LONDON METROPOLITAN UNIVERSITY

ITAHARI INTERNATIONAL COLLEGE

Module Code & Module Title

CS5002NT Software Engineering

Assessment Weightage & Type

20 % Group Coursework -1

Year and Semester

2020-21 spring, Semester

Assignment Submission Date: 03/01/2022

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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

Table of content

Contents

Table of Figure

Table of table

Acknowledgment

Firstly, we would like to thank Almighty God for making this beautiful day that we were able to finish our work and submit while, on the other hand, we could read with our beautiful eyes. There are many people to whom we can express our sincere gratitude.
We have humbled all acts of kindness with GOD. These helpful hands and words of reassurance for us in difficult times will always be remembered. As we prepared for this assignment, we had to seek the help of our respected module leader (Mission Sapkota), as we would like to start by thanking him for providing the assignment and helping us with our difficulties related to the mission as he guided us. well throughout the realization of the project from the beginning. He also introduced us to many other ideas that can be implemented in Project. Respected sir, "you are the best". Your thoughtfulness is a gift that we will always cherish in the depths of our hearts along with other fondest memories. We would also like to thank and thank the members of our group for their sincere work to give the best of themselves and to enjoy every moment of structured software engineering. London Met University and Itahari International College's administration for providing adequate guidance to enable it to be completed on time. Well, in the end, without thanking the recognition of our parents would be incomplete. We would like to keep millions of graces at the feet of all our parents. We are at a loss for words, thank you all for everything.

Abstract

Less is more. We students of level 2 were given a task to work as a team of five. We had to build an online system for the ‘T-14 Football Academy’ organization in terms of structured software engineering patterns. We divided the whole CW project into different group members. One member would be researching and collecting the materials for the context diagram for Environmental Model Specification (EMS) whereas another member will be making DFD level 0 fragments for the event list generated by another member and so on. After completing a group task, we were given an individual task which includes:

i) Register membership

ii) Enroll Staff members

iii) Purchase football/accessories

iv) Report preparation

v) Take a mock exam

The main brainstorming is done in individual tasks. While completing an individual task, EMS, IMS, DS with DFDs, and structured chart and pseudocode are done. DFD fragments up to level 2 are made whereas in task five DFD level 2 is explored more with the name DFD level 2.1.

1. Introduction

This report is made to represent the work done of the first-course work of software engineering based on group work. This course work accounts for 20% of our total module grades and expects us to form a group of four or five students. This course work assigned to us is based on the scenario where a group needs to work together to create an online booking system for a T-14 Football Academy. The group should specify and design substantial parts of the system following a Yourdon structured method. From the given scenario, the system is set up for the existing Football Academy. T-14 Football Academy has launched this system to manage the heavy influx of customers and the difficulty with phone call-based booking. This system helps to keep the client record in an electronic system abolishing all the desk works of the Institute. Besides, the system is planned for a Football Academy to execute day to day operate smoothly and effectively. This task is an attempt to come up with the benefits of a digital programmed system for the Football Academy such as the member can lock in the activity on their schedule as they should not wait for a person in the office which saves time. It eliminates the error while recording data like double bookings, wrong member information, and the records of the organization are also secured. It can save businesses time and money spent on admin also help with scheduling, allowing for the better planning of resources, with reduced admin costs.

Yourdon’s Structure Method

It has been extended for embedded systems by Ward & Mellor Yourdon’s Structure is more concerned with what the system should do than with how it will execute it. It is a popular and well-understood method It applies to both large and small projects Yourdon's structure technique takes care of all logical expressions. It is made up of two models: an environmental model and an internal model.

The represents an item in the system’s environment; it acts as a data source or sink. terminator Data transformation is an input/output process (note that it can report the occurrence of an event, i.e. initiate a control flow). A is an abstraction on a file; it acts as a repository for data that is subject to storage delay. Values are modified at discrete points in time and remembered. The readout is not ordered and is non-destructive. datastore

The is an abstraction on a transaction or other data-aggregate sent or received by the system. discrete data flow.

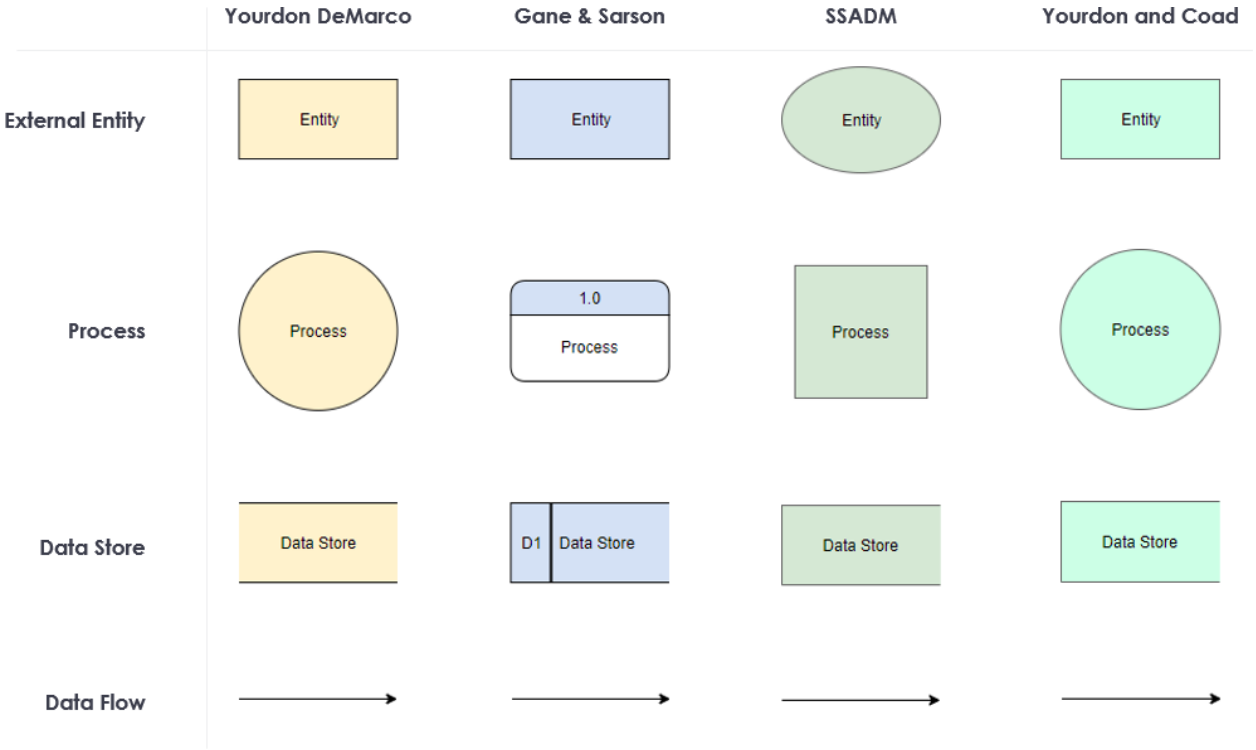


Figure 1: Yourdon DFD Structure Model

Types of Yourdon's Model:

Environmental Model

The interactions between the system and its surroundings are the subject of an environmental model. It might be thought of as one of the most abstract levels of abstraction. A statement of purpose, context diagram (level 0 DFD), and event list make up the environmental section.

Internal Model

The internal model explains the system's required behavior and structure for it to interact successfully with its surroundings. DFDs, data dictionaries, E-R Diagrams, and State Transition Diagrams are all part of it.

Data Privacy Policy

In the reservation, process client has to register their name, DOB, address, contact number as required by the system. For data holders, Safety reserves the right to withhold the negative impact, personal data of client are very sensible as they can lead someone with negative effects. The minor leak of these details may cause harm to the client registered into the system So, once a booking is confirmed, the following conditions will apply in respect of data policy, the institute commits for the upmost safety of these details and it also guarantee to not use these details for any purpose other than related to the appointment itself, data will be accessible to very few and authorized personnel among the institute. Information is given in good faith, as it is our responsibility for its safety

Aims and Objectives

Aims:

i. To demonstrate practical knowledge of ‘Structured Software engineering’.
ii. To be able to work in a group under a given time scale.
iii. solve real-life software problems with team members.
iv. crack any problems or build any software from scratch using Yourdon methods and DFD fragments.
v. To be able to know the basics of teamwork and SSADM

Objectives:

Objectives are specific statements that define a measurable outcome e.g.
what steps we will be taking to achieve the desired outcome.

i. Firstly, we will be going through our module lectures, provided PDF files and books by our module teacher.

ii. We would refer to books, journals, and web resources for the grasp of extra knowledge about coursework and the surfaces that we had to be doing.

iii. We would ask help from topper friends and seniors about more detailed and effective methods to do coursework.

Tools:

Draw.IO

Draw.io might be a cross-platform application that is on the market as an offline client for Windows, Linux, macOS, ChromeOS, as an add-on for Google Docs, Google Slides, as a stand-alone web-app, or integrates directly together with your Dropbox, GitHub GitLab Google Drive, OneDrive, Office 365 account.

Figure 2: Draw.io icon

You can use Draw.io to export the flowcharts in several formats including PNG, JPEG, SVG, PDF, VSDX, HTML, XML. you'll even use the URL option to create a shareable link that you just can send to your friends/colleagues. you are doing not must register for an account or log in to any service for this (or for using the web app). you will be ready to optionally allow other users to edit the created flowchart.

MS-Word:

Microsoft Word application software is now linked with Microsoft Office, and you may register for Microsoft 365. Microsoft Inc. created it. Microsoft is a global technology firm based in the United States, and Microsoft Word is a word processing program for both personal and corporate usage.

Microsoft Word is a word processing program that is used to create, edit, print, and share professional documents such as newsletters, applications, forms, templates, business cards, books, paper, reports, and brochures. You may also turn documents into websites and distribute them to your email subscribers as newsletters or share them with your social media following.

Figure 3: MS-Word Icon

Google Docs:

Google Docs is a free online word processor that allows you to create and format documents as well as collaborate with others. In this group assignment, we use Google Docs to distribute our documents among our group members for re-editing and adding our suggestions.

Figure 4: Google Docs icon

SWOT Analysis

Strength of the system:

• Footballers and their payment details will be recorded correctly.

• Footballers won't be charged just to use online services or create an account in the system.

• The booking of the trainer and Kits will be easy and fast.

• Customer can get a quality Football kit with the best available instruments at under affordable price.

• Both footballers and staff will be saving time and money.

• T-14 Football Academy will be the pioneer in the field of Sports if they take their services available in online system/platform.

A weakness of the system

• The unregistered Footballers/customers will not be able to use the application.

• Less technical Footballers/customers may get confused.

• It might be quite expensive.

Opportunities

• Footballers get great opportunities to strengthen their skills.

• Footballer/Customer can book a trainer/buy kits from anywhere through the internet.

• The footballers will get to play bigger league games.

• Out services might open a business overseas.

Threats for the system:

• Sometimes the server might get crash which can lead to data loss.

• The data of the customer may be compromised which may decrease the trust.

Group Task

Environmental Model Specification:

Statement of Purpose

The T-14 Football Academy has been providing football training for footballers and proper trainers for a decade. Apart from this, it also provides trainers for reservation and a football accessories kit for footballers. Its trainers choosing service has been in demand lately with the quality of trainer and training place they provide, which has become laborious for football lovers but its manual registration system has been affecting it and its business. The design and module specification for one such software that digitalized record management system allowing online booking/membership is being developed through this course work to manage the heavy influx of customers and the difficulty with phone call-based booking and also due to COVID crisis.

An online booking system is a software solution that allows potential guests to self-book and pay through the website, and other channels, while giving the best tools to run, all in one place. In a world of digital ubiquity, T-14 Football Academy should make booking system online, the system should make it easy for clients to find what they want without their physical presence and book it in a way that's convenient to them, in terms of device, platform, and time of day.

Event List

An event is an occurrence within a particular system or domain; it is something that has happened or is contemplated as having happened in that domain. The word event is also used to mean a programming entity that represents such an occurrence in a computing system.

The event list is the list of all the elements of external and temporal stimulus that the system must need to respond to fulfill to reach its objectives. (Manning Publication, 2021) The event list that is required to build the system for the T-14 Football Academy are mentioned below:

1. Staff
    i) System Login
    Staff logs in to the system by entering a valid username and password.

ii) Register staff

New staff register to the system providing necessary details.

iii) Register an appointment

The staff handles the appointment of the registration of the footballer.

iv) De-register Footballer

Staff de-register the customer from the system that is no longer.

v) De-register membership

Staff de-register the membership of the customers after the time expires.

vi) Maintain user

Keeps the record of all the details of users.

vii) Payment details

Keeps the record of all the payments.

viii) Generate report

Staff generates reports for the organization's purpose.

ix) Manage bookings

Staff can cancel the booking if the need arises and re-allocate the timings after an agreement with the relevant users.

x) Wish customer

Staff can wish customers their birthdays with the help of the customer database.

2. Footballer

i) System login

Footballer/Customer login to the system by entering the username and password.

ii) Register new Footballer/customer

If a Footballer/Customer is new, the Footballer/Customer can register to the system providing necessary details.

iii) Register membership

Footballer/Customers can register for membership.

iv) Can update profile

Footballers/Customers can update their profiles.

v) Available Kits and accessories

Footballers/Customers can view available kits and accessories in the store.

vi) Can view report

Footballers/Customers can view their activity reports.

vii) Book trainer

Footballers/Customers can choose trainer book after taking membership.

viii) Book preferred kits and accessories

Footballers/Customers can pre-book their required kits and accessories.

ix) Pay electronically

Footballers/Customers can pay electronically for memberships or purchase football kits.

x) Cancel bookings

Footballers/customers cancel their kits and accessories.

xi) Notify offer discounts

Footballers/Customers receive information about offers and discounts on new kits or stock clearance discounts.

xii) Notify customer/Footballer

Footballers/Customers are notified automatically by the system if the new kits are available in the store.

xiii) Notify membership expires

Footballers/Customers who have a membership will be notified by staff a week earlier before their membership expires.

xiv) Give feedbacks

Footballers/Customers give feedback to the T-14 football academy.

3. Administrator

i) System login

Administration login to the system by entering a valid username and password.

ii) Check the registration

Administration checks the registration appointment.

iii) Verifies the registration

Administration verifies the registration appointment by staff.

iv) Check the report

The administration can check the report generated by staff.

v) De-register staff

Administration de-register the staff that is no longer from the system.

4. Trainer

i) System login

Trainer login to the system by entering a valid username and password.

ii) Check Footballer details

A trainer checks footballer details and records.

iii) Manage footballer schedule

Trainer manages footballer schedule for practice and overall daily tasks.

iv) Prepare footballer for mock exam

Trainer prepare footballers for mock exams

v) Give feedback to footballer

The trainer gives feedback about footballer improvement and their mock exam.

Context Diagram:

The Context Diagram is the most advanced level of a Data Flow Diagram. It is a common tool among Business Analysts who use it to clarify the specifics and restrictions of a project's system to be created. It denotes the flow of data between the system and its external components. This is known as information hiding.

A context diagram is included in a project's requirements document. Unlike previous project diagrams, the Context diagram is intended for use by project stakeholders rather than engineers/technicians. As a result, it should be written in plain and straightforward language so that stakeholders may easily grasp the items when they study them. (Wondershare Edrawmax, 2021)

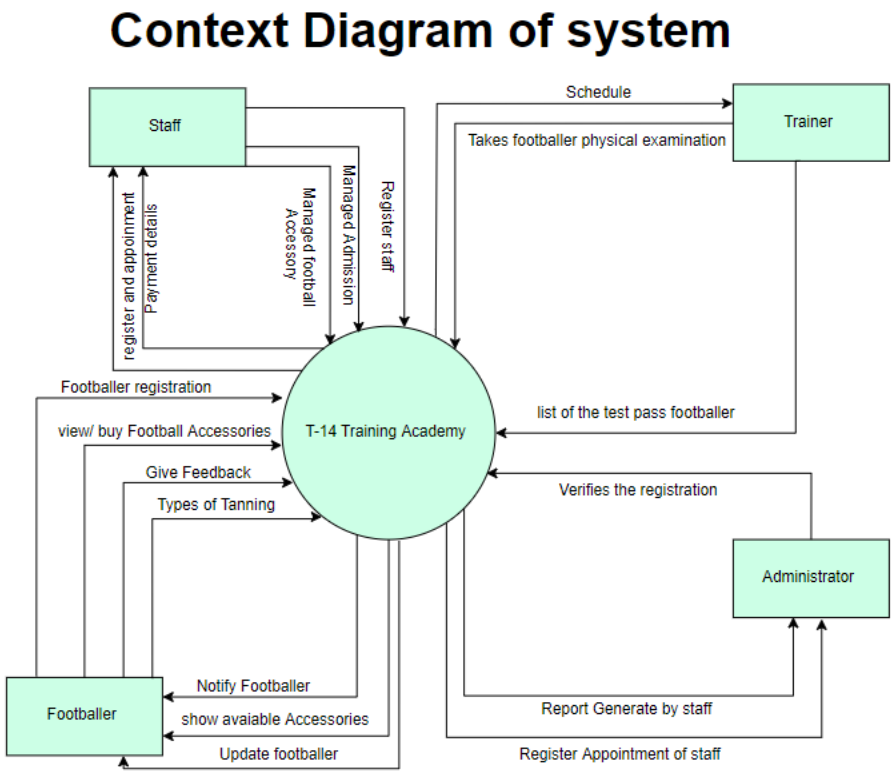


Figure 5: Context Diagram

The above-given figure is the context diagram of the T-14 Football academic Institute. The context diagram contains four entities which are Staff, Footballer, Administrator, and Trainer. All four entities are linked with the T-14 Football academic Institute through the data flow.

Internal Model Specification

DFD's with process specifications for elementary processes.

A Data Flow Diagram (DFD) is a graphical representation of the "flow" of data through an information system modeling its process aspects. Often it is a preliminary step used to create an overview of the system that can later be elaborated. DFDs can also be used for the visualization of data processing (structured design) and show what kind of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored. It does not show information about the timing of processes or information about whether processes will operate in sequence or parallel. (Elsevier B.V., 2022).

The objective of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communication tool between a system analyst and any person who plays a part in the order that acts as a starting point for redesigning a system. The DFD is also called a data flow graph or bubble chart. (JavaTpoint, 2021)

1. **Staff**
    i. **System Login**

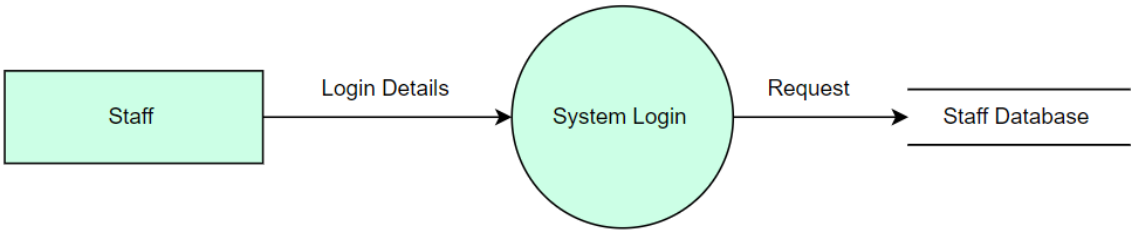


Figure 6: DFD Fragment for System Login

The above figure represents the DFD level 0 fragment of staff logging into the system. Here staff entity is linked with the login process where the request is made to the staff Data Base.

Process Name: staff logging into the system

Input: staff logging details

Process Output: the person can work as a staff if logs in successfully.

Logic: customer must log in to work as a staff in ‘T-14 Football Academy’

ii. Register staff

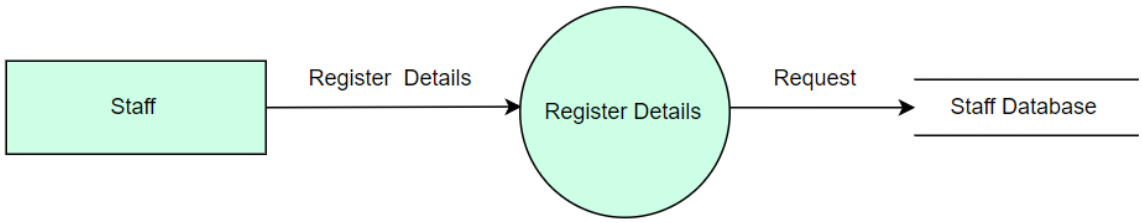


Figure 7:DFD fragment for register staff

The above figure represents the DFD level 0 fragment of staff registering new staff in the system. Here staff entity is linked with the registration process where the request is made to the staff Database.

