# DESIGN AND IMPLEMENTATION OF A FLUTTER BASED FOOTBALL YOUTH ACADEMY MANAGEMENT INFORMATION SYSTEM

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***This abstract article focuses on the development of a management information system for football youth academies using the Flutter framework. The traditional methods of managing football youth academies, such as paper-based systems, can be time-consuming, inefficient, and error-prone. The proposed system will provide data security, accessibility, and analysis capabilities that are not available in traditional paper-based systems. Additionally, the proposed system will enable academy managers to make data-driven decisions that can enhance the development of young players. The article also suggests potential areas of future work, including improving app security, developing a finance department, and creating a new version of the academic system with personalized learning plans and progress-tracking tools. Overall, this article highlights the importance of using technology to improve the efficiency and effectiveness of football youth academies.***

*Keywords— football, youth, academy, system*

## I. INTRODUCTION

In this project documentation, the researchers suggest creating and implementing a management information system for football youth academics based on flutter.

This study suggests using the Flutter framework to create a Football Youth Academy Management Information System (FYAMIS).

There are many drawbacks to organizing youth football academies manually. First of all, they are prone to mistakes, contradictions, and inaccuracies. This is because it is challenging to maintain data consistency because the data is spread across numerous sources. Second, FYAMIS have several limitations, such as data redundancy, data inconsistency, lack of data security, limited accessibility, and poor data analysis. After that, we'll create a program that does the duties we need to be done at the academy every day.

The proposed system will benefit football youth academies by providing an efficient and effective way of managing the academy. This will save time and reduce errors, leading to improved efficiency and effectiveness in academy operations. Additionally, the proposed system will provide data security, accessibility, and analysis capabilities that are not available in traditional paper-based systems.
This will enable academy managers to make data-driven decisions that can enhance the development of young players.

The goal of this project is to build and implement a Flutter-based Football Youth Academy Management Information System (FYAMIS) that may streamline the operation of football youth academies. The system will provide a consolidated platform for handling many parts of the academy, such as player registration, training schedules, match scheduling, and performance evaluation. A user-friendly platform for managing and enhancing overall productivity will be made available by the system.

The researchers should plan & analyse Football Youth Academy Management Information System (FYAMIS)
The researchers should develop and test the proposed management system of the academy, especially, the important functions such as: player registration, training plans, game scheduling, and academy managements.

The researchers should decrease manual procedures and errors in order to increase the management of the football youth academy's efficiency and effectiveness.
The researchers should pay attention to safeguard the privacy and data security of the academy's information, including player information and records.
Proposed sytem

In this paper, the review of the literature is discussed in section II. The methodology of designing and analysing the software is explained in section III, while the implementation of the system and the conclusion of the application are analysed in sections IV and V.

## II. LITERATURE REVIEW

Football is one of the most widely watched games in the world, and it has a big influence on a lot of people's lives. It encourages physical fitness, social engagement, and personal growth in well to being a kind of entertainment. Football youth academies have grown in significance in recent years since they give young people the chance to hone their skills and pursue a future in professional football.

Football youth academies are organizations that educate and foster the growth of young football players to produce elite athletes who can compete at the highest level.

### A. Compare Existing Systems

In this segment we compare proposed system to other existing systems to evaluate and see the difference between them. The systems that we compared: Toni Kroos academy, and Coaching Hub.

TABLE I

REPRESENTING COMPARISON

| Comparison between existing system | | | |
|---|---|---|---|
| Features | Proposed system | Toni kroos academy | Coaching hub |
| Login | Yes | Yes | Yes |
| Registraion | Yes | Yes | Yes |
| Subscription | No | Yes | Yes |
| Security | Yes | Yes | Yes |
| Cloud-based | No | Yes | Yes |
| Notification | No | Yes | Yes |

## III. METHODOLOGY (SOFTWARE PLANNING AND ANALYSING)

In this section outlines the research methodology of this study. It also presents operational frame work, Unified Modelling Language (UML) especially Use case diagram, work break down structure (WBS) which makes The Application's main components to be understood easily.

