



Designing a Training Management System

Bader Al-Salmi and Samiha Najah

EasyChair preprints are intended for rapid dissemination of research results and are integrated with the rest of EasyChair.

August 29, 2022

Designing a Training Management System

Bader Nasser Mohammed Al Salmi
Computing Department
Middle East College
Muscat, Oman
18F17796@mec.edu.om

Samiha Najah
Computing Department
Middle East College
Muscat, Oman
samiha@mec.edu.om

Abstract— Industrial Training is of immense importance to university students as it helps them to gain much deeper knowledge about the workplace’s environment and enhances their technical skills. Many students are already aware of the training’s importance but justify their less participation in such opportunities by the fact that they miss lot of details about each of them. The aim of this article is to study the design of a Training Management System (TMS) for the students in Middle East College. The objectives of TMS is to notify the students about recent training opportunities and to share with them details on other student’s experiences in completed trainings. To complete this project, Agile Dynamic Systems Development Method was followed as a methodology and different design illustrations have been prepared in order to design both the static and dynamic aspects of the system. In the light of the studied design, the final system has been prepared and tested. The testing reflected impressive feedback and adequateness with the student’s expectations.

Keywords—Training, Information Management System, Web application, Design, Students,

I. INTRODUCTION

TMS is a system that helps the students to find trainings in any institution. “Training Management Systems can resolve most issues by storing operational and training requirements in a centralized relational database, that can be accessed anytime and from anywhere by all team members” [1].

The essential functionality in these systems is to create a new environment to start searching for training opportunities and previous experiences in smooth method.

According to [3] “... 'The Affect Based Learning Matrix' has been constructed in order to promote processes for continuous learning within organizations when taking employees automatic thoughts and emotional aspects into consideration. This is assumed to improve the organisational learning process since vague wordings and unspoken negative emotions make people passive in finding new solutions”. [3]. So, the training information should be published with full information to help students know what they wants from the training to improve them skills.

Daleel is an example of Training Management System belonging to the Ministry of Higher Education in the Sultanate of Oman. This system shares training courses in various educational specialties and display it with many useful information about that courses. Daleel center use Linked in, Instagram, website... etc, to publish all courses what they have. (<https://om.linkedin.com/company/مركز-دليل-للتدريب>)

Daleel1010 is initiative joint between Omantel and Infoline LLC, it is a tools help to avail information on a range of services. It is available 24/7 access by mobile App, website

or by phone. Daleel1010 is first smart guide in Oman. For Training, write in search bar the course name you look for than Daleel1010 will give you the available institute give that course. (<https://www.daleel1010.om/en>)

In each Information System, a database storage is necessary to save all data and information. The database helps to generate reports, get quick search for data, etc.“ Once a business is committed to a database, it becomes critically dependent on the successful operation of business applications. All these applications are using a database to store and retrieve data.” [4]. So, TMS should have a database to save all information about the trainings, which will helping students to get all information in anytime with quick respond.

II. DESIGN ILLUSTRATIONS

System design illustrations describe the client requirements into virtual form so that the final outcome become easier to build. Blow diagrams which includes, Flow Chart Diagram, Use Case Diagram, Context Diagram, Data Flow Diagram, and Entity Relationship Diagram are as following: Flow Chart Diagram

System flow chart diagram is use to explain the working flow of whole system. Through flow chart diagram client or user understands how the system will work. The rectangle in this diagram represent the main entities of the system where diamond symbol represents the decision the system will make and with the help of arrows those systems connected to each other so that a clear image of system flow build up. See the illustration Figure 4 1 System Flow Chart.