In short

Process Name: New staff registered in staff DB

Input: staff details to register

Process Output: When new staff is registered in Database, he/she work as a staff for ‘t-14 Football Academy’

Logic: Person must be registered before working as a staff.

iii. Register an appointment

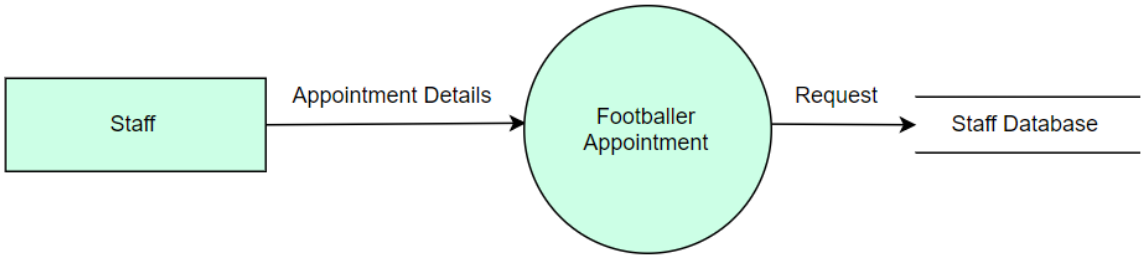


Figure 8: DFD fragment for registering an appointment

The above figure represents the DFD level 0 fragment for staff registering Footballer appointments. Here Staff entity is connected to a Footballer appointment where a request is made to staff DB.

In short

Process Name: Staff register Footballers appointments

Input: appointment details

Process Output: At first footballer, appointments must be registered by Staff.

Logic: Footballer must have an appointment registered by staff.

iv. Maintain footballer data

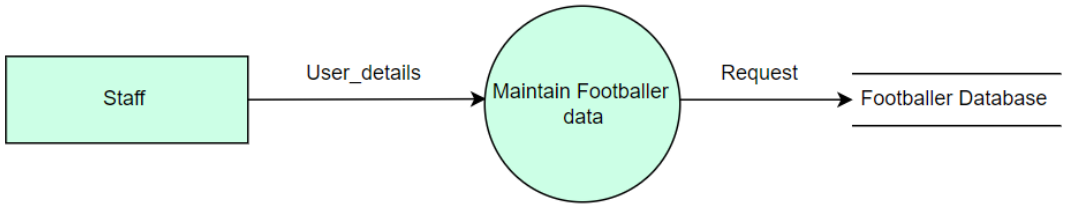


Figure 9: DFD fragment for Maintain footballer data

The above figure represents the DFD level 0 fragment for staff maintaining footballer data from the system. Here staff entity is linked with Maintain Footballer data process which requests Footballer DB.

In Short

Process Name: Maintain footballer data

Input: User details

Process output: At first staff, sends user details to the Footballer database.

Logic: Footballer details must be sent by staff to the Footballer database

v. Payment details

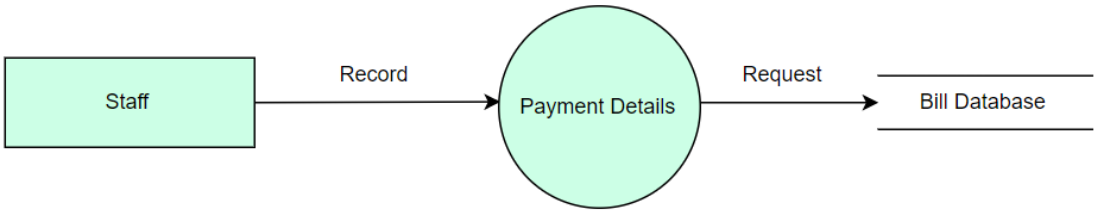


Figure 10:DFD fragment for Footballer payment details

The above figure represents the DFD level 0 fragment for staff keeping the records of footballer payment details from the system. Here staff entity is linked with the payment details data process which requests Bill DB.

In short

Process name: Footballer payment detail

Input: Payment details and price

Process output: Footballer needs to provide the payment detail to the billing database.

Logic: Footballer payment details are stored on the billing database.

vi. Generate Report

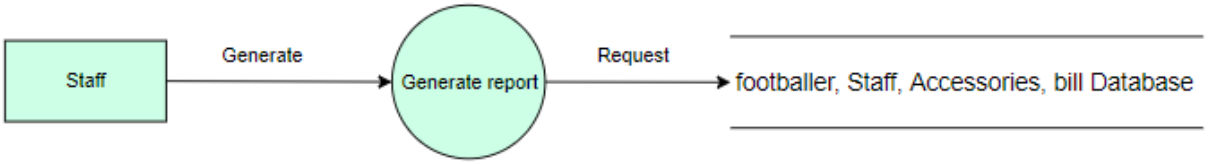


Figure 11: DFD fragment for Generate report

The above figure represents the DFD level 0 fragment for staff generating the whole report of a footballer. Here staff entity is linked with the whole report process where a request is made to the footballer Database, Staff Database, booking Database, and bill Database.

In short

Process Name: staff generate the whole report

Input: footballer activities detail in bill DB, booking DB, staff DB, and footballer DB

Process Output: Report is generated and can be viewed by footballer, staff, and administration.

Logic: Report must be generated by staff using different databases like footballer/ customer, staff, booking & bill Database.

vii. Manage football accessories

Figure 12: DFD fragment for manage football accessories

The above figure represents the DFD level 0 fragment for staff managing the trainer of a footballer. Here staff entity is linked with the trainer shift time process where a request is made to staff DB.

In short

Process Name: staff manage trainer shift booking time

Input: trainer details from Staff DB

Process Output: In any emergencies, the trainer of a footballer can be canceled by staff.

Logic: trainer can be canceled, and the training time can be shifted by the footballer for valid emergencies where the alert message can be sent to the footballer about certain changes in bookings.

viii. Wish Footballer

Figure 13:DFD fragment for wish footballer

The above figure represents the DFD level 0 fragment for staff doing birthday wishes to a footballer. Here staff entity is linked with the footballer birthday process where a request is made to footballer DB.

In short

Process Name: Staff wish on footballer birthdays

Input: wishes

Process output: on the birthdays of the footballer, staff must wish them to let them know that we care about our footballer.

Logic: To wish, the data must be collected by footballer database and an algorithm can be set in the system.

2. Footballer

i) System login

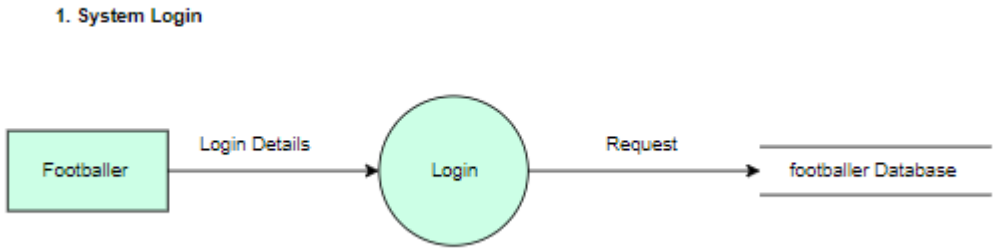


Figure 14:DFD fragment for Footballer system login

The above figure is a DFD level 0 fragment of login to system function. Here footballer entity is linked with the login process with username and password as detail which is further linked and stored in the footballer database.

In short:

Process Name: Logging to the system.

Input: Login details like username and password of the footballer.

Process output: After logging into the system footballer can use T-14 football Academic online services.

Logic: A person must log in to the system first, then view/order his/her required needs.

ii) Register Footballer

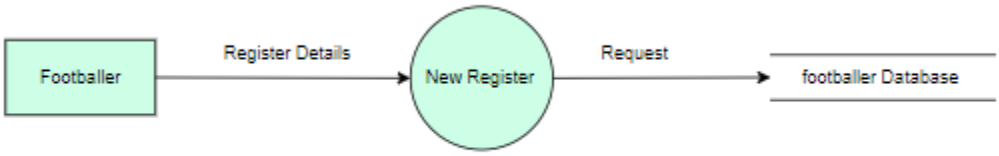


Figure 15:DFD fragment for register footballer

The above figure represents the DFD level 0 fragment of registering footballer if the footballer is new to the 'T-14 football Academy system. Here footballer entity is linked to registering process with footballer details needed to register which is further stored and linked with the footballer database.

In short:

Process Name: Registering a new footballer in the system.

Input: footballer register details.

Process output: After registering a new footballer to the system, he/she can use 'T-14 football Academic online services.

Logic: If a footballer is new to the system then he/she must be registered to the system.

iii) Register Membership

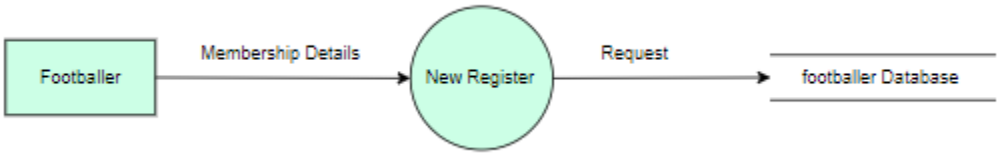


Figure 16:DFD fragment for Register membership

The above figure represents the DFD level 0 fragment of providing membership to the footballer. Here footballer entity is linked to the membership

process with membership detail needed to register the footballer in the members' list which is further stored in the footballer Database.

In short:

Process Name: Registering membership Input: membership detail of a footballer. Process Output: After a footballer is a member of the system, he/she can receive offers and discounts from the footballer.

Logic: A footballer can have membership in the system registered by staff.

iv) Can update profile

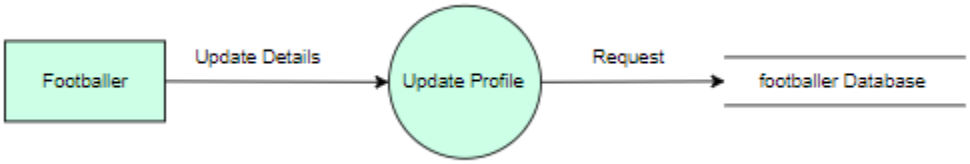


Figure 17:DFD fragment for can update profile

The above figure represents the DFD level 0 fragment of Footballer updating his/her profile in the system. Here footballer entity is linked with the update profile process with update details which are further stored in the footballer Database.

In short

Process Name: updating the profile of a footballer. Input: footballer details. Process Output: The user can update the detail in the system after logging in to the system

Logic: A footballer has the privilege that he can change his/her detail by logging into the system.

V) Available kit views and order accessory

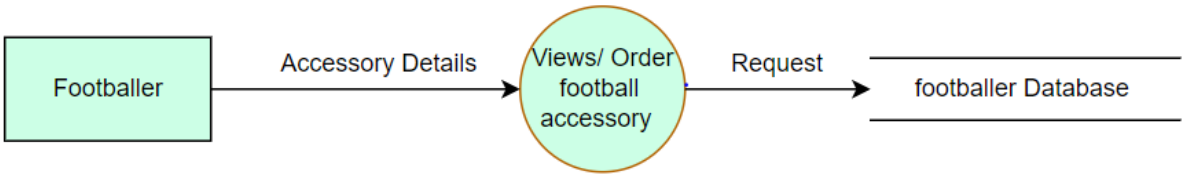


Figure 18:DFD fragment for available kit view and order accessory

The above figure represents the DFD level 0 fragment of footballers viewing the available kit views and ordering accessories on the online platform. Here footballer entity is linked with the view/order football accessory availability process by requesting to Footballer Database.

In short.

Process Name: footballer can check the available kit views and order accessories.

Input: checking required available details.

Process Output: After checking available kit views and order accessory footballer can view/order

Logic: A person can use the required available kit by viewing/ordering the available facilities.

vi) Can view the report

Figure 19:DFD fragment for can view report

The above represent the DFD level 0 fragment of the footballer viewing report. Here footballer entity is linked with the Report process by requesting a staff Database. With this footballer can see his /her activities in 'T-14 football Academic'.

In short

Process Name: footballer can view the report.

Input: no input required

Process Output: After the report is generated by staff footballer can view the report.

Logic: A person can view his/her activities in terms of reports generated by staff.

vii) Ordering preferred kits and accessories

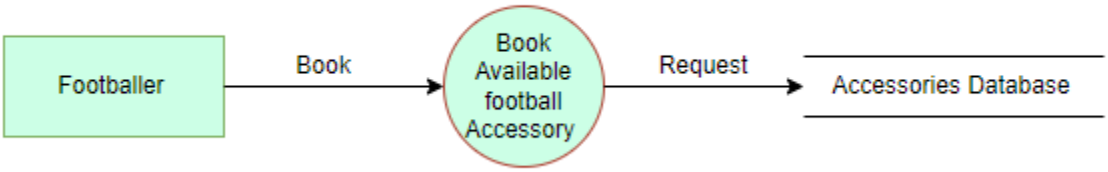


Figure 20:DFD fragment for ordering preferred kits and accessories

The above figure represents the DFD level 0 fragment for footballer ordering Accessories. Here footballer entity is linked with the order available accessory process with further requests made to the Accessories Database.

In short

Process Name: Ordering available accessory

Input: check and choose available required accessories.

Process output: footballers can use the accessories after ordering the available accessories.

Logic: footballer orders an accessory to use.

viii) Pay electronically

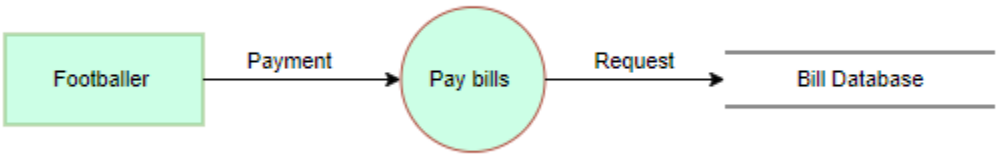


Figure 21: DFD fragment for Pay electronically

The above figure represents DFD level 0 fragment for footballer paying advance if he is not a member of 'T-14 football Academic'. Here footballer entity is linked with the pay bills process with is further linked with the bill Database for request.

In short

Process Name: pay bill amount electronically

Input: payment details

Process output: footballers must pay electronically to use the service. Advance is needed only if he/she is not a member of 'T-14 football Academic'

Logic: Non-member footballers can order the football kit and Accessories only after paying in advance.

ix) Cancel order

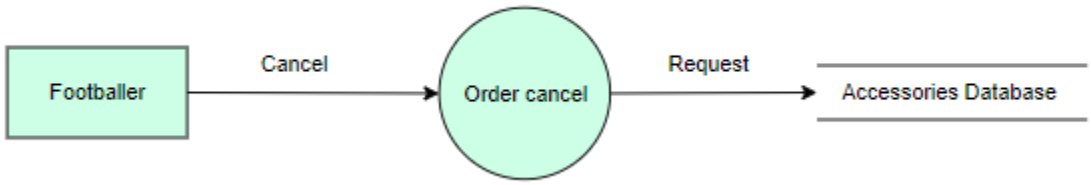


Figure 22:DFD fragment for the cancel order

The above figure represents DFD level 0 fragment for footballer canceling ordered kits and accessories if he/she wants. Here footballer entity is linked with the cancel process and further linked with the Accessories Database for the request to update the ordering details for the footballer.

In short

Process Name: cancel the order

Input: order details

Process output: A person can cancel the order at the last hour

Logic: footballer could cancel the order if the purchase is not needed.

x) Notify offer discounts

Figure 23:DFD fragment for Notify offer discounts

The above figure represents the DFD level 0 fragment for the 'T-14 football Academic' member footballer/customer viewing offers. Here footballer entity is linked with any special offer or discount which is provided from staff DB.

In short

Process Name: special offer and discount offered to member-footballer.

Input: Membership details by the footballer.

Process output: Once a footballer becomes a member of T-14 football Academic he can get discounts and offers from staff.

Logic: One must be a member to get special offers and discounts.

xi) Notify footballer

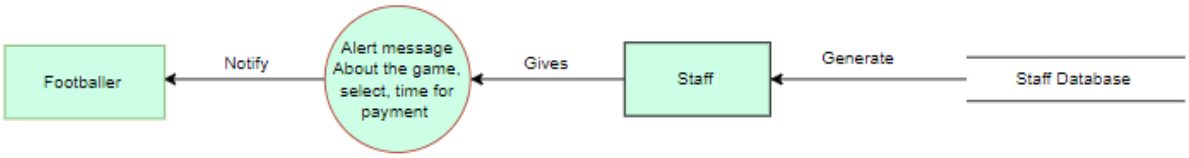


Figure 24:DFD fragment for Notify footballer

The above figure is the DFD level 0 fragment for footballers been notified with an alert message that their training period about the game is going to start after half an hour.

In short

Process Name: notify footballer

Input: booking details from staff Database

Process output: Staff will generate an alert message to the footballer half an hour ago before booking time ends.

Logic: half an hour ago footballers must be notified by staff using the booking Database.

xii) Notify membership expires

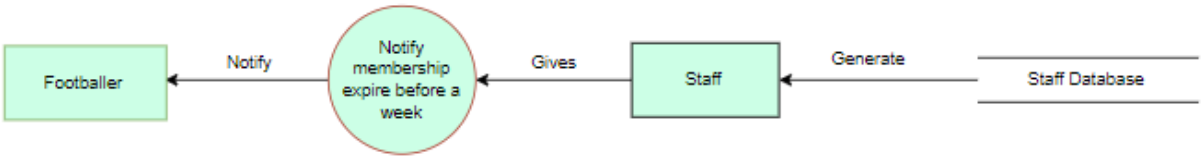


Figure 25:DFD fragment for notify membership expires

Above is the DFD level 0 fragment for footballers who have been notified with a week expire message that their membership period is going to end. Here footballer entity is linked with a week advance message process and the message was generated by staff DB.

In short

Process Name: Notifying member footballer/customer a week ago

Input: Member footballer detail by staff from staff Database

Process output: footballer after getting and reading a week expire message, can choose to extend or not extend his/her membership validation.

Logic: footballer must get a week to expire message of extending or ending membership from staff.

xiii) Give feedbacks

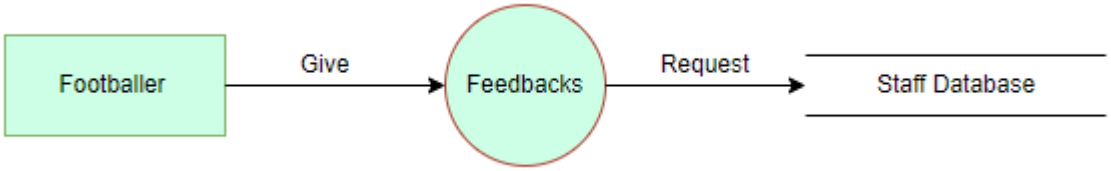


Figure 26:DFD fragments for give feedbacks

Above is the DFD level 0 fragment of footballer giving feedback. Here footballer entity is linked with the feedback process request to the staff Database.

In short

Process Name: give feedback to staff

Input: feedback details

Process Output: After using ‘T-14 football Academic’ footballer can give feedback to staff directly

Logic: staff will be getting feedback from the footballer.

Administration

i) System login

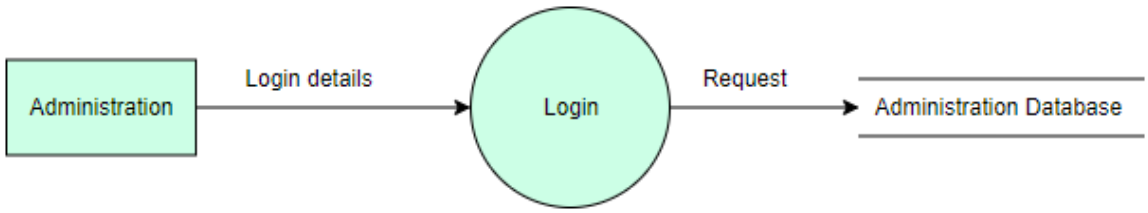


Figure 27:DFD fragment for Administrator login

The above figure represents the DFD level 0 fragment of administration logging to the system where a request is made to administration DB. Here administration entity is linked to the login process where a request is made to the administration database.

In short

Process Name: Administrators log in to the administration database

Input: login details

Process Output: One can be in the administration department with a valid username /password login.

Logic: To work for administration person must first log in to the administration system

ii) Check the Registration

Figure 28:DFD fragment for check the registration

The above figure represents the DFD level 0 fragment for administration checking footballer appointments. Here administration entity is linked with the footballer appointment process where a request a made by the footballer database.

In short

Process Name: Administrator checks staff appointments.

Input: appointment details

Process output: staff appointments can be accepted for applying for a staff job.

Logic: the staff appointment must be verified by the administration.

iii) Verify the registration

Figure 29:DFD fragment for Verify the registration

The above figure represents the DFD level 0 fragment for administration verifying staff registration and appointment. Here administration entity is linked with the staff registration and appointment process and a request is made by the staff database for verification.

In short

Process Name: Administration verifying staff appointments and registrations

Input: staff details and appointments from the Staff database.

Process Output: once the appointments to be registered are verified a person can work as a staff.