### A. *Operational Framework*

The Operational Framework starts planning, proposal, chapter one introduction, chapter two literature review, chapter three software planning & analysing chapter four software design, chapter five system implementation and finally chapter six conclusions & enhancement [1]

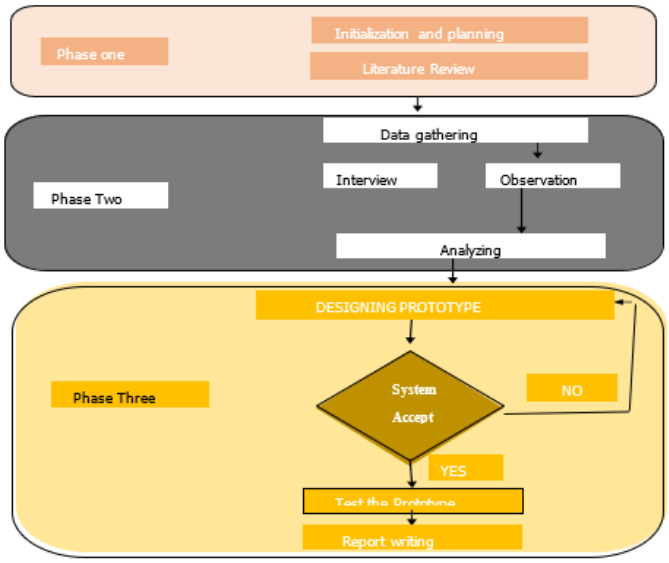


Figure. 1 representing the operational framework of the study

### A. *System Requirements*

System requirement is a characteristic or feature that must be include in any information system to satisfy users. Since the Administrator and the users are the main target collection of our software, I will only concern about some important functions for the admin and the user. The system needs Applications like Mobile, Internet, Play Store or Apple store, and the following interfaces:

1. *User Interfaces:* The keyboard, mouse, menus of a computer system. The user interface allows the user to communicate with the operating system.
2. *Software Interfaces:* The languages and codes that the applications use to communicate with each other and with the hardware.
3. *Hardware Interfaces:* The wires, plugs and sockets that hardware devices use to communicate with each other, computer systems, or any other medium of communication. A physical interface is the interconnection between two items of hardware or machinery. [1]

TABLE 2

REPRESENTING SOFTWARE REQUIREMENT

| Requirements | |
|---|---|
| Operating System | Android 10 and Ios 14 |
| Front End | Flutter |
| Back End | Mysql |

### B. *User Requirement*

A document that defines what the proposed system must be capable of doing to solve the problems of a defined set of employee system. The user requirements specification should be completely independent of any solution-oriented and must

use terminology from the problem domain of the users. It must be understandable by the intended users who must "buy in" to it. Therefore, it is most unlikely to be created using a conventional requirement-analysis method, since these introduce solution bias, representations, and concepts that are rarely understood by (and are irrelevant to) the users. [2]

### C. *Work Break Down Structure*

A Work break down structure (WBS) is a vehicle for breaking an engineering project down into subproject, tasks, subtasks, work packages, and so on. It is an important planning tool which links objectives with resources and activities in a logical framework. It becomes an important status monitor during the actual implementation as the completions of subtasks are measured against the project plan. *[3]*

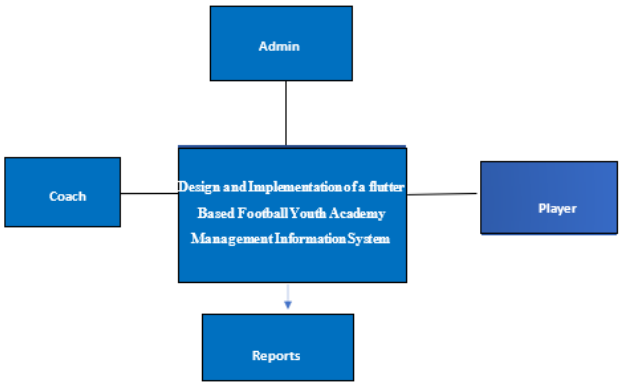


Fig. 2 Representing work break down of this study

### D. *Software Developmental Model*

The prototype model is a preliminary version of a software system that is used to test and evaluate its design and functionality before it is fully developed and released to the market. The purpose of creating a prototype model is to identify and address potential issues or flaws in the design early in the development process, before significant resources are invested in the final product.

