .

5.2 Description of Relationship

Entity	Multiplicity	Relationship	Multiplicity	Entity
Student	1..*	Access	1..1	Participation Certificates
	1..*	States	1..1	Preferences
	1..1	Registers	*..*	Events
	1..*	Make	1..1	Payment
Organizer	1..*	Registers	1..1	Student
	1..*	Manages	1..*	Clubs
	1..*	Issues	1..1	Participation Certificates
	..	Create	1..1	Announcement
	1..*	Access	1..1	Payment
Preferences	1..*	Shows	1..*	Events
Clubs	1..*	has	1..1	Events
	1..*	Manages	1..1	Events
Administrator	1..*	Manages	*..*	Organizer
	1..*	Manages	*..*	Student

5.3 Description of Attributes

Entity	Attributes	Description	Data Type	Null	Multi-Valued
Student	StudentID {PK}	Uniquely identify a Student .	VARCHAR(10)	NO	NO
	Username	User name of the Student .	VARCHAR(20)	NO	NO
	Password	Student's password.	VARCHAR(10)	NO	NO
	Email	The Email Address of the Student .	VARCHAR(30)	YES	NO
	PhoneNumber	Phone Number of the Student .	VARCHAR (13)	NO	YES
	Faculty	Name of Student's Faculty .	VARCHAR(50)	NO	NO
	FullName	Full Name of the Student .	VARCHAR(30)	NO	NO
	FirstName	First Name of the Student .	VARCHAR (15)	NO	NO
	LastName	Last Name of the Student .	VARCHAR (15)	NO	NO
	DOB	Date Of Birth of the Student .	DATE	NO	NO
Preferences	Category	The Category of Student's Preferences .	VARCHAR(10)	NO	NO
	ParticipationCost	The cost of participation .	FLOAT(5)	NO	NO
	Location	The location of Student's preferences .	VARCHAR (50)	NO	YES
	Date	The date of Student's preferences .	DATE	NO	YES
Payment	ReceiptID {PK}	uniquely identify a Student .	VARCHAR(10)	NO	NO
	TotalAmount	The amount of the Payment .	FLOAT (5)	NO	NO

	SenderID	uniquely identify the sender .	VARCHAR(10)	NO	NO
Organizer	OrgnizerID {PK}	Uniquely identify the Organizer .	VARCHAR(10)	NO	NO
	UserName	User name of the Organizer .	VARCHAR(20)	NO	NO
	Password	Organizer's password .	VARCHAR(10)	NO	NO
	PhoneNumber	Phone Number of the Organizer .	VARCHAR (13)	NO	YES
	Email	the Email Address of the Organizer .	VARCHAR(30)	YES	NO
	Role	The Role of the Organizer .	VARCHAR(20)	NO	NO
Events	EventID{PK}	Uniquely identify the Event .	VARCHAR(10)	NO	NO
	EventDescription	The description of the Event .	VARCHAR(500)	NO	NO
	EventDate	The Date of the Event .	DATE	NO	NO
	EventLocation	The location of the Event .	VARCHAR(30)	NO	NO
	EventCost	The Cost of the Event .	FLOAT (5)	NO	NO
Clubs	ClubID{PK}	Uniquely identify the Club .	VARCHAR(10)	NO	NO
	ClubName	The Name of the Club .	VARCHAR(20)	NO	NO
	Category	The Category of the Club .	VARCHAR(10)	NO	YES
	MemberSize	The members size of the Club .	INT	NO	NO
	ClubDescription	The Description of the Club .	VARCHAR(500)	NO	NO
Announcement	Announcement Description	The Description of the Announcement .	VARCHAR(1000)	NO	NO
	Announcement title	The Title of the Announcement .	VARCHAR(50)	NO	NO

	Announcement category	the Category of the Announcement .	VARCHAR(10)	NO	YES
Administrator	AdministratorID {PK}	Uniquely identify the Administrator.	VARCHAR(10)	NO	NO
	Role	The Role of the Administrator .	VARCHAR(20)	NO	NO
	Email	the Email Address of the Administrator .	VARCHAR(30)	YES	NO
	PhoneNumber	Phone Number of the Administrator .	VARCHAR (13)	NO	YES
	UserName	User name of the Administrator.	VARCHAR(20)	NO	NO
	Password	Administrator's password .	VARCHAR(10)	NO	NO
	OrganizerID {FK}	Foreign Key of Organizer which Uniquely identifies the Organizer .	VARCHAR(10)	NO	NO
	StudentID {FK}	Foreign Key of Student which Uniquely identifies the Student.	VARCHAR(10)	NO	NO
Participation Certificates	CertificateID {PK}	Uniquely identify the Certificate .	VARCHAR(10)	NO	NO
	Certificate Description	The Description of the Certificate .	VARCHAR(1000)	NO	NO
	CertificateIssued Date	The date of issuing the Certificate .	DATE	NO	NO
	EventName	the Name of the Events which the Certificate was Issued for .	VARCHAR(20)	NO	YES

6.0 Summary

In this stage, our team has acquired knowledge of the foundation needed templates in relation to the registration of events and managing it . This was done by having the final of the database conceptual design. We fine-tuned our business rules in order to meet the data and transactional requirements of the system that has been proposed. In addition, we constructed several fundamental diagrams: a context diagram, parent and child diagrams, a conceptual ERD and an enhanced ERD, and a data dictionary.

The making of data flow diagrams has made us gain an understanding regarding how different entities and processes within the system are related. Such diagrams as the parent diagram (Level 0) and child diagrams (Level 1), have made it possible for us to be specific concerning processes involved in Clubs and Events Management hence improving the system's architecture.

Examining data and transaction requirements in this particular case, points out several issues that justify the need for an efficient system, one that would address the issues of loss of time or resources in carrying out procedures as well as difficulties in handling registration processes. That made the idea of a data management system more clearly organized.

The current stage of this project was facilitated by the use of conceptual and enhanced ERDs which defined the relations between the entities and created a good base for the design of the database. And the data dictionary as well helped maintain uniformity of terms and promote understanding over the project.

All things considered this phase was crucial in shifting the focus of those working on the project from the planning stage to that of creating a structural database for it. It formed a basis upon which further stages of development could be built and added value as a whole to the system we developed.