Logic: Administration is the head of ‘T-14 football Academic’. They have the authority to hire staff.

iv) Check the report

Figure 30:DFD fragment for check the report

The above figure represents the DFD level 0 fragment for administration checking the whole report generated by Staff. Here administration entity is linked with the whole report process where a request is made by the staff database.

In short

Process Name: Administration checking whole reported generated by staff.

Input: The report is generated by staff with the help of other databases.

Process Output: The report is verified by administrations.

Logic: The report must be generated by staff and must be verified by the administration

v) De-register staff

Figure 31:DFD fragment for De-register staff

The above figure represents the DFD level 0 fragment for administration de-registering staff. Here administration entity is linked with the de-register staff process where a request is made to the staff database.

In short

Process Name: Administration de-registering staff.

Input: staff details

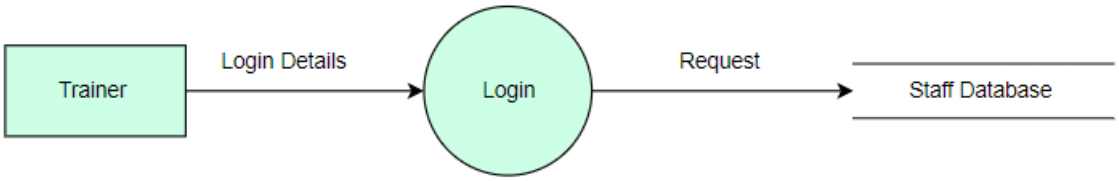
Process output: Once the staff is de-registered, he/she cannot work as a staff.

Logic: Administration has the authority to de-register a staff

3. Trainer

Trainer

System login



The above figure represents the DFD level 0 fragment of Trainer logging to the system where a request is made to the Trainer database. Here Trainer entity is linked to the login process where a request is made to the Trainer database.

In short

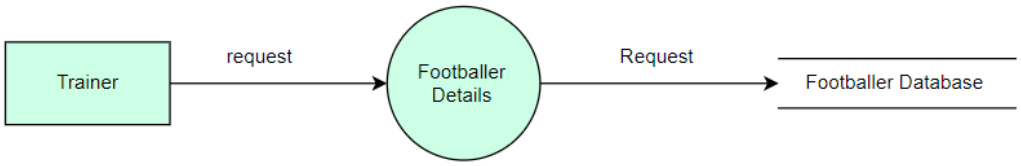
Process Name: Trainer log-in system.

Input: Trainer login details

Process Output: One can be in the trainer department with a valid username /password login.

Logic: To work for a trainer person must first log in to the T-14 football Academic system.

Check footballer details



The above figure represents the DFD level 0 fragment of footballer details.

Here trainer entity is linked with the footballer detail process where a request is made to the footballer database.

In short

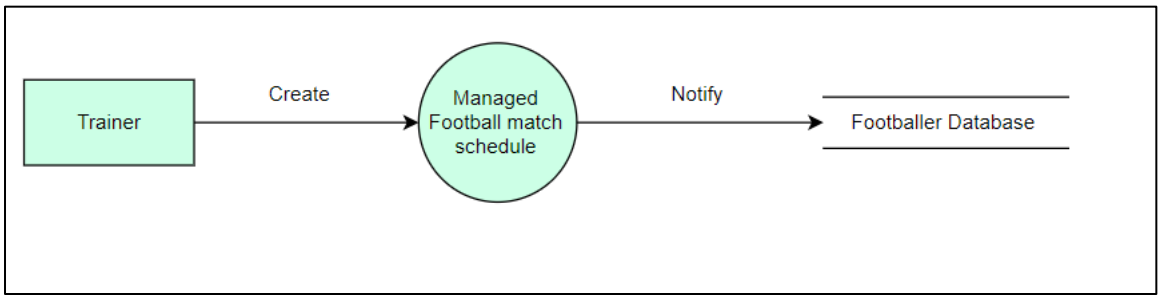
Process Name: trainer login footballer detail

Input: footballer details

Process output: Login into the system

Logic: to login into the system by being a trainer.

Manage footballer schedule



The above figure represents the DFD level 0 fragment of managed footballer schedule.

Here trainer entity is linked with the footballer database.

In short

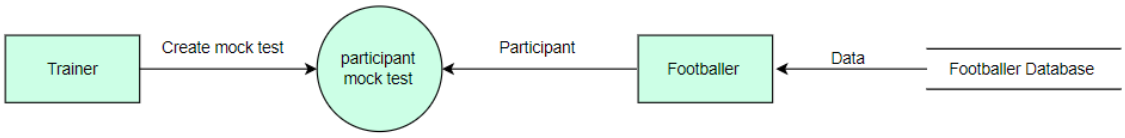
Process Name: managed Footballer schedule

Input: Create footballer schedule

Process output: Login into the trainer

Logic: to login into the system by being a trainer.

Prepare footballer for mock exam



The above figure represents the DFD level 0 fragment of preparing footballer for mock test. Here trainer entity is linked with the footballer and footballer database.

In short

Process Name: prepare footballer for mock test

Input: create a mock test

Process output: mock test successful

Logic: Intermediator registration footballer mock test

Give feedback to footballer

The above figure represents the DFD level 0 fragment of giving Feedback to footballers. Here trainer entity is linked with the footballer and footballer database.

In short

Process Name: Giving Feedback to footballer

Input: Generate report

Process output: Notify footballer individual

Logic: The trainer create a report of an individual footballer and gives feedback

Level 1 DFD

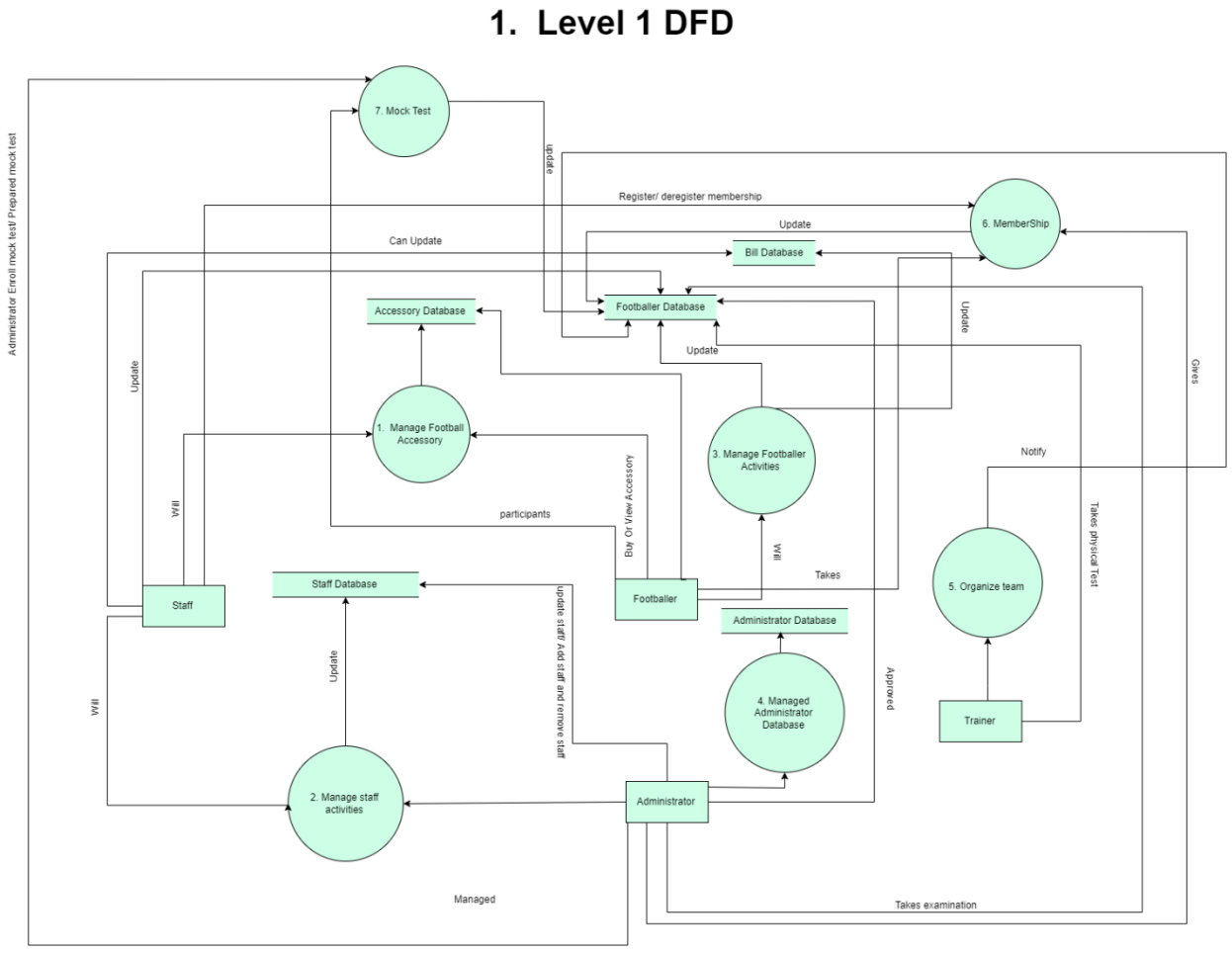


Figure 32: Level 1 DFD

The above figure is the Level 1 DFD of the T-14 Football academy this DFD has been further broken down into Level 2 DFD and it has been illustrated below.

Level 2 DFD

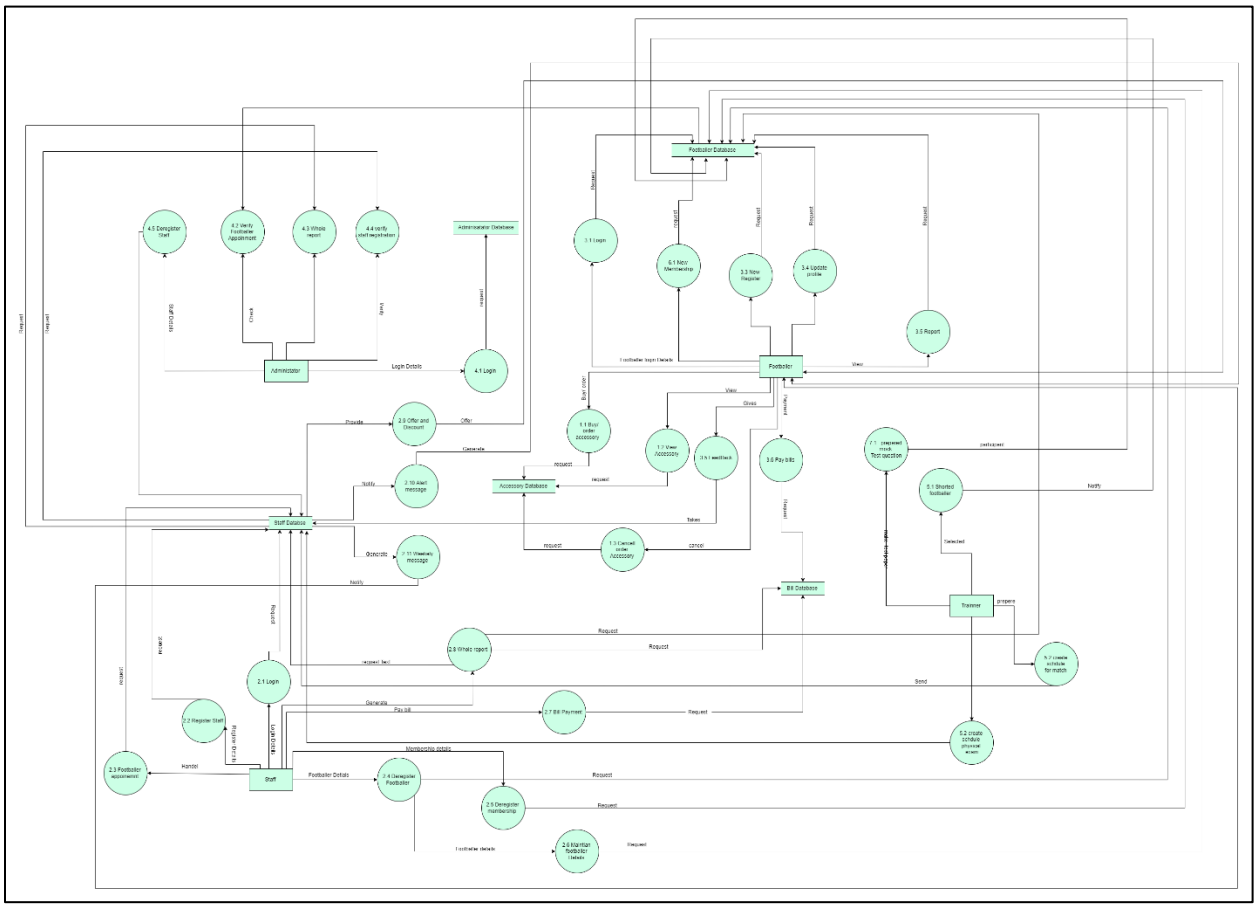


Figure 33: Level 2 DFD of T-14 Football Academy

The above level 2 DFD fragment was created after building level 1DFD.

First, when all level 0 fragments were joint level 1 DFD was created. Then after all the common processes and fragments were grouped and made a single process to build DFD level 2. The processes inside the above single process are shown below:

1. Manage Accessories

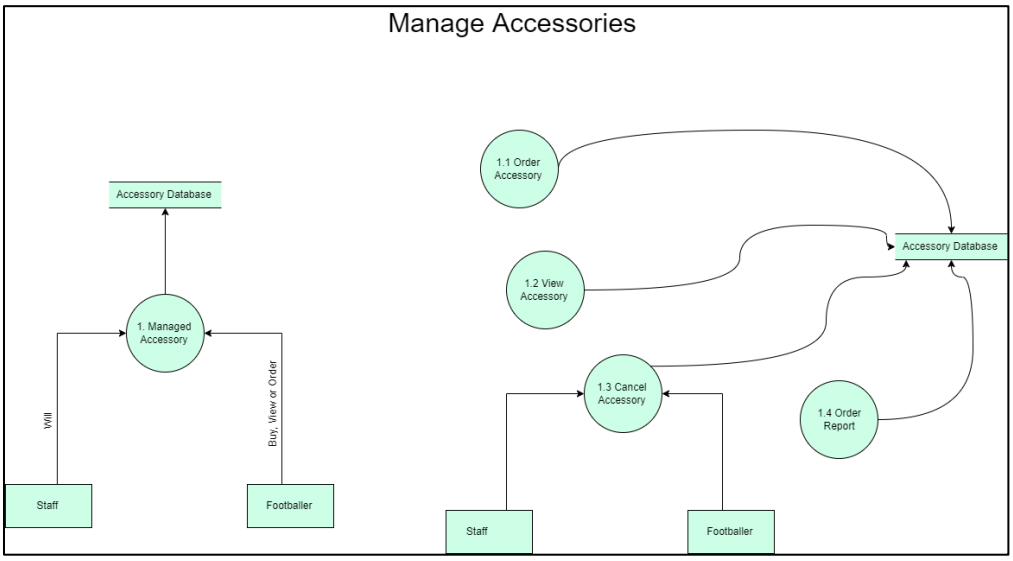


Figure 34: Manage Accessories process

2. Manage Footballer activities

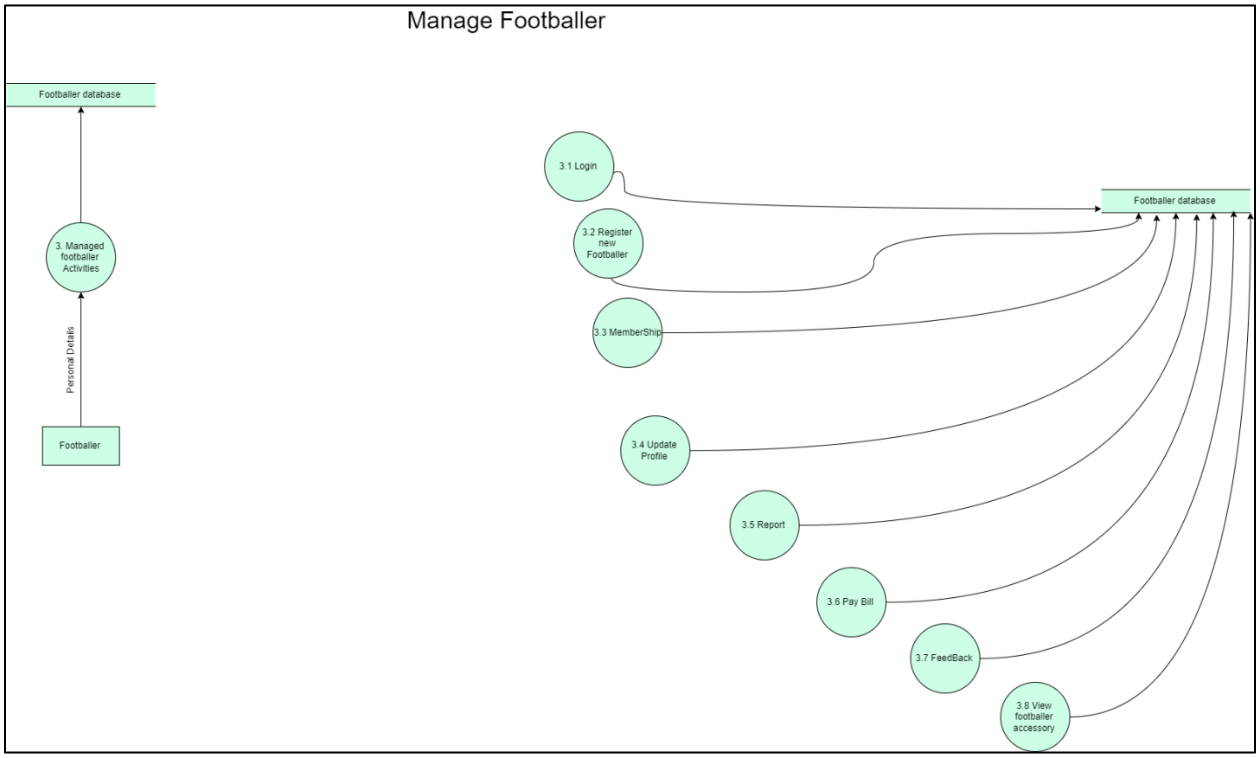


Figure 35: Manage Footballer Process

3. Manage Staff Activity

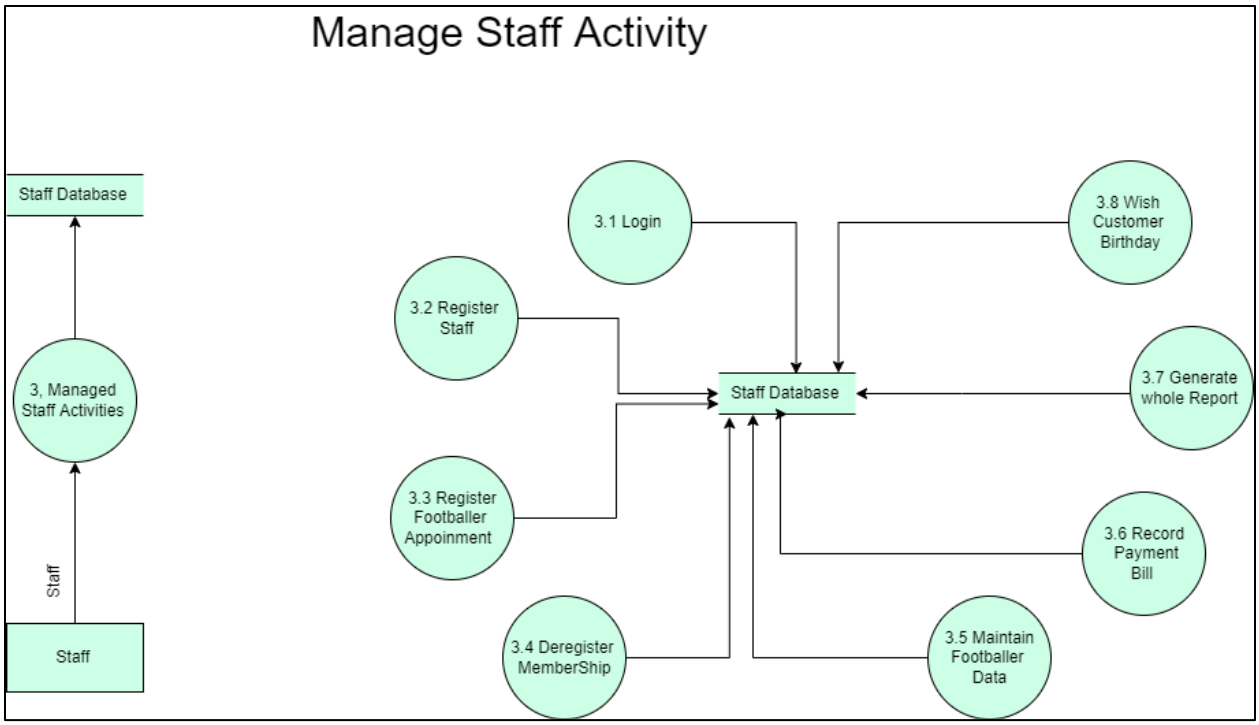


Figure 36: Manage Staff Activity process

4. Managed Administrator

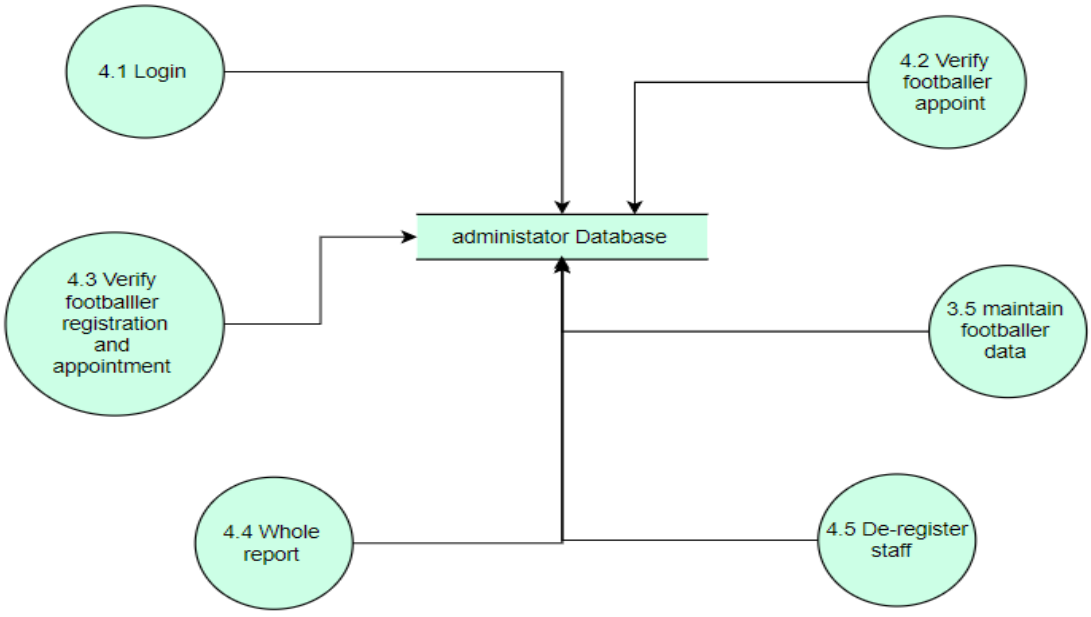


Figure 37: - managed Administator

5. Organized team

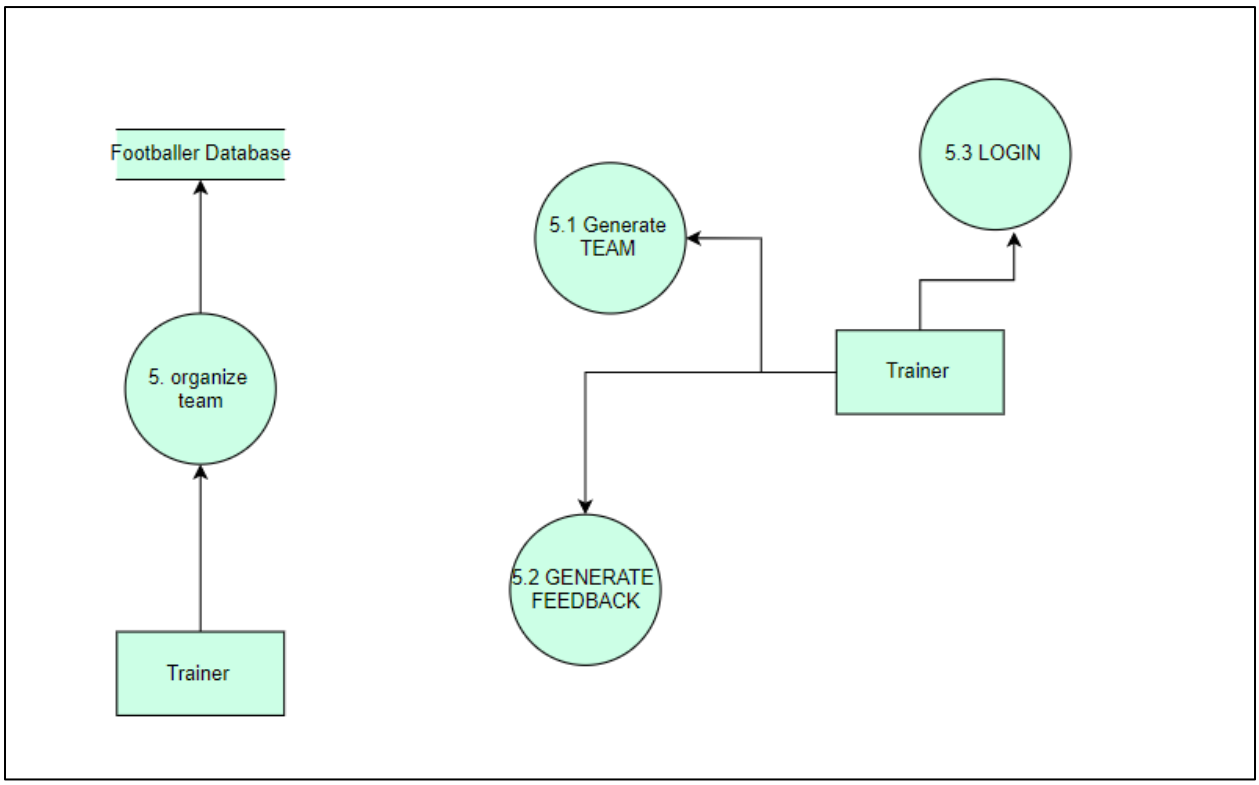


Figure 38: - originized team

ERD:

ER-modeling is a data modeling method used in software engineering to produce a The conceptual data model of an information system. Diagrams created using this ER-modeling methods are called Entity-Relationship Diagrams or ER diagrams or ERDs. The database analyst gains a better understanding of the data to be contained in the database through the step of constructing the ERD. The ERD serves as to a documentation tool. Finally, the ERD is used to connect the logical structure of the database to users. In particular, the ERD effectively communicates the logic of the database to users. (JavaTpoint, 2021)

There are different components of ERD which are:]

i. Entity
ii. Attributes
iii. Relationships

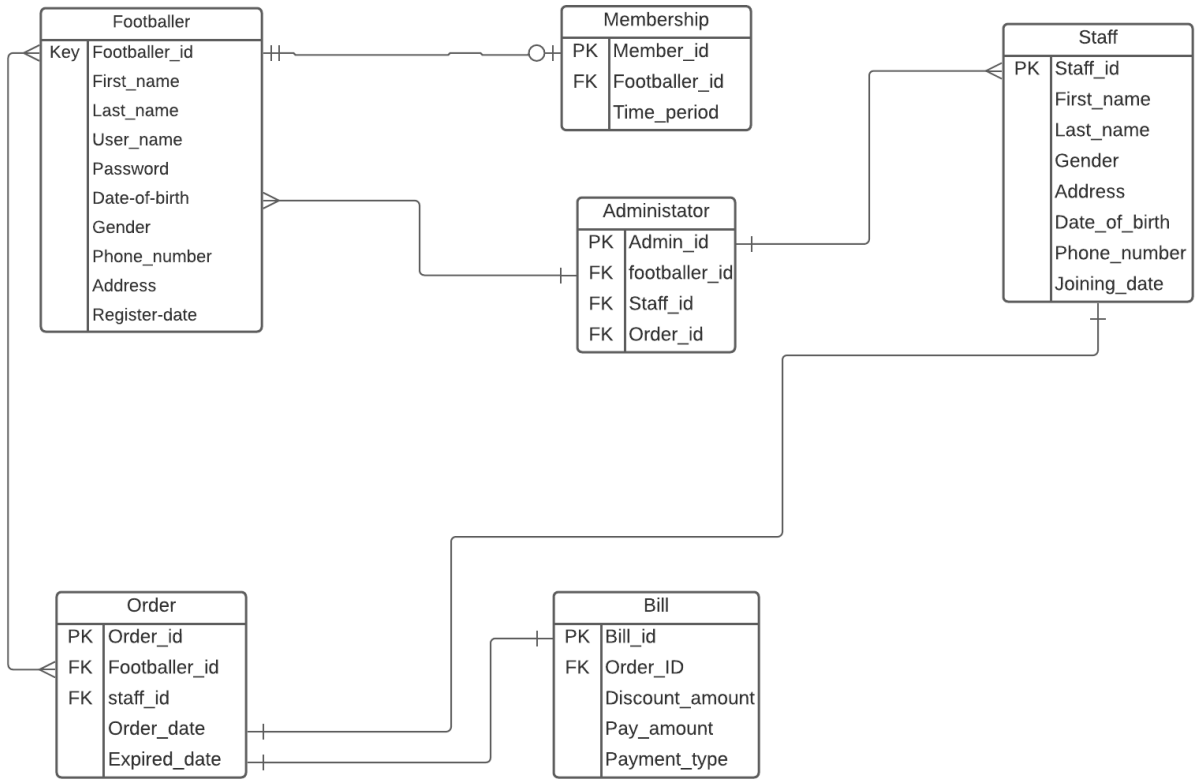


Figure 39:ERD of the system

The above entity-relationship diagram represents the ERD of the 'T-14 Football Academy' online system. The entities with the attributes which we can see above are:

i) Footballer:
Footballer_id (PK),First_name,Last_name,User_name,Password,Date of birth,Gender,Phone_number,Address,Register_date

ii) Staff: Staff_id(PK),First_name,Last_name,Gender,Address,Date of Birth ,Phone_number,Joining_date

iii) Administrator: Admin_id(PK),Footballer_id(FK),Staff_id(FK),Order_id(FK)

iv) Membership: Member_id (PK), Footballer_id (FK), Staff_id (FK), Order_id (FK)

v) Order: Order_id (PK), Footballer_id, Staff_id (FK), Order_date, Expired_date

vi) Bill: Bill_id (PK), Order_id(FK),Discount_amount,Pay_amount,Paq2ayment_type

Data Dictionary

A data dictionary is a centralized repository of metadata. Metadata is data about data. Some examples of what might be contained in an organization's data dictionary include:

i. The names of fields contained in all of the organization's databases
ii. What table(s) each field exists in
iii. What database(s) each field exists in
iv. The data types, e.g., integer, real, character, and image of all fields in the organization's databases
v. The sizes, e.g., LONG INT, DOUBLE, and CHAR(64), of all fields in the organization's databases
vi. An explanation of what each database field means
vii. The source of the data for each database field
viii. A list of applications that reference each database field
ix. The relationship between fields in all of the organization's databases
x. Default values that exist for all fields in all of the organization's databases
xi. Who has access to each field (C.Bourne, 2014)

Data Dictionary of Footballer

Entity	Entity description	Attributes	Key	Data Type	Data Size	Default	References	Description
Footballer	A person who will register in football academic or purchase a football kit.	Footballer_id	Primary key	Varchar	30	Not null	-	The primary key for a footballer
		First name	-	Varchar	30	Not null	-	First name of the footballer
		Last Name	-	Varchar	30	Not null	-	Last name of the footballer
		User name	-	Varchar	30	Not null	-	Username for using the online system
		Password	-	Varchar	30	Not null	-	The password of his/her account

		Date of birth	-	Date	-	Not null	-	Date of birth of the footballer
		Gender	-	Varchar	30	Not null	-	Gender of footballer
		Phone_number	-	Int	10	Unique	-	Phone number of footballer
		Address	-	Varchar	30	Not null	-	Address of the footballer
		Register_date	-	Date	-	Not null	-	Date of registration

Table 1: Data dictionary of Footballer

Data Dictionary of Staff

Entity	Entity description	Attributes	Key	Data Type	Data Size	Default	References	Description
Staff	Staff manages everything so that the academy runs smoothly on the online system	Staff_id	Primary key	Varchar	30	Not null	-	The primary key for staff
		First name	-	Varchar	30	Not null	-	First name of the staff
		Last name	-	Varchar	30	Not null	-	Last name of the staff
		Date of birth		Date	-	Not null	-	Date of birth of staff
		Gender	-	Varchar	30	Not null	-	Gender of staff
		Phone_no	-	Int	10	Unique	-	Phone number of staff
		Address	-	Varchar	30	Not null	-	Address of staff
		Joining_date	-	Date	-	Not null	-	Date of joining the staff

Table 2: Data dictionary of Staff

Data Dictionary of Administrator

Entity	Entity description	Attributes	Key	Data Type	Data Size	Default	References	Description
Administrator	Administrators take care of staff and many only transactions of the academy	Admin_id	Composite (PK)	Varchar	30	not null	-	The composite primary key of the administrator
		Footballer_id	Foreign key	Varchar	30	Not null	Footballer	Foreign key brought footballer
		Staff_id	Composite (pk, FK)	Varchar	30	Not null	Staffs	Foreign key from staff and a composite primary key
		Order_id	Foreign key	Varchar	30	Not null	Order	As foreign key from order

Table 3: Data dictionary of Administrator

Data Dictionary of Order

Entity	Entity description	Attributes	Key	Data Type	Data Size	Default	References	Description
Order	Order details of the footballer	Order_id	Primary	Varchar	30	Not null	-	The primary key for order id
		Footballer_id	Foreign	Varchar	30	Not null	Footballer	Foreign key brought from footballer
		Staff_id	Foreign	Varchar	30	Not null	Staff	Foreign key brought from staff
		Order date	-	Date	-	Not null	-	Order date of the product
		Expired_date	-	Date	-	Not null	-	Expired date of the product order

Table 4: Data dictionary of Order

Data dictionary of Bill

Entity	Entity description	Attributes	Key	Data Type	Data Size	Default	References	Description
Bill	After buying accessory payment is done by which a footballer can get a bill of the payment	Bill_id	Primary	Varchar	30	Not null	-	Primary key
		Order_id	Foreign	Varchar	30	Not null	Order	Foreign key brought from booking
		Discount_amount	-	Varchar	30	Not null	-	Membership footballer will get discount
		Pay amount	-	Varchar	30	Not null	-	After discount or without discount the amount to pay to accessory
		Payment_type	-	Varchar	30	Not null	-	The method of payment might be online, cash or credit, etc.

Table 5: Data dictionary of Bill

Data dictionary of Member

Entity	Entity description	Attributes	Key	Data Type	Data Size	Default	References	Description
Member	Footballer can become a member	Member_id	Primary	Varchar	30	Not null	-	The primary key for member
		Footballer id	Foreign	Varchar	30	Not null	-	Foreign key brought customer
		Period	-	Varchar	30	Not null	-	When time is over staff can deregister the footballer

Table 6: Data dictionary of Member

Design Specification

Structure chart

In information engineering and organizational philosophy, a structure chart is a chart that displays a system's collapse to its lowest functional levels, explaining the functions and sub-functions to a larger extent. It is the composition of the module hierarchy that shows the relationship between modules. The structure chart is a Data Flow Diagram with greater details of functions and sub-functions of the system. (Geek for Geeks, 2018) While constructing the structure chart, different symbols are used which are mentioned below:

1. Process

   It is a series of instructions that are to be carried out by the program at a specific point.

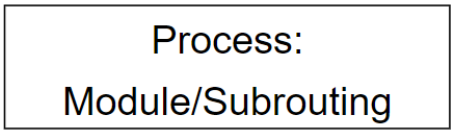


Figure 40: Symbol of module/ sub routing

2. Physical Storage

   It is storage to store all the information Related to the system.

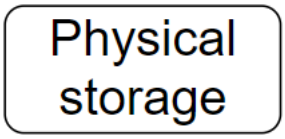


Figure 41: Symbol for physical storage

3. Call line

   It represents the path (SEQUENCE) between modules/subroutines.

Figure 42:Symbol for Call line

4. Parameter

   It represents the flow of DATA between the module/subroutines. It is represented by a direct arrow with an an empty circle at the end.

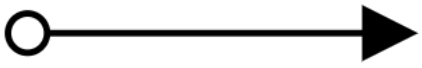


Figure 43:Symbol for Parameter

5. Decision

   It is used to represent SELECTION and split the charts sequence into multiple paths. It shows the module can select any one of the sub-modules based on some condition.

Figure 44: Symbol for Decision

6. Repetition

   It is used to represent REPETITION and highlight that a process can occur multiple times. It shows the loop in the module/subroutines.

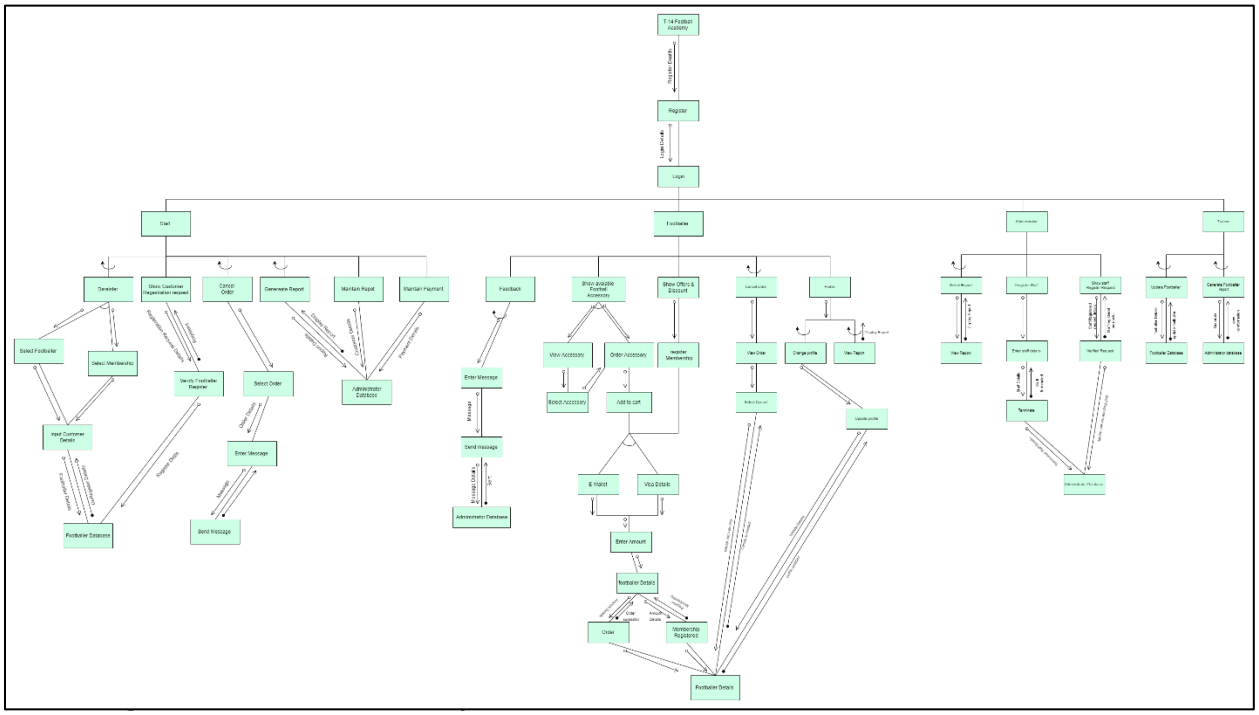
Figure 45: Symbol for Repetition

7. Control Parameter

   It indicates that a criterion has been met, confirming the system to proceed.

Figure 46: Symbol for Control Parameter

Structure Chart



The above-given figure is the structure chart of T-14 Football Academy.

At the top of the structure chart, it contains a register module and login module. This module represents the user's need to first register and logs in to get to the system. The system is divided into three modules Customer, Staff, and Administrator. Each part of the modules contains different functions and sub-functions which describe below:

1. **Footballer Module**

   The footballer module contains the functions provided to the footballers. The The system shows the footballer all the available Kits, football accessories, and trainers that they can book. The footballer can choose whether they want to view a kit or train with a trainer. By selecting one, the system allows the footballer to choose a payment method to pay in advance. The footballer can pay through an E-wallet (e-Sewa, Khali) or visa card. With the completion of advance payment, the kits and accessories bought and payment details are stored in the Footballer database. The footballer can also cancel their booking.

The system also shows discounts and offers to the footballer. To receive discounts and offers the footballer needs to register membership followed by the payment method. The footballer can feedback by entering a message in the feedback section and sending it. The sent message will go to the administrator database. The footballer can update their profile by changing profile details which will be updated in the footballer database. Through the profile section, the footballer can view their activities report.