So according to the study prototype model is suitable for it to choose as software development life cycle. The following diagram representing the life cycle of the project.

### E. *Feasibility Study*

A feasibility study for an information system project is an in-depth look at the project in order to determine whether or not an organization should proceed with its implementation. Feasibility studies provide project managers with an overview of the primary issues related to the project, as well as insights about the outcomes of the project, before the company invests too much time and money. Feasibility study is divided into four types : Technical Feasibility, Operational Feasibility, Economic Feasibility and Schedule Feasibility. *[4].*

### F. *UML Modelling*

The UML stands for Unified Modelling Language, UML is a way of visualizing a software program using a collection of diagrams. The notation has evolved from the work of Grady Booch, James Rumbaugh, Ivar Jacobson, and the Rational Software Corporation to be used for object-oriented design, but it has since been extended to cover a wider variety of software engineering projects. Today, UML is accepted by the Object Management Group (OMG) as the standard for modelling software development.

A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal. It consists of a group of elements (for example, classes and interfaces) that can be used together in a way that will have an effect larger than the sum of the separate elements combined [5]

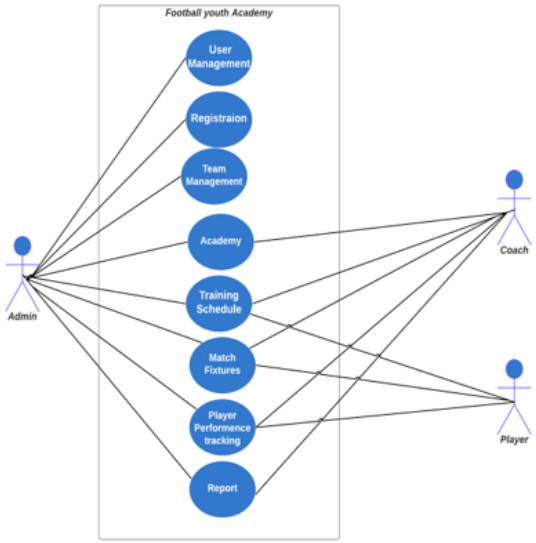


Fig. 3 representing the use case diagram of the paper

## IV. DESIGN AND IMPLEMENTATION

The first step in the development phase for the purpose of being defined, a system in sufficient detail to let its physical realization is named by design. The software design which is involved three technical activities which are design, coding, implementation and testing that are required to build and assure the Application have been specified by the software requirements.

A. *Architectural Design*

The program is recognized to be a system with many components interacting with each other by an architectural design since it is considered to be the highest method of the system. According to this level, the idea of proposed solution domain is gotten. An architecture design is a step that reveals a structured solution that fulfils all of the operational and technical requirements.


Fig. 4 represents architecture design of "Flutter Mobile Application"

B. *User interface design*

User interface (UI) design is the design of user interfaces for software or machines, such as the look of a mobile app, with a focus on ease of use and pleasure ability for the user. UI design usually refers to the design of graphical user interfaces—but can also refer to others, such as natural and voice user interfaces. [6]

Fig. 5 player reg.


Fig. 6 Login

C. Database Storage

Design for database for using MYSQL with relational database management system Provides minimum search times when locating specific records. That will provide Stores data in the most efficient manner possible to keep the database from growing too large, makes data updates as easy as possible and creating more flexible enough to allow inclusion of new functions required of the Mobile apps.

D. *Database design*

Database design process integrates relevant data in such a manner that is can be processed through a mechanism for recording the facts. A database of an organization is an information repository that represents facts about the organization. The database design is a complex process. The complexity arises mainly because of the identification of relationships among individual components and their representation for maintaining correct functionality are highly involved. The complexity increases if there are many-to-many relationships among individual components. This section discusses about the database created for this project. The database is created using MYSQL.

The word database design can be used to define many different parts of the design of all existing database system. Designing database is very important in my study, thus some of the FYA Mobile Application related tables were presented below.