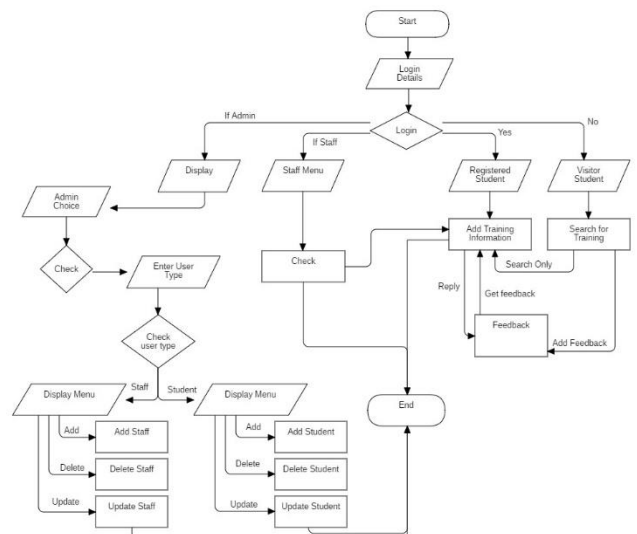


Figure 1.; Flow Chart

Use Case Diagram

System use case diagram is used to explain the role of each user in the system. In training management system, we have four different type of users i.e. admin, staff, registered users and visitors. Each having different roles as shown in **Error! Reference source not found.** below:

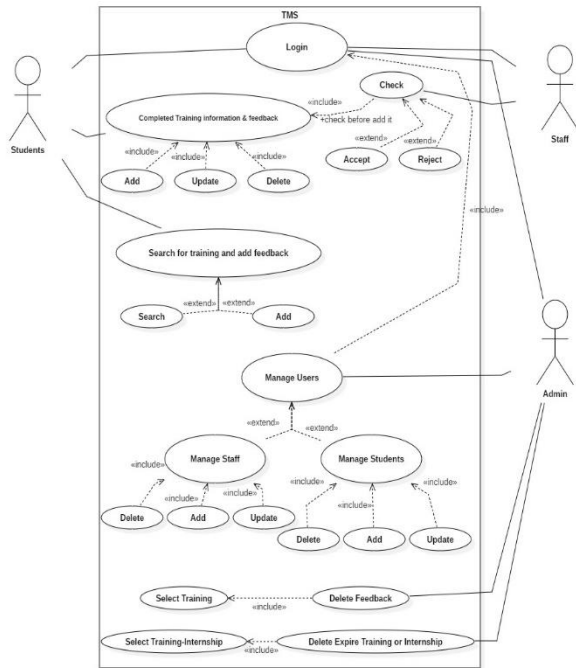


Figure 2: Use Case Diagram

Context Diagram

System context diagram is well known as level 0 data flow diagram where system boundaries defines the working flow and main working of the system. Here system has four main entities and working flow define with the help of arrows. For the illustration see **Error! Reference source not found.**

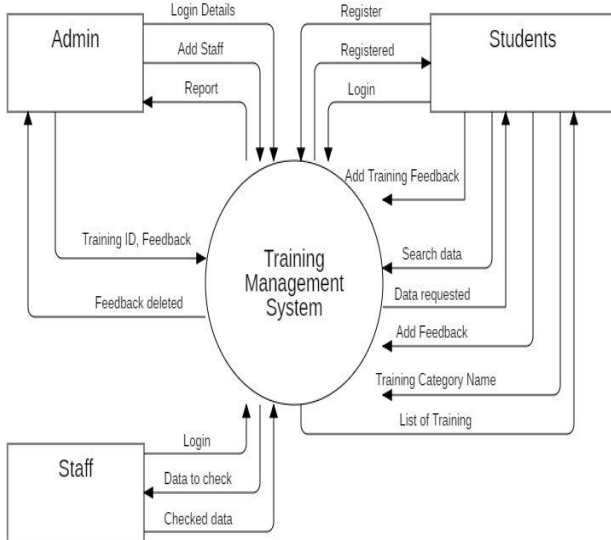


Figure 3: Context Diagram

Data Flow Diagram

Data flow diagram is more explained form of context diagram where it break all the main functionalities into smaller parts to show the flow of data in detail. Data flow diagram also

explain that from where the data comes from and data into the system. For the illustration see **Error! Reference source not found.**