2. **Staff Module**

The staff module contains all the functions provided to staff. The system will show all the customer's registration requests to the staff and are verified by the staff. The registration details will be sent to the customer database. The staff can deregister customers and also their membership. The system will allow the staff to choose between the customer or membership for deregistering and followed by entering details of the customer that is to be terminated or deregistered membership. After successfully entering the customer details,

customer details are passed to the customer database for the process. The staff can cancel the booking of the customer if necessity is raised through the cancel booking module by selecting the book that is to be canceled followed by entering a suitable reasonable message to the customer and sending it. The staff generates a report of the institute and the system which will be sent to the administrator database. The staff maintains customers and payments by keeping records of them in the administrator database.

3. **Administrator Module**

The administrator module contains all the functions of the administrator. The system will show all the staff's register requests. They are verified by the administrator and sent details to the administrator database. The administrator deregisters staff that is no longer by entering the details of the staff and terminating them from the administrator database. The administrator can view the reports of the system and institute that are generated by the staff.

Pseudocode

Pseudocode is an informal style of programming that lacks any strict programming language syntax or underlying technology considerations. It is represented in a formally-styled natural language instead of a programming language. Simply, we may claim that it's an algorithm's cooked-up representation. Like other programming languages, it has no syntax and can thus not be compiled or interpreted by a machine. The pseudocode of the system for the T-14 Football Academy Institute is given below

1. **Footballer**

i. System Login

START
INPUT Footballer’s username/password
IF (Username/password is valid)
DO
Footballers get access to the system
END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END

ii. Register Footballer

START
INPUT Footballer’s details
IF (The details valid)
DO
INSERT footballer details into a customer database
OUTPUT registered message
END DO
ELSE
DO

OUTPUT error message.
END DO
END IF
END

iii. Register membership

Register membership
START
INPUT membership requirement’s details
IF (membership requirement’s details valid)
DO
OUTPUT select payment method ‘E-wallet’ or ‘Visa details’
INPUT amounts
IF (amounts valid)
DO
Store payment and customer details in footballer
database
OUTPUT membership message
END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END

iv. Update profile

START

IF (SELECT update profile)

DO

OUTPUT Footballer profile details

INPUT change profile

IF (change profile valid)

DO

UPDATE changed profile

END DO

ELSE

DO

OUTPUT error message

END DO

END IF

END DO

END IF

END

v. Available Kits and Accessories

START

IF (SELECT view available Kits and Accessories)

DO

OUTPUT Available Kits and Acc END DO

END IF

END

vi. View Footballer activities

START

IF (SELECT view my activities)

DO

OUTPUT Footballer's activities report from Footballer database

END DO

END IF

END

vii. View available kits and Accessories

START

IF (SELECT Available Kits and Accessories)

DO

OUTPUT Kits and Accessories available for purchasing

SELECT a Kits and Accessories

IF (Footballer has a membership)

DO

Store Footballer and purchased Kit and Accessories information to administration database

OUTPUT kit and Accessories purchase successful message

END DO

END DO

ELSE

OUTPUT select advance payment method ‘E-wallet’ or ‘Visa details’

INPUT amounts

IF (amounts valid)

DO

Store Footballer and Kits and Accessories information to administration database

OUTPUT Kit and Accessories purchase successful

END DO

ELSE

OUTPUT error message

END DO

END DO

END IF

END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END

viii. Cancel purchase

START
IF (SELECT cancel booking)
DO
FOR (valid cancel purchasing request)
DO
DELETE purchase kit and Accessories from the
administration database
END DO
END FOR
END DO
END IF
END

ix. Notify offers and discounts

START
IF (SELECT offer or discount)
DO
OUTPUT offer or discounts available
OUTPUT select message for a discount or offer type
END DO
END IF
END

x. Notify Footballer's

INPUT reserved time-reminder and membership reminder

DO

FOR (Valid request to set reserved time and membership reminder)

DO

SET reserved time and membership reminder

An OUTPUT confirmation message to the customer

END DO

END FOR

END DO

END

2. Staff

i. System login

START

INPUT staff's username/password

IF (Username/password is valid)

DO

staff get access into the system

END DO

ELSE

DO

OUTPUT error message

END DO

END IF

END

ii. Register Staff

START

INPUT staff's details

IF (The details valid)

DO

INSERT staff details into administration database

OUTPUT registered message

END DO

ELSE

DO

OUTPUT error message.

END DO

END IF

END

iii. Verify register request of Footballer

START

IF (Staff verifies registration)

DO

INSERT customer details in the customer database

END DO

ELSE

DO

INPUT suitable denied message

END DO

END IF

END

iv. De-register Customer

START

IF (SELECT de-register customer)

DO

INPUT customer’s details that are to be de-register

IF (customer’s details valid)

DO

DELETE customer’s registered data from customer database

OUTPUT confirmation message

END DO

ELSE

DO
OUTPUT error message
END DO
END IF
END DO
END IF
END

v. De-register membership

START
IF (SELECT de-register customer's membership)
DO
INPUT customer's details
IF (customer's details valid)
DO
REMOVE all the discounts and offers of customer
OUTPUT confirmation message
END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END DO
END IF
END

vi. Maintain user(Keep a record of Footballer activities)

START
IF (SELECT maintain user)
INPUT customer details
IF (customer details valid)
DO

INPUT customer activities
STORE customer activities in the customer database
END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END IF
END

vii. Maintain Payment details

START
IF (SELECT maintain payment bills)
DO
INPUT payment details with customer details
IF (customer’s details valid)
DO
STORE input details in the customer database
END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END DO
END IF
END

viii. Generate report

START
IF (SELECT generate customer report)
DO

INPUT customer’s details
IF (customer’s details valid)
DO
OUTPUT customer activities report from a customer database
INSERT generate a report to the administration database
END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END DO
END IF
END

ix. Manage Purchase(Cancel purchase if needed)
START
IF (SELECT cancel booking)
DO
OUTPUT purchased Kits and Accessories detail
IF (SELECT a purchase to cancel)
INPUT a notified message to the customer
DO
DELETE purchased items from the customer database
OUTPUT confirmation message.
END DO
END IF
END DO
END IF
END

3. Administration

i. System Login

START

INPUT administrator's username/password

IF (Username/password is valid)

DO

administrator get access into the system

END DO

ELSE

DO

OUTPUT error message

END DO

END IF

END

ii. Verify staff's registration

START

IF (the new staff request for registration)

DO

OUTPUT staff registration request details

IF (Administrator verify the request)

DO

INSERT staff register details in administrator

database

END DO

END IF

END DO

END IF

END

iii. Check the report

START

IF (SELECT check customer report)

DO
OUTPUT customer report from the customer database
END DO
END IF
END

iv. De-register staff

START
IF (SELECT de-register staff)
DO
FOR (valid staff details)
INPUT staff details
IF (staff details is valid)
DO
DELETE staff details from the administrator
database
OUTPUT confirmation message
END DO
ELSE
DO
OUTPUT error message
END DO
END IF
END FOR
END DO
END IF
END

Assignment Diary

Assumptions

1. Cash payment can be done at the time of the book appointment.
2. Staff can view the feedbacks
3. Staff can de-register staff but the first de-register staff appointment must be verified by the administration.
4. Staff can cancel the booking in any emergencies, similarly customers can also cancel the booking but it is possible if cancellation is done 2 hours before the time of booking.
5. Administration must verify to staff generated report to take any decision of
6. 'T-14 Football Academy' like cancel the booking, customer payment, de-register members, staff, etc.

Omission

The entire scenario given by question is full fill so there is no omission.

Meeting minutes

Group meetings-1

Meeting	Group work meeting 1
Date of Meeting	Dec 12
Time	10:30-11:30
Location	College Premises

Table 7:Meeting 1 schedule

Meeting objectives
On the date December 12 we had our first meeting for the group work. Firstly, we all discussed the different Models of the CW

Table 8: Meeting 1 objectives

Group meetings-2

Meeting	Group work meeting 2
Date of Meeting	Dec 17
Time	11:30:1:00
Location	Google meet

Table 9: Group meetings 2

Meeting objectives
On the date December 17 we had our 2nd meeting for the group work. Firstly, we all discussed the Environmental Model and list out the Event lists and task was divided within group members

Table 10: Group meeting 2 objectives

Group meetings-3

Meeting	Group work meeting 3
Date of Meeting	Dec 23
Time	9:10
Location	Personal room

Table 11: Group meetings 3

Meeting objectives
On the date December 26 we had our 3rd meeting for the group work. Firstly, we all discussed the Models of CW in detail and the task was divided among a group members.

Table 12:Group meeting 3 objectives

Group meetings-4

Meeting	Group work meeting 4
Date of Meeting	Dec 27
Time	9:10:30
Location	Personal room

Table 13:Group meetings 4

Meeting objectives
On the date December 27 we had our 4th meeting for the group work. Firstly, group members explain and display their completed task and the problems regarding the the module was discussed.

Table 14: Group meetings 4 objectives

Group meeting-5

Meeting	Group work meeting 5
Date of Meeting	Jan 2
Time	10:00-1:00
Location	Personal room

Table 15: Group meetings 5

Meeting objectives
On the date Jan 2 we had our 5th meeting for the group work. Merging of the individual task and the divided task among the group members were merged and the formatting for the documentation was made and a review of coursework was done. The project was overall checked and modified as necessary.

Table 16: Group 5 meeting objectives

Group responsibilities:

Task number	Task	Group member name
1	Register a footballer	Pratik Limbu
2	Purchase football kits	Shreyak Kharel
3	Enroll staff members	RojeshShah
4	Report preparation	Mausam Kumar Chaudhary

Table 17: Group responsibilities

Individual Task

Purchase Football Accessory and Kits

Done by Name: Shreyak Kharel

London ID: 20048510

Introduction

We students were required to demonstrate a practical understanding of 'Structured Software' in a group of five to construct an online system for 'Sound Strong' within a time frame. 'T-14 Football Academy' is a Football Academy that is experiencing difficulty booking consumer demand through a phone call-based approach.

We students must complete our CW under the auspices of SSADM (Structured Systems Analysis and Design Method). After finishing our group task (EMS, IMS, DS, and Assignment Diary), we must choose one of the following online functions.

The seven functions mentioned in CW are as follows:

i) Register membership
ii) Design exam test papers and practice test papers.
iii) Enroll staff members
iv) Purchase Football Kits
v) Report Preparation
vi) Post exam notice and preparations.
vii) Take a mock exam

I am heading to do the number 4 function ‘Purchase Football Kits’. In an online system, any Footballer/customer logged into the system can have the privilege of booking their required quality football kits along with their desired size and needs. Footballers/Customers can check the availability of Kits through the ‘T-14 Football Academy’ online app or website. After knowing about the detail of their requirement at an affordable price they can book/buy kits along with the size and need they want to use. If a Footballer/customer is not a member then he will not be able to buy the kits on credit, he/she must pay earlier for booking/buying. In case, Football Kit is not

available then staff will be shifting the booking item and notifying the Footballer/customer about the situation when the item will be available next. If necessary then footballers/Customers will be refunded for the trouble.

Before the online system, the purchasing was done in the traditional manner where staff had to face the trouble to explain their Footballers/Customers about the services of 'T-14 Football Academy' their availability and price. If there were only one or two Footballers/customers daily then it was possible but with the demand and popularity of its services staff cannot handle mass demand and fulfilling their queries.

Due to all these, hectic and chaotic demands traditional way of purchasing was not quite applicable. We will be adding a feature in the online system through which people can check and buy/book their required available Football kits at their mentioned affordable price.

Environmental Model Specification

DFD

A data flow diagram shows the way information flows through a process or system. It includes data inputs and outputs, data stores, and the various subprocesses the data moves through. DFDs are built using standardized symbols and notation to describe various entities and their relationships.

Data flow diagrams visually represent systems and processes that would be hard to describe in a chunk of text. You can use these diagrams to map out an existing system and make it better or to plan out a new system for implementation. Visualizing each element makes it easy to identify inefficiencies and produce the best possible system. (Lucid Chart, 2020)

Level 0 DFDs also known as context diagrams are the most basic data flow diagrams. They provide a broad view that is easily digestible but offers little detail. Level 0 data flow diagrams show a single process node and its connections to external entities. (Lucid Chart, 2020)

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 subprocesses. As these processes are added, the

diagram will need additional data flows and data stores to link them together. (Lucid Chart, 2020)

Level 2+ DFDs simply break processes down into more detailed subprocesses. In theory, DFDs could go beyond level 3, but they rarely do. Level 3 data flow diagrams are detailed enough that it doesn't usually make sense to break them down further.

Data flow diagram symbols and notation

Depending on the methodology (Gane and Sarson vs. Yourdon and Coad), DFD symbols vary slightly. However, the basic ideas remain the same. There are four basic elements of a data flow diagram: processes, data stores, external entities, and data flows. The picture below shows the standard shapes for both methodologies.

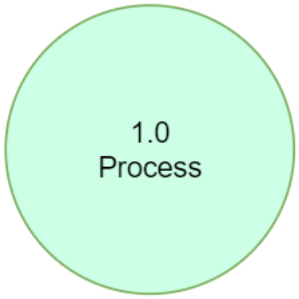


Figure 48: Structure of Process 1.0

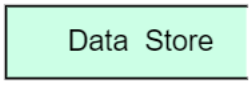


Figure 49:Structure of data store

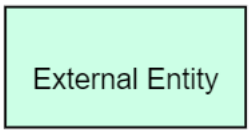


Figure 50: Structure of External Entity

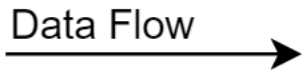


Figure 51: Structure of Data Flow

Context Diagram

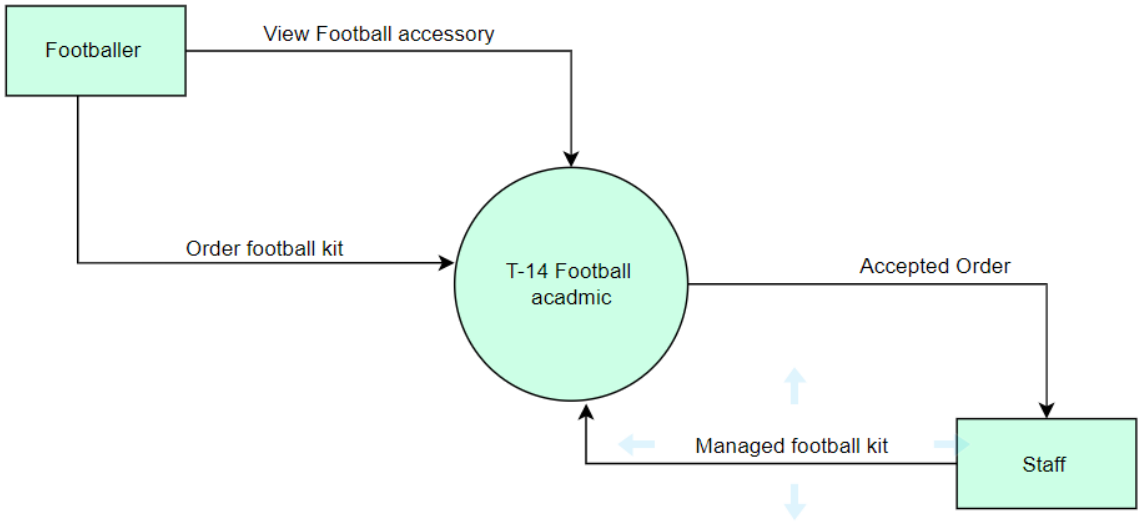


Figure 52: Context Diagram of Purchase Football Kit

In the above context diagram, the system shows all the available kits that can be viewed or can be bought. It consists of two entities i.e. Staff entity and the Footballer entity. The footballer/customer views and purchases the available football kits. All those details are sent to the system. The footballer/customers can order the kits which will be sent to the system. If he/she is not a member of the Academy then they need to pay instantly to order the item but if he/she is a member of the Academy they even get a discount for the order they make. The staff receives the detail/requirement of the kit that the footballer/customer needs from the system. The system also sends payment details of the footballer/customer to the staff. The staff collects all the details/requirements and generates its reports. The report is again sent to the system.

Internal Model Specification

Level 1 DFD

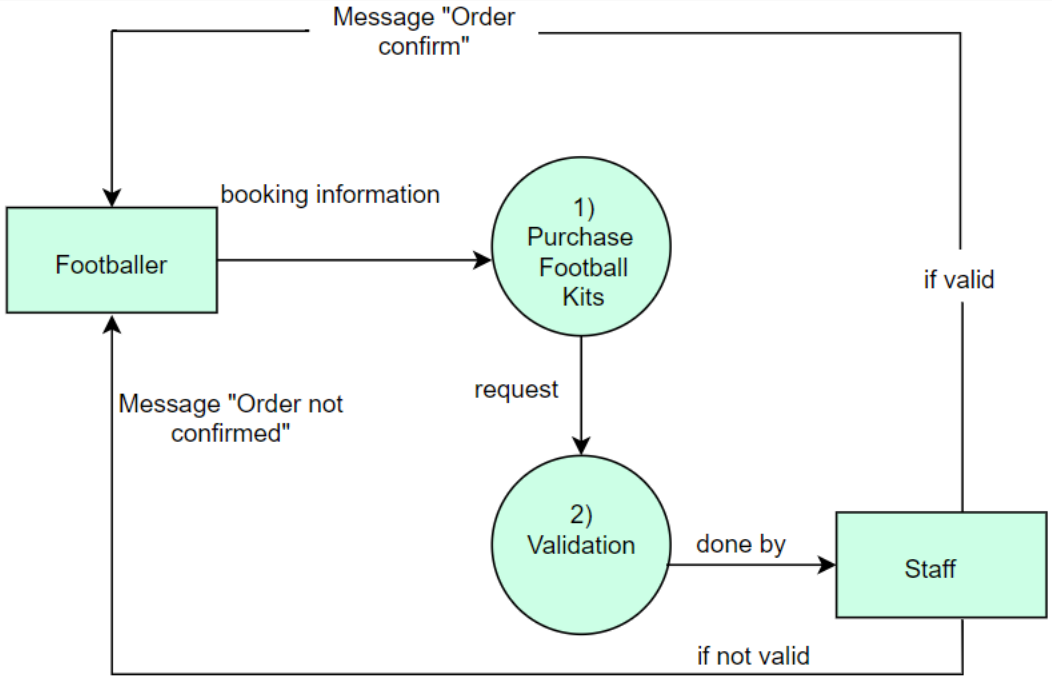


Figure 53:Level 1 DFD of purchasing Football Kits

The above figure represents the level 1 DFD diagram for Purchasing Football Kits function of the 'T-14 Football Academy' online system. From above we can see that at first Football/customer sends their booking information to the Purchase Football Kits process. Where again the process is sent to the validation process. The validation process is done by staff. If the validation process is approved and possible then a message "Order Confirm" is sent to Footballer/customer but if validation is not approved then the message "Order not confirmed" is sent to Footballer/customer by staff.

DFD Level 2

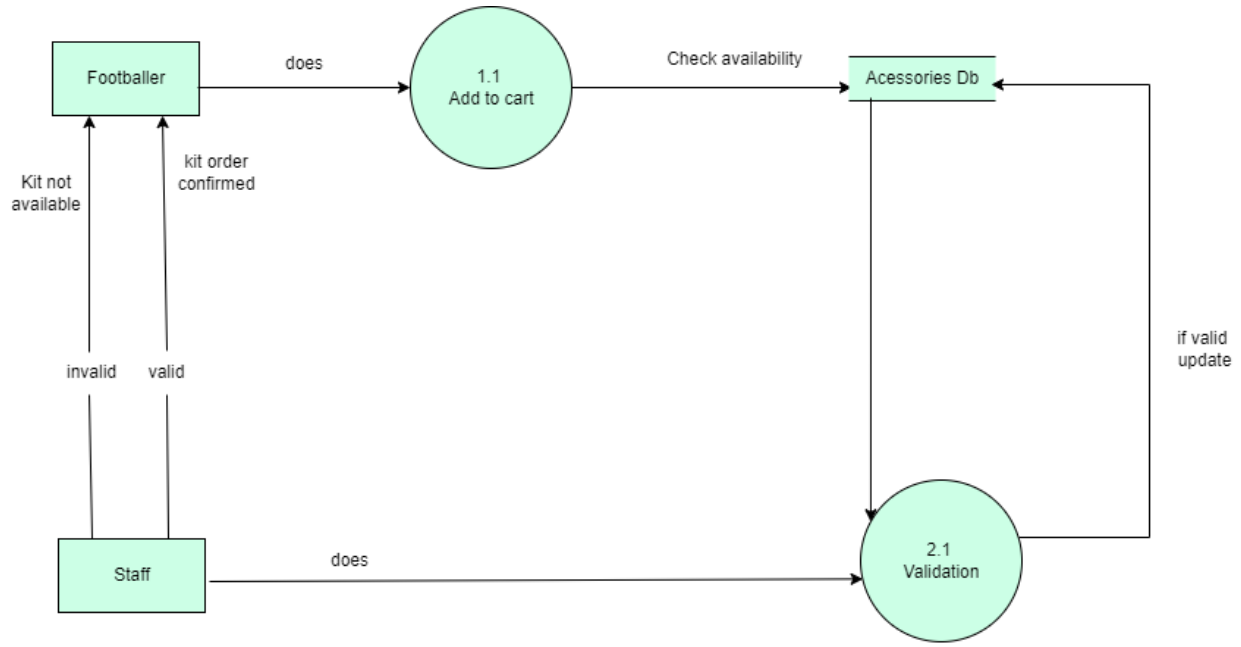


Figure 54: Level 2 DFD of Purchasing Football Kits

The above figure represents the level 2 DFD diagram for the 'T-14 Football Academy' function of the online system. Here we can see that at first footballer/customer add the item to the cart room but to do that the availability of kit is checked in Accessories DB. The availability information is sent to the validation process which is done by staff. Message "Kit order confirmed" to customer if validation is approved else "Kit not available" is sent by staff.