TABLE 3

REPRESENTING USER REGISTRATION

| User_id | username | password | Usertype | Status |
|---|---|---|---|---|
| **001** | Sharif@gmail.com | 123@ | admin | active |
| **002** | Ceyga@gmail.com | ceyga@123 | coach | active |
| **003** | Ahmed@gmail.com | Ahmed@004 | player | active |

E. *ERD OF THE PROPOSED SYSTEM*

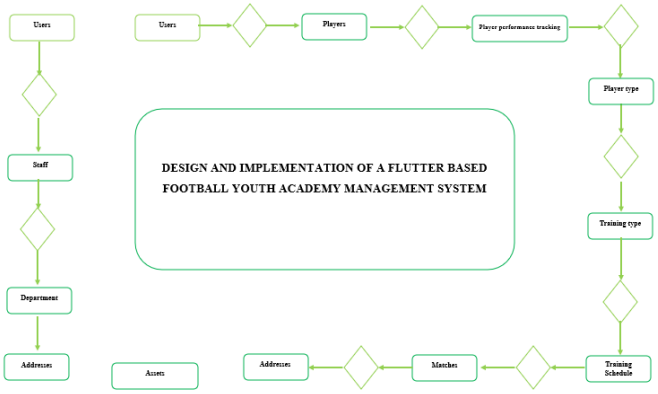


Figure. 7 representing erd of proposed system

F. Implementation

The mobile application was developed using Flutter as the frontend framework and Dart as the coding language. It runs on Android and iOS platforms. The backend was built with PHP and a MySQL database to store and retrieve data.
The key modules consist of:
Authentication: Handles user registration and login using the MySQL database.
Database: Makes API calls to the PHP scripts to perform CRUD operations on the MySQL tables.
UI: Consists of different screens to display data and allow user input.

The main functions include:
User registration and login Store and retrieve data from the MySQL database.
Display data from the API calls in Views and custom widgets
Allow the user to input and update data using Form widgets
Secure communication with the backend using HTTPS.

Fig. 8 employee test form

## V. CONCLUSION

The key objective for developing this project is to develop flutter-based football youth academy management information system, in Somalia and then, the project will be applicable to the other organizations like this. Furthermore, here are the details of the project objectives that have been accomplished.
This research studied the current mobile flutter-based football youth academy management system in Somalia. This study focused on the current way of fulfilling the flutter-based football youth academy in organizations in Somalia.

The researcher designed the flutter-based football youth academy using modelling tools such as unified modelling language (UML) diagrams, including use case diagrams and class diagrams.

The researcher coded the proposed system and tested it during the implementation phase of the project using flutter as the front end and MySQL for the back end, eventually achieving this objective properly.
Generally, all the objectives above mentioned have been attained and the constraint of the users has been met through the project.

A lot of experiences have been gained during this project such that the literature review provided knowledge of existing system of football youth academy systems for organizations, and also it helps in identifying the weaknesses and the strengths of the developing system by comparing the features of the system that is going to be developed with three existing systems which are related to it.

During the methodology study, it identifies the software engineering methodology for any software engineering system. Moreover, one of the most experiences gained during this project was the methods used to get the requirements from the user and doing the practice in analysing the collected requirement to achieve the objectives of the system.

The authors still grabbling to expend this application to cover all possible user requirements.
Future work is an essential component of any thesis in computer science. Because, it provides a roadmap for future researchers and they can help guide the direction of future work in the area of study. In this composition, the researcher will outline some key considerations and strategies for developing important future works.

The development of a mobile app for a football youth academy is a significant achievement, but there are opportunities for future work that can enhance the app's functionality, security, and user experience.

Another area of focus is the development of a finance department within the app. This could involve the integration of features such as budgeting tools, payment processing, and management tools to help the academy better manage its finances. These features are designed for financial academy.

## VI. ACKNOWLEDGMENT

We thank the almighty God for allowing us to do our graduate research.

Besides, we would like to express our sincere gratitude to our supervisor **Dr. Mohamed Adam Isaak** who gave us ideas, comments, encouragement, and advice in the course of writing this research. We have learned a lot from him and we are fortunate to have him as our mentor and supervisor.

We would also like to thank the authority of the UNIVERSITY OF SOMALIA (UNISO) for providing us with a good environment and facilities such as a Computer laboratory to complete this project with software that we need during the process. We would also like to give our thanks to all our classmates with whom we have been studying for four years.

Finally, we would like to thank everyone who supported us during the writing of our thesis.

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