Design Specification

Structure Chart

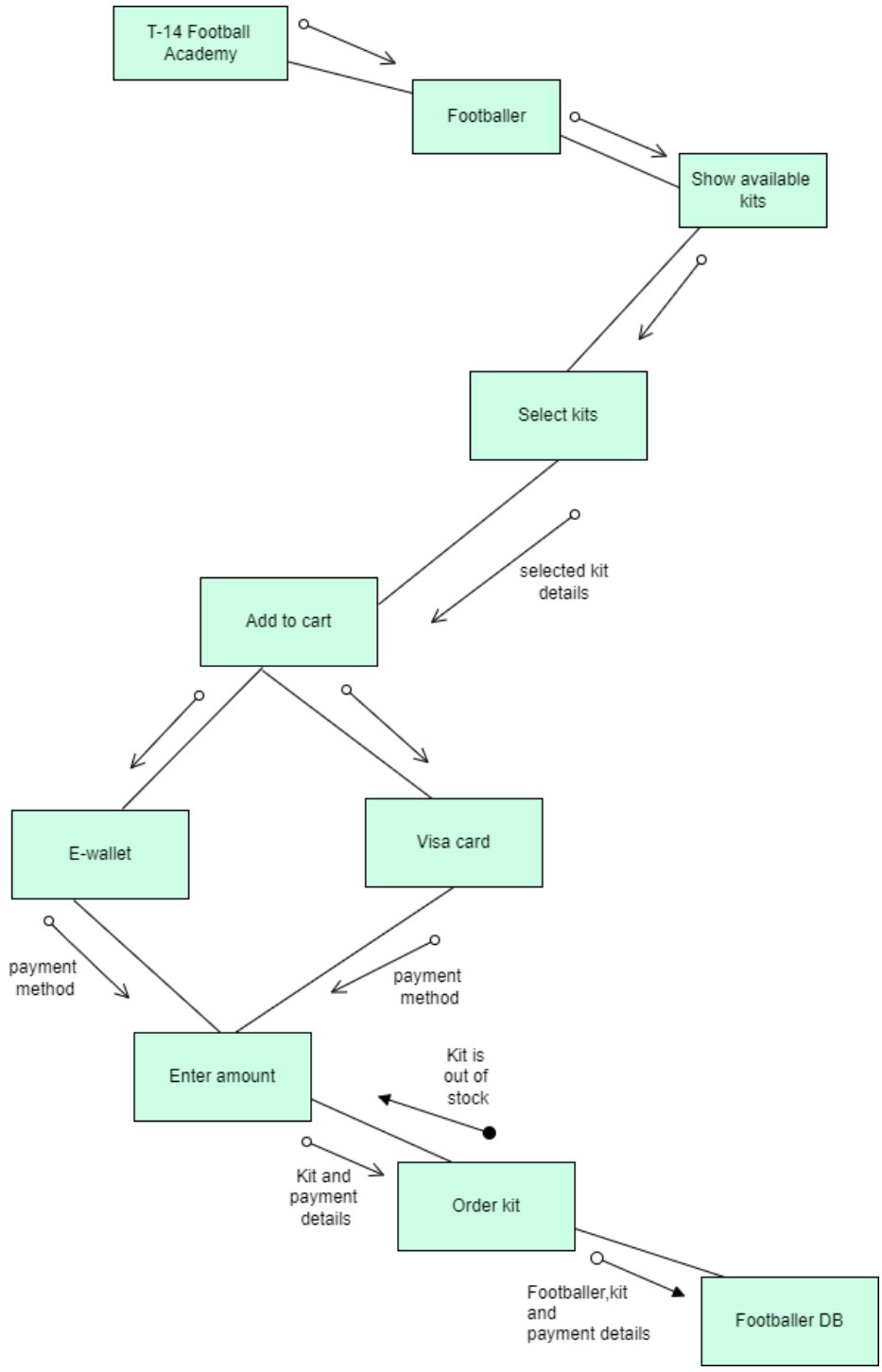


Figure 55:Structure Chart for Purchase football kits

The above-given figure is the structure chart for the Purchase football kit of

T-14 Football Academy. The structure chart shows that the Footballer/customer views the The kit is available for purchase. The Footballer/customer selects the kit. Furthermore, the customer checks whether the kit is available or not. If the customer does not have a membership, the customer needs to pay instantly for the purchase. The customer has to choose a payment method i.e., either through an E-wallet (e.g., Khalti, E-Sewa) or a Visa card. The customer enters the amount. The kit details and payment details are passed to the order kit. A message of the confirmed kit is sent to the customer and all the details of the Footballer/customer, purchased kit, and payments are stored in the Footballer database.

Module Specification:

MODULE NAME: Purchase_football_kits

PURPOSE: To purchase a Kit of T-14 Football Academy for the system.

PSEUDOCODE:

START

OUTPUT Kit order confirmed.

INPUT choose an available kit,

IF (the kit is valid)

CALL Footballer/customer_payments

DISPLAY confirmation message of Kits order confirm.

ELSE

DISPLAY error message

END IF

END

INPUT PARAMETERS: available kits details, advance amounts

OUTPUT PARAMETERS: available kits, confirmation message, an error message

GLOBAL VARIABLES: N/A

LOCAL VARIABLES: N/A

CALLS: Footballer/customer_payments

CALLED BY: N/A

Conclusion

In the individual task of ‘purchase Football Kits’, we first have to make imagine logical DFDs and sketch them out in our tools to draw. We can imagine a Footballer(customer) trying to search their required need of Football kits with good quality and appropriate sizes. So, in this individual task, we have solved the problem of purchasing the kit required need, by adding a feature of purchasing available services from the online system of ‘T-14 Football Academy’. Here booking will be managed by staff. In an emergency, staff can cancel purchasing kits and shift delivery times. Similarly, a Footballer/customer can also cancel the booking but the cancelation must be 2 hours before the delivery time. Here if the customer is not a member of ‘T-14 Football Academy’ one must pay all the amount as soon as confirming the item added to the cart.

Individual task

Register a membership

Done by Name: - Pratik Limbu

London ID: - 20048321

Introduction

The course work that was allocated to us based on our group work was to develop and specify significant sections of the pre-defined T-14 Football Academy system to create an online registering system. Yourdon's structure method was used to approach the purpose of coursework. There were two sections to the coursework. The initial step was to design the entire system, which we accomplished by collaborating in a group and assigning tasks to each individual. Individual work is the focus of the second section. It has a specified task that each team member is responsible for.

1. Register Membership
2. Design exam test papers and practice test papers
3. Enroll staff members
4. Purchase Football kits
5. Report preparation
6. Post exam notices and announcement
7. Take a mock exam

After our group divided the aforementioned assignment, I was able to choose the first task, "Register a membership." I observed the novice Footballer engaging with the system from this vantage point. The task entails giving a new Footballer access to the system and building their profile. To acquire this, a footballer must provide the system with their registration requirements. The registration request is then forwarded to the staff for approval. The request is verified by the staff. A consumer is given a new account in the system through which he or she can gain access to it. The registration request is refused if the Footballer data is invalid, and an error notice is delivered to the Footballer. After the completion of registration of the

staff s/he can liable for the membership. After taking the membership s/he can take the membership advantage of the T-14 Academic.

Environmental Model Specification

Context Diagram

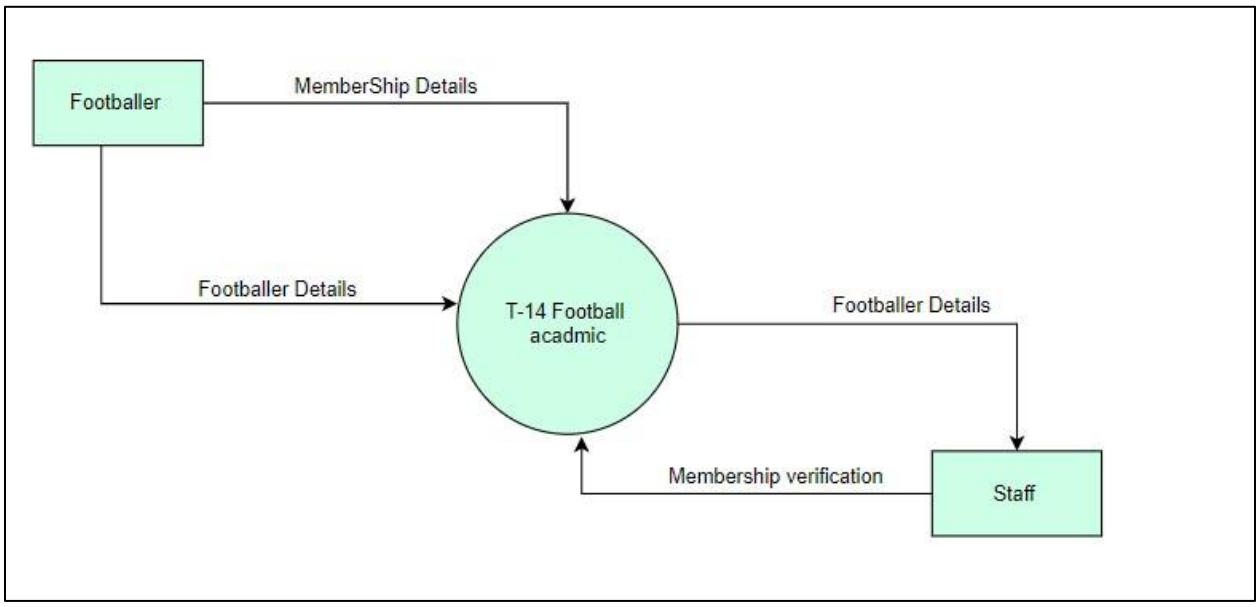


Figure 56:- Context diagram of membership

The above-given figure is the context diagram for registering a membership in the system. The context diagram contains two entities, footballer a staff entity. In the footballer entity, the footballer sends the registration membership request with the required details to the system. In the staffing entity, the system sends the footballer registration request with their details to the staff for verification. The staff analyzes the request and verifies it which is sent back to the system. After Verification, the footballer registers for the membership.

Internal Model Specification

Level 1 DFD

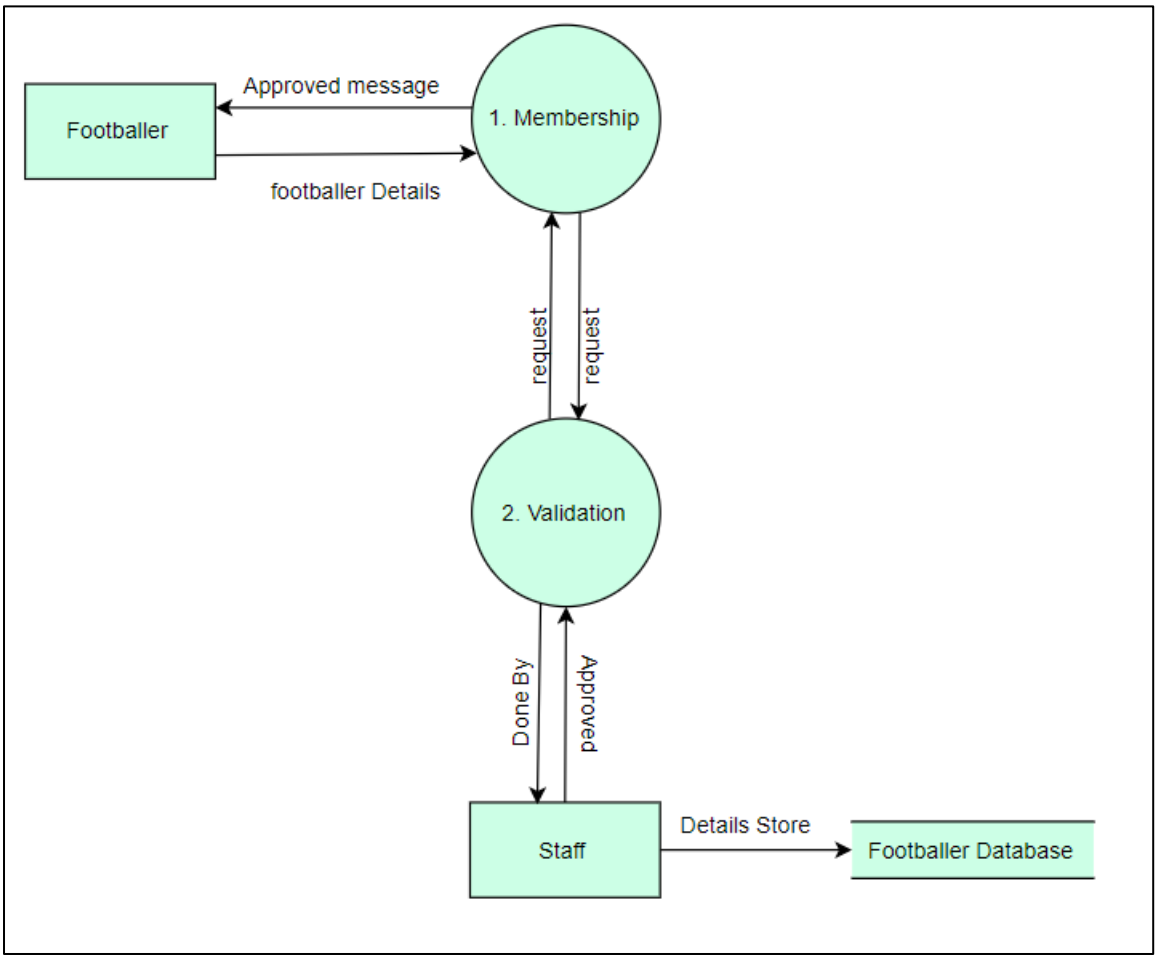


Figure 57: -Level 1 Diagram of membership

Above we can see the level 1 Data flow diagram (DFD) of the internal model specification of the T-14 Football academic online system to register membership. The above diagram shows that the footballer sends their detail or personal information to the register the process of the system. The details are then sent to the validation process. The validation is then carried out by staff. If the personal details are valid then an approved message is sent to the footballer and data is stored in the footballer database. Whereas if validation is not approved then confirmation is not sent.

Level 2 DFD

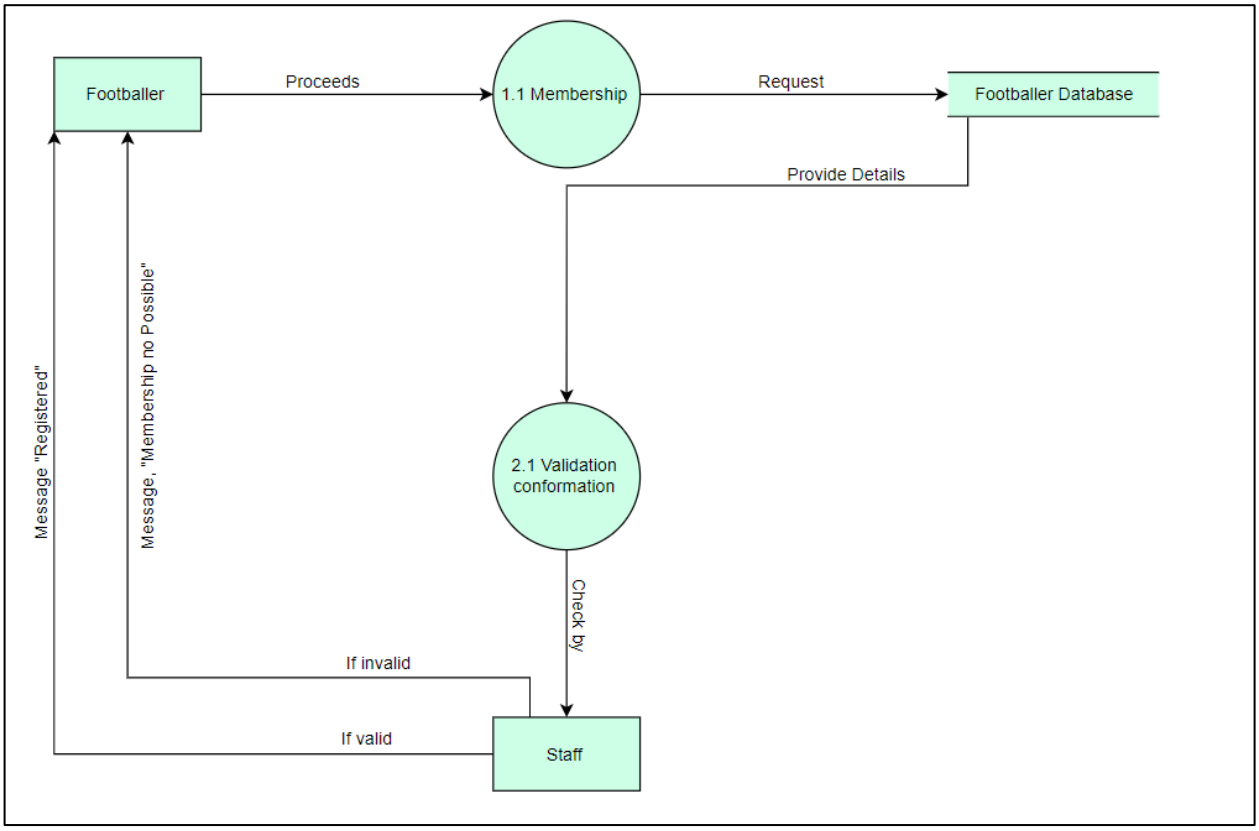


Figure 58: - level 2 diagram of membership

The above figure represents the level 2 Data flow diagram (DFD) of the T-14 Football academic online system for the “Register Membership” function. From the above figure, we can see that footballer goes for the registration process where he/she will be inserting personal information and details. From there the data entered will be compared to the footballer database. And compared data results will be sent to the validation process then carried out by staff. If all the details of footballer and membership criteria area meet then the approved message is sent to the footballer and the data stored in footballer database where if validation is not approved then conformation is not sent.

Design Specification

Structure Chart

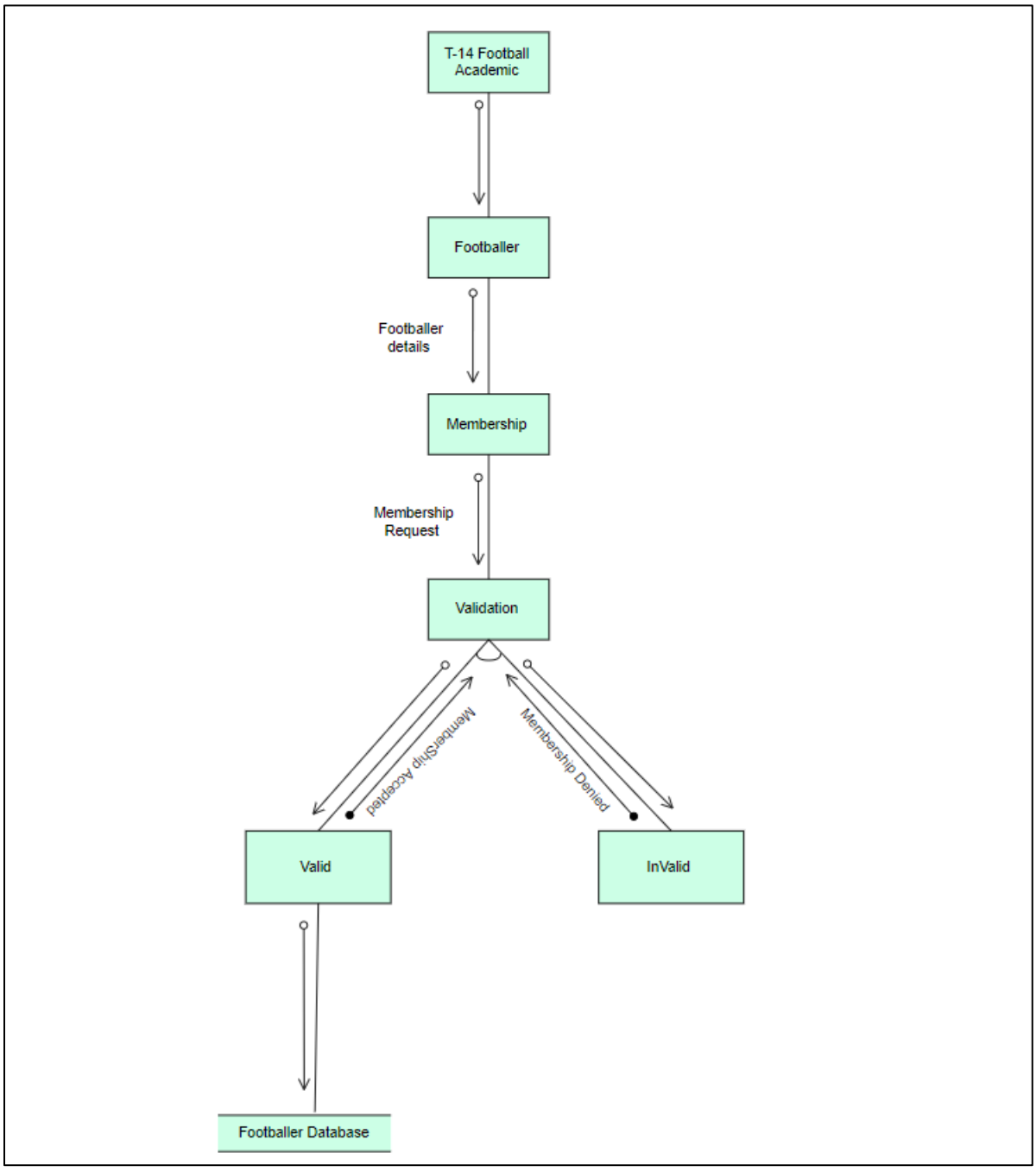


Figure 59: - Structure Chart

The above-given figure is the structure chart for the registered members of the footballer of the T-14 Football academic. This shows that footballer passes the details that are

required for membership. The membership request is stored in the membership module and passes further for validation. If the footballer details are invalid the membership request is denied and sends an error message to the footballer, but if the details are valid the footballer membership successfully and their information is stored in the footballer database.

Module Specification

Module name: Register Membership

Purpose: - To Add the new membership with the required details in the T-14 football Academic system

Pseudocode: -

```
Input Footballer details
Input Membership details
If (the details valid && Membership criteria match)
  Do
INSERT footballer member into the database
Display Received membership Message
END Do
Else
  Do
        DISPLAY Error Message
        End DO
END IF
END
INPUT PARAMETER: - Footballer Details
INPUT PARAMETER: - MEMBERSHIP VALIDATION
GLOBAL VARIABLES: - N/A
LOCAL VARIABLE: - N/A
CALLS: - N/A
CALLED BY: - N/A
```

Conclusion

In the above individual task ‘Register Membership” was a bit difficult for me in comparison to the group task because here I have to complect it by myself. With the help of our module teacher/ leader Mr. Mission Babu Sapkota and my friends and also with my research skills I was able to complect it at an appropriate time. In this, I have created a context diagram as simple as I have to show only the major information between the Footballer, system, and staff through a simple diagram. Modeling a DFD was the most difficult component. I was able to complete it in around 2 days with the help of our Module leader and team members. I successfully produced a structure chart using my knowledge of DFDs for the structure chart section. I was able to complete pseudocode using the structural chart.

I gain more knowledge and skills as I complete different projects, particularly in the area of DFD modeling. It greatly aided me in learning more about Yourdon's structure analysis and gaining confidence in myself.

Individual task

Report Preparation

Done by Name: Mausam Kumar Chaudhary

London ID: 20048455

Introduction:

The first community work scenario is based on a T-14 Football Academic. The given task is an individual task. The assignment was divided into two categories: Group and individual assignment in the coursework. A specific assignment that is assigned to all members of all teams. We must choose one role out of five tasks after completing the group task. The role is given as described below:

i) Registration membership
ii) Design exam text papers and practice test papers
iii) Enroll staff members
iv) Purchase Football kits
v) Report preparation
vi) Post exams notice and preparations
vii) Take a mock test

Environment Model Specification

Context Diagram

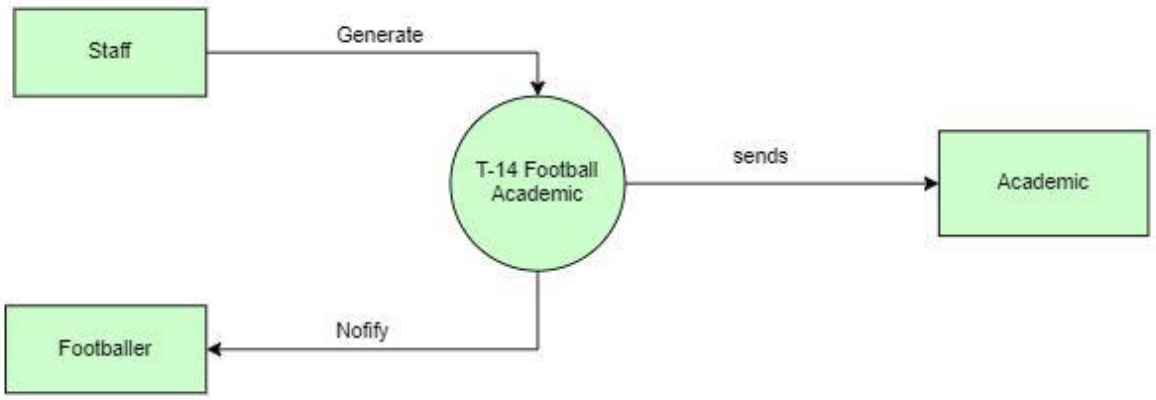


Figure 60:Context Diagram of report preparation

The above-given figure is the structure chart for the report preparation of T-14 football Academic. It consists of three entities which are the staffing entity, footballer entity, and Administrator entity. The staff generates the report that contains footballer details, payment details, Academic details. The preparation report is stored in the system. The system sends all the reports to the administrator. The footballer can also view a report of their details and payment.

Level 1 DFD

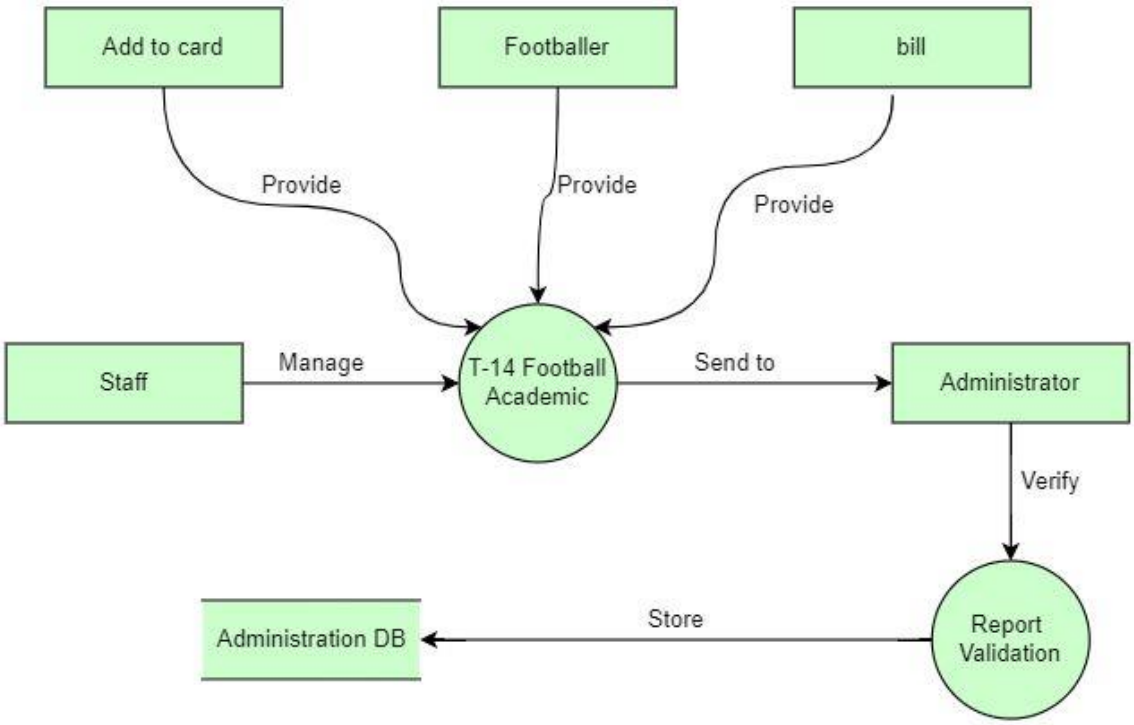


Figure 61:Level 1 DFD of report preparation

The above figure represents the level 1 DFD diagram for the “report preparation” function of the T-14 Footballer Academic online system. We can see here that report details are maintained by staff and are created by the information given by the Add to the card, Footballer, and bill entities. The report is subsequently forwarded to the administration for verification. If the report is authorized by report validation, the data is saved in the administrative database.

Level 2 DFD

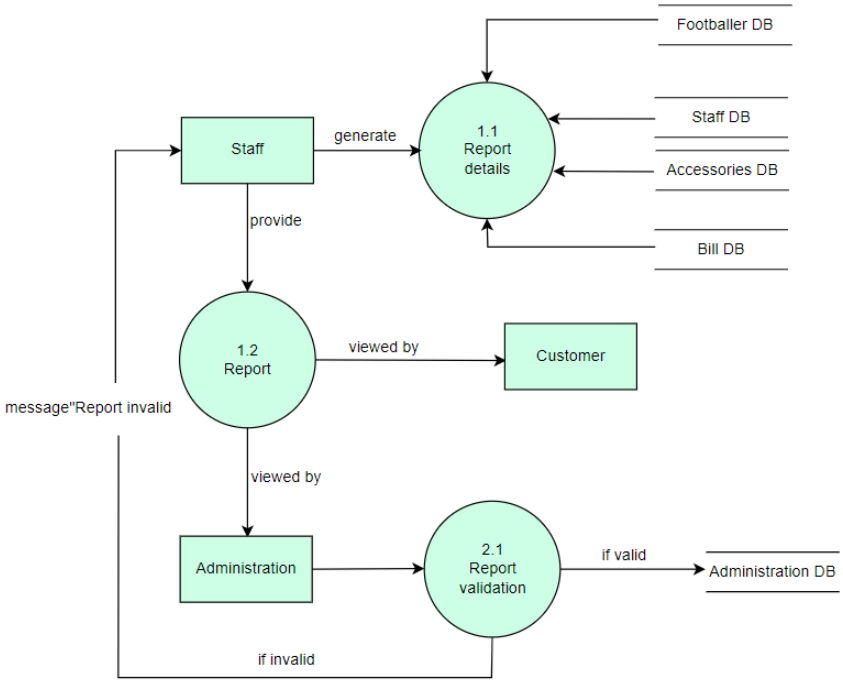


Figure 62:Level 2 DFD of report preparation

The figure above is a level 2 DFD diagram for the "create report" function of the 'T-14 football Academic' online system. Staff will generate the report details from the staff DB, footballer DB, Accessories DB, and bill DB first. The report will be made available to the client and administration for review and confirmation, respectively. If the report is authorized by the administration, it is saved in the administration database; otherwise, the notification "report not valid" is provided to staff.

Structure Chart

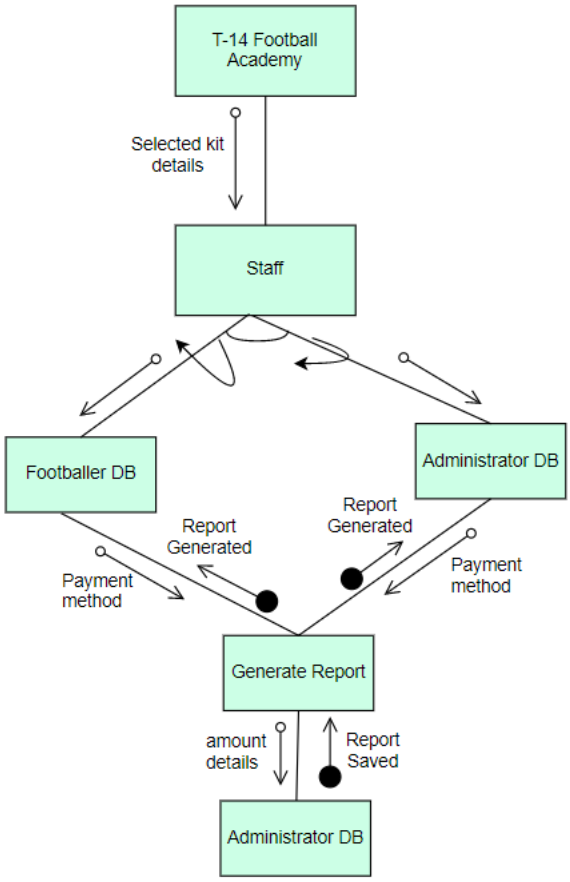


Figure 63:Structure chart of report preparation

The above diagram is the structural chart for the T-14 football Academic prepared report. The structural diagrams show the functions that are utilized to generate a report. The staff can either access the customer database to generate a football report or the administrator database to generate a system report. When the report is created, it is presented to the staff, and the data is transferred to the administrator to be saved, and a message report saved is delivered to the staff.

Module Specification

Module name: Report preparation

START

INPUT select 'Footballer' or 'system to generate

IF (Footballer)

DO

INPUT Footballer's details

IF (Footballer details equals valid)

DO

OUTPUT Footballer activities information

INSERT store report into administrator database

END DO

ELSE

DO

OUTPUT error message

END DO

END IF

END DO

ELSE

INPUT report details

IF (system details valid)

Do

OUTPUT system information

INSERT store report into administrator database

END DO

ELSE

DO

OUTPUT error message

END DO

END IF

END IF

END

INPUT PARAMETERS; footballer details, system details

OUTPUT PARAMETERS: footballer information, system information

GLOBAL VARIABLES: N/A

LOCAL VARIABLES: N/A

CALLS: N/A

CALLED BY: NA

Conclusion

The development process, which involves the production of pseudo-code for footballer reports. This section of the individual job includes a Design specification for the creation of footballer reports, an internal model specification for the generation of footballer reports, and an environmental model specification for the development of footballer reports. After this phase of the individual job, all of the objectives given in the scenario for all of the functions have been met. As a result, it can be considered that the individual task for the creation of footballer reports has been performed at this time.

Individual task

Enroll staff members

Done by: Rojesh shah

London met id:20048486

Introduction

This coursework is about the development of the pre-defined T-14 Football Academy system to create an online registering system. To meet the goal of the coursework, to meet the goal of the coursework, the Yourdon structure method was followed. As the course work was as a group course work it is divided into two parts. The first part was designing a whole system which was done through working together in a group and dividing tasks for everyone. And the second part is individual tasks for each member of the group. The tasks are given below.

1. Register membership.
2. Enroll staff members.
3. Purchase football
4. Report preparation.
5. Take a mock exam.

After dividing the above task in our group, I was able to choose a second task which is to Enroll staff members. In this individual task, I saw that first, we have to make an Environmental model specification and in the Environmental model specification, we have to make a context diagram. Second, we have to make the internal model specification for the system and in that, we have to make,

The Level 1 DFD fragments

Level 2 DFDs for the particular function

Also, at last, we have to make a structure chart for the particular function.

Environmental Model Specification.

1. Context Diagram

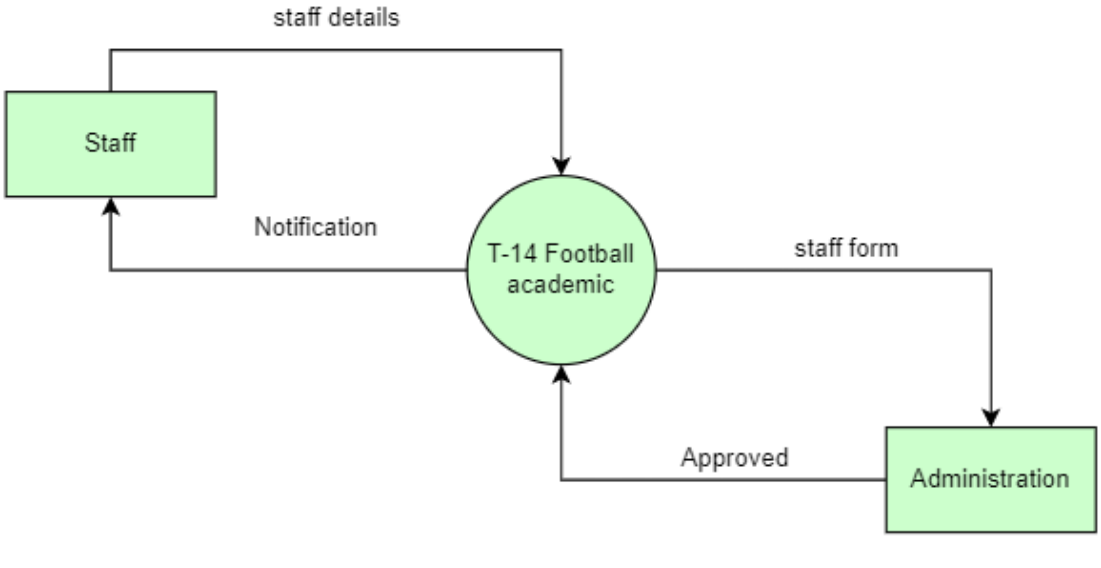


Figure 64:Context diagram of enrolled staff members

The above figure is the context diagram of the Enroll staff members of the T-14 Football Academic. The context diagram of the Enroll staff member contains two entities. The first entity is Staff and the second entity is Administration. The Staff sends the details for the Enroll staff members to the system. In the Administration entity, the system sends the details of the Enroll staff members to the Administration for verification. The Administration analyzes the request and verifies the detail of the staff and it was again sent to the system. After verification, the Enroll staff member was accepted into the system.

Internal model specification for the system

Level 1 DFD

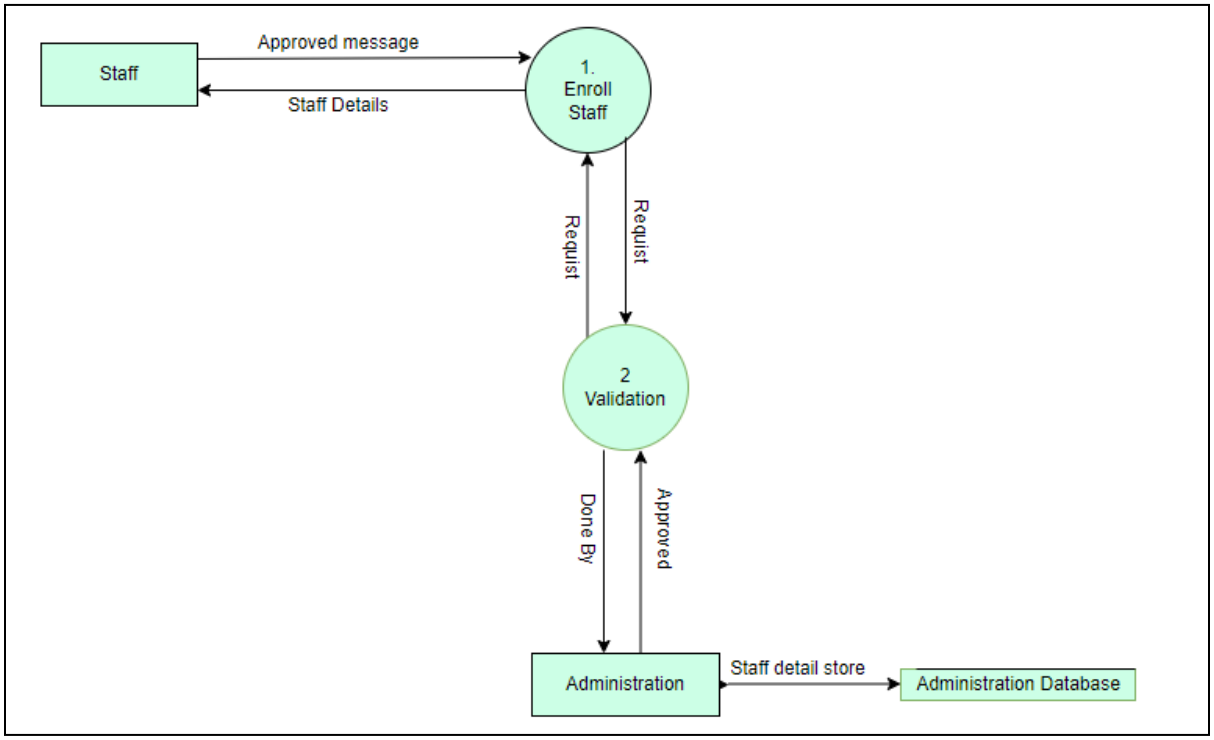


Figure 65:Level 1 DFD of enrolled staff members

In the above, we can see the level 1 Data flow diagram (DFD) of the internal model specification of the T-14 Football academic online system for the Enroll staff members. In the above figure, we can see that staff sends their details for the Enroll staff member process of the system. The details of the staff are sent to the validation process. The validation is then carried out by Administration and if the details of the staff are valid then an approved message is sent to the staff and the details of the staff are stored in the Administration database but if the validation is not approved then a confirmed message is not sent to staff.

Level 2: DFD

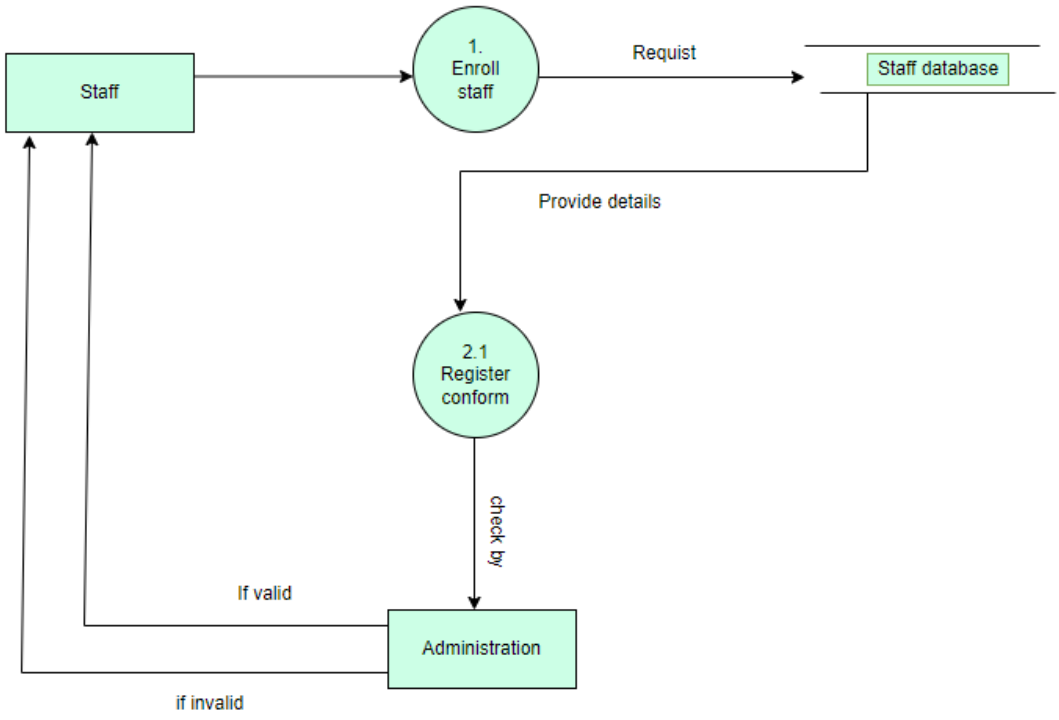


Figure 66:Level 2 DFD of enrolled staff members

The above figure is the level 2 Data flow diagram (DFD) of the T-14 of the Football academic online system for the Enroll staff members' function. From the above figure w can see that the staff goes for the Enroll process where the staff inset his/her details. After that, the data which was inserted will be compared to the staff database and the compare data of the staff will go to the validation process which was carried out by Administration. If the details of the staff and Enroll staff members criteria meet then the approved message is sent to the staff and the data of the staff was stored in the staff Database of the T-14 Football academic. If validation is not approved by the Administration, then the confirmation message was not sent to staff.

Design specification

Structure chart for the particular function.

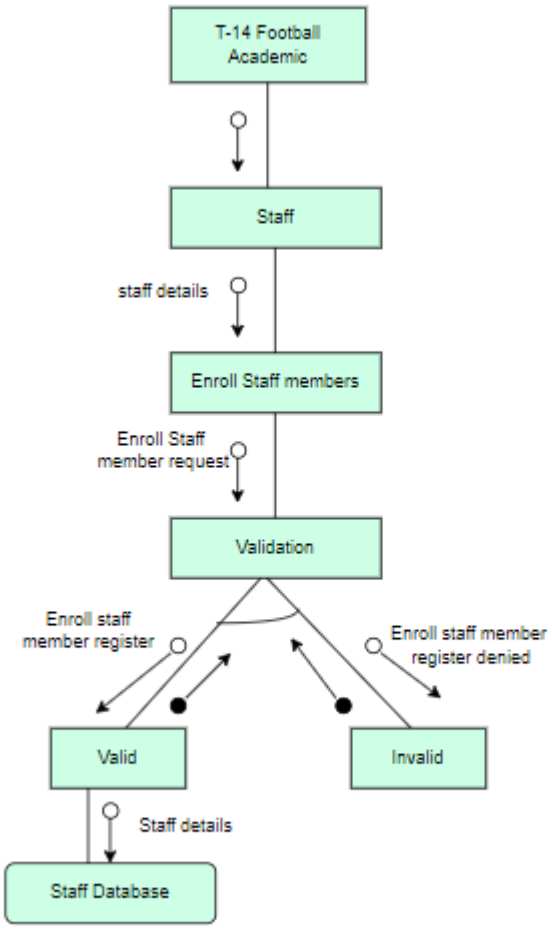


Figure 67: Structure chart of the Enroll staff members

The figure above is the structure chart of the Enroll staff members of the T-14 Football academic. The above figure shows that in the system i.e. T-14 Football academic. staff details are passed for the Enroll staff member request for the process and further passed for the validation. If the staff details are invalid the request for Enroll staff member is denied and an error message is passed to staff. And if the details of the staff are valid then the Enroll staff member registers successfully and the details of the staff are stored in the staff Database.

Module Specification

Module name: - Enroll staff members

Purpose: - To Add the new Staff with the required details in the T-14 football Academic system.

Pseudocode: -

```
START
INPUT staff details
IF (The details valid)
        DO
              INSERT staff details into staff Database
              DISPLAY registered message for enroll staff member

     END DO
ELSE
                (The details invalid)
    DO
              DISPLAY error message
    END DO
END IF
END
INPUT PARAMETERS staff details
OUTPUT PARAMETERS register message, error message
```

Individual task

Report Preparation

Done by Name: Shrawan Kumar Pokharel

London ID: 20048322

Introduction

The given course work is to develop the pre-defined T-14 Football Academy in which we have to create the online registering system. The development of the process is carried by the Yourdon structure method. This coursework is group coursework and has to form the group and must be done in the group. As there is an individual task for each member which is given below.

1. Register membership.
2. Enroll staff members.
3. Purchase football
4. Report preparation.
5. Take a mock exam.

After some work was done in the group the entire member gets the individual task and I was given the last task which was “Take a mock exam”. Which was an easy task for me? First, we have to make the context diagram. And the second task is to make level 1: DFD and level 2: DFD diagram. At last, we have to make the structure chart of the whole system.

Environmental model specification

1. Context Level

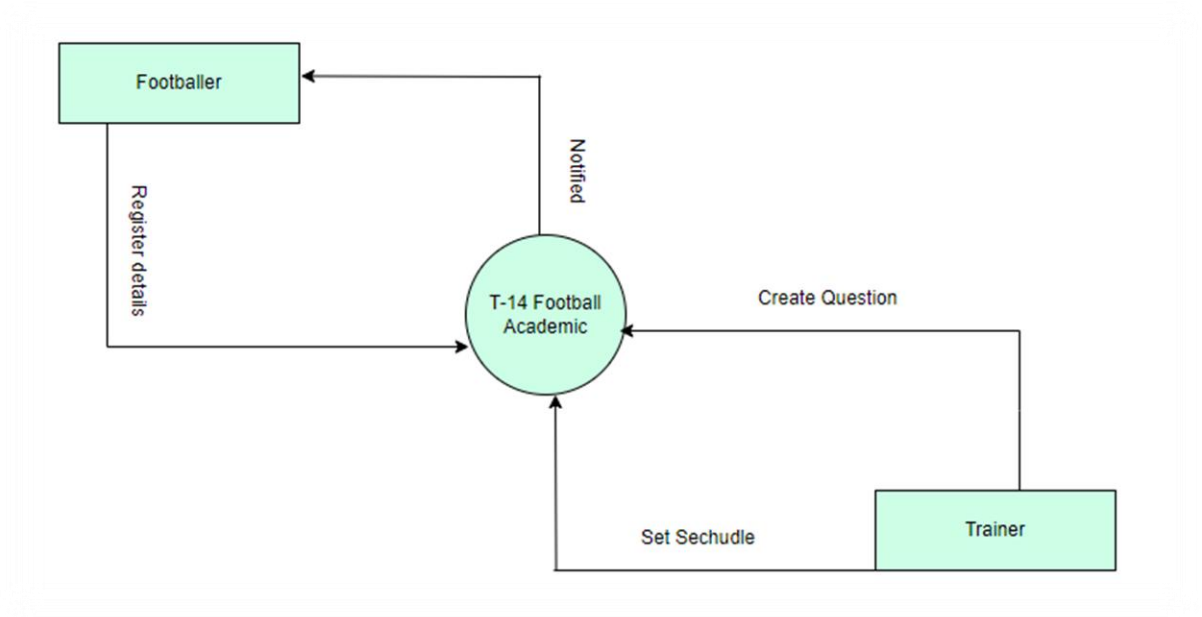


Figure 68: Context diagram of the take a mock exam

The above figure is the context diagram of the T-14 Football academy of the “Take monk exam “. In the given context diagram for taking a monk exam for which there is two entity Footballer and trainer. The footballer sends the request detail to the academic and the trainer creates the schedule and create question and send it to the system. After that, the academic Notified the footballer for the monk exam.

Internal model specification for the system

The Level 1 DFD fragments

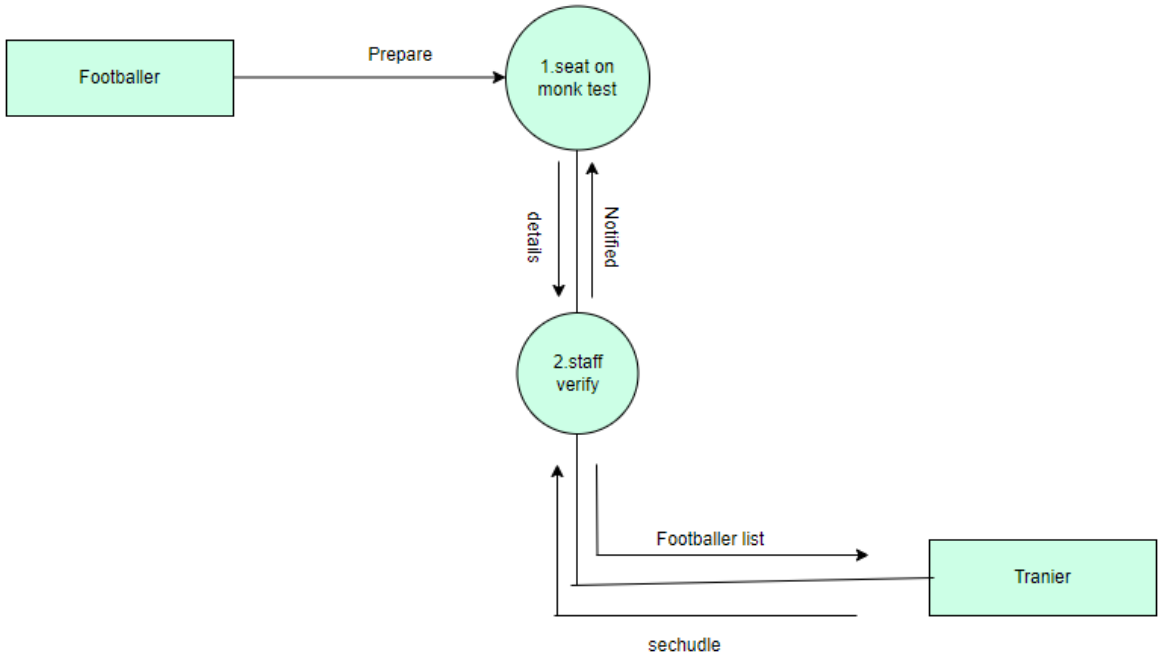


Figure 69: Level 1 DFD of mock exam

The above figure is the level 1: DFD diagram of the system for taking a monk test. The above figure shows that the footballer prepares for the mock exam to seat in the exam. the details of the footballer are sent to for verify to the staff. After that footballer list is sent

to the trainer by the staff and the trainer sets the schedule for the exam and again resends it to staff and staff notified the footballer for the exam.

Level 2 DFDs for the particular function

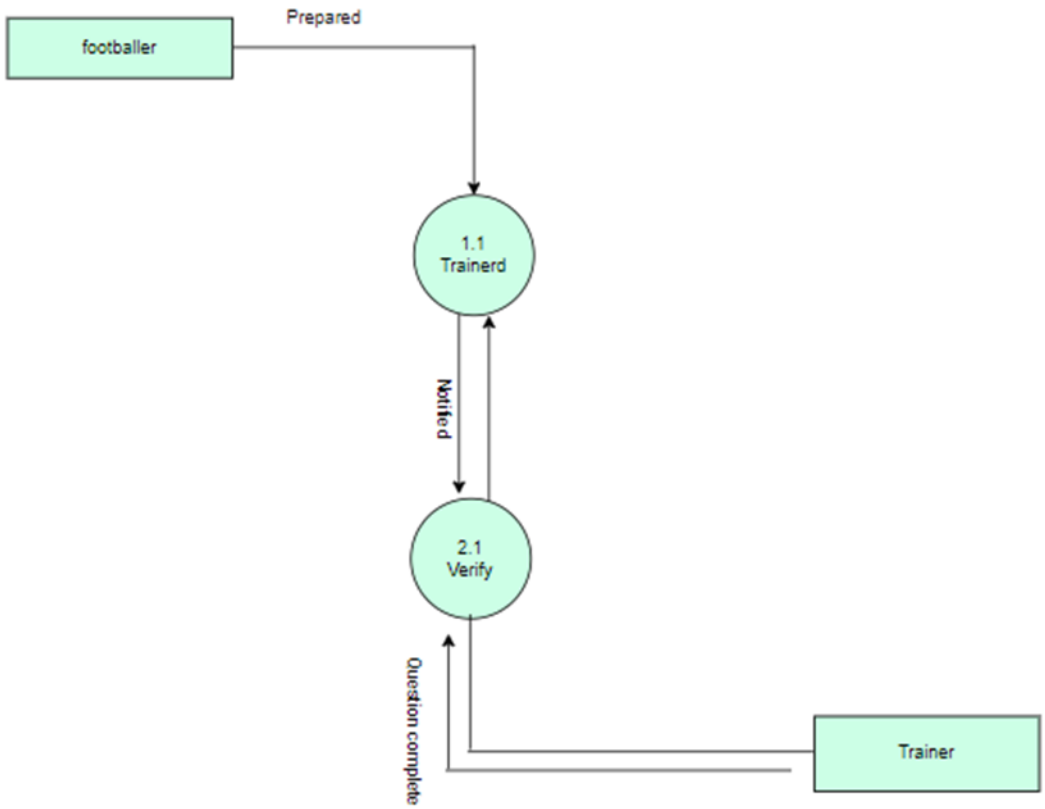


Figure 70: Level 2 DFD of mock exam

Design specification

Structure chart for the particular function.

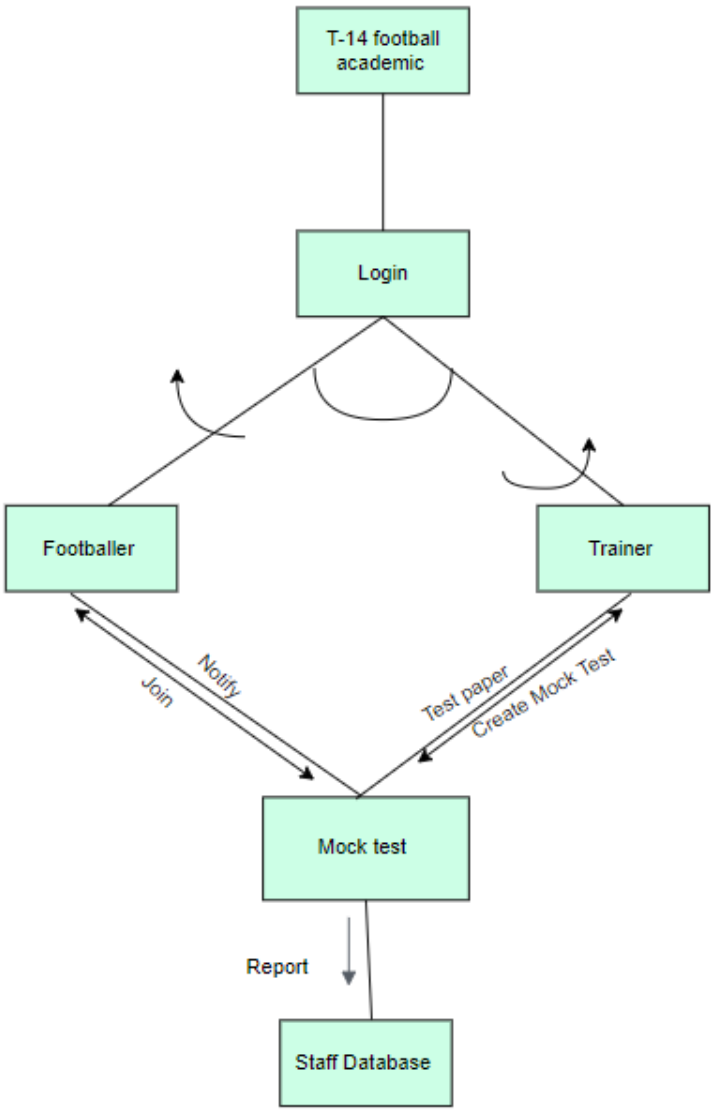


Figure 71: SRS of mock exam

Conclusion: -

In the given individual task, which is to Enroll a staff member was so difficult for me. This coursework is about the development of the pre-defined T-14 Football Academy system to create an online registering system. To meet the goal of the coursework, to meet the goal of the coursework, Yourdon structure method was followed. Yourdon structure was new for me to understand and for the individual task, it was much difficult for me. I have some difficulties in the task in which my module teacher MR mission Babu Sapkota help me and my friend also help me too. The first task is to make a context diagram which was not so difficult for me. But the Level 1: DFD and Level 2: DFD are quite difficult for me but also, I have completed them in time. I have learned many things from this assessment as well as from individual tasks. As I have learned the Yourdon structure method. I have learned the basic elements of notation. This method supports two distinct design phases: analysis and design. YSM includes three discrete steps: the feasibility study; essential modeling; and implementation modeling. One of the benefits of using structured analysis is that the technique takes the client's needs into account from the beginning.

Summary

If we have to write down a summary of coursework then sincerely it would be of more pages than total CW. We all have so many memories and experiences while working together for the group task. The given coursework tested students' basic knowledge about structured software engineering and made us ready to work with the team to work for the same goal within a given specific period.

The Group Coursework was about developing a 'T-14 Football Academy' system for a Football Academy. The system was designed to handle the records of clients and solve the current problems they are facing. The project can process different types of records like client detail, vacancy, payment detail, appointment detail , etc. A client can operate this service through an online or mobile application. The project is mainly engrossed in examining our practical knowledge of Yourdon's Structured Software Engineering processes. The project took our theoretical knowledge about Yourdon Structured Software Engineering and elevated it to be an appeal to the practical level. The course work also gave us an outlook on how it feels to work in a small group to achieve a common goal most effectively and efficiently in a given time scale. In the project, we are provided with a scenario and according to to the scenario, the system is to be created. We were asked to analyze the requirements of the system as the manager and develop a software development process with the detailed environmental model, internal model, and design specifications. All the obligations presented by the scenario were met at the end of the coursework.

We have always been showing a learning attitude towards this module. This coursework was not as easy as it is seen. We have given our best effort. We hope in upcoming days we can cope up with friends and teachers and can do our best.

Working in teams has helped us grow our communication and coordination skills. A lot of research was to be done on various topics to better understand the concepts. It also has developed knowledge on utilizing the resources and building capabilities of its own. It also helps to build confidence in other upcoming coursework. In the field of Technology, it is being updated and new technology is taking the place over the old. Similarly, in the coming days, the tech field will advance more and new features will be introduced overcoming the side effects and flaws that exist. The technology of

Software engineering has made human life easier and advanced, e.g. the CW was a group CW but we group members were able to meet virtually and work together being at different places. We might never meet in person, but in this coursework, we all have met each other. Now we have a teacher-student bond. We pray that one day we all might work together on a project utilizing the knowledge we gained from this CW.

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Glossary

DB: Database

CW: Course work

EMS: Environmental Model Specification

IMS: Internal Model Specification

DS: Design Specification

ERD: Entity Relationship Diagram