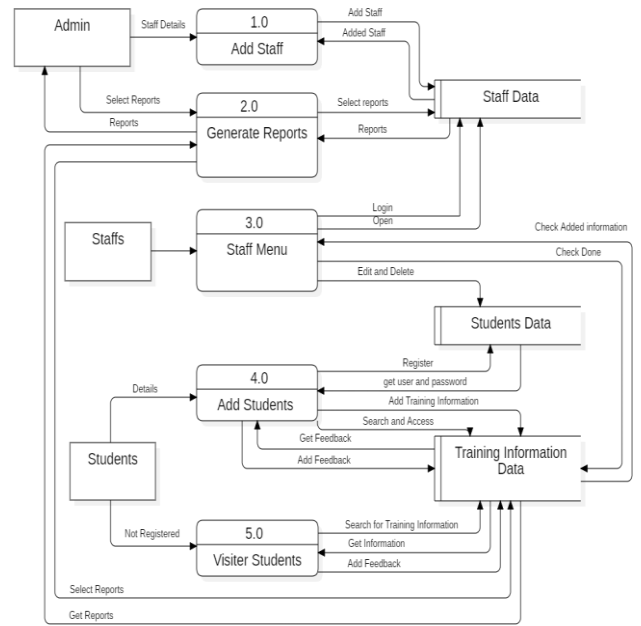


Figure 4: DFD 0

Entity Relationship Diagram

Entity relationship diagram explain the database view where each entity has relationship with each other. Training management system's database design contain six tables in total where relation between each of them shown in the **Error! Reference source not found.** below:

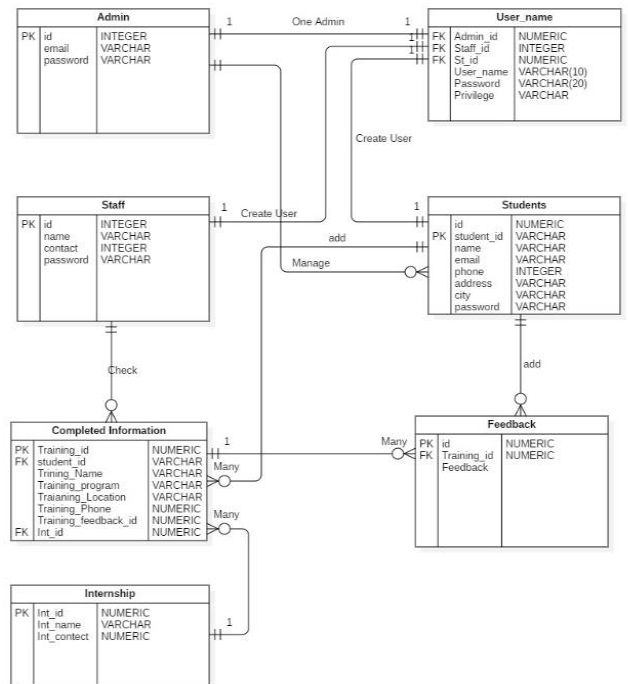


Figure 5: ERD

Security Measures

Training Management System comprise sensitive data related to students and institute for which security measures should not be neglected. In order to implement best practice for system security and for that purpose PHP is quite a good choice known as powerful- server side language and assist you to strengthen defense mechanism and protect system from hackers. Defense of a web applications from a wide range of attacks is a definitive obligation of a web engineer. You ought to fabricate your web applications adequately defensive to have no security issues or escape clauses. Protecting your Data ought to be vital for your organization. Below are some of the Security measures applies to protect a system:

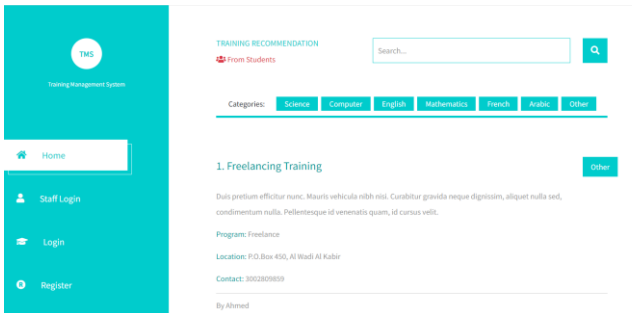
- Make users to use strong password by applying the validation while registering for a system.
- Unauthenticated user is not allowed to access the system, only student/teacher with right credentials can access their respective dashboard and perform actions accordingly.
- Implemented Role- Base Access Control to avoid ambiguousness.
- Admin authentication has separate route which will not visible for other users, which admin can access and login to their system

All the word done using sessions which is very secure for login to a system and session destroyed immediately when user logout from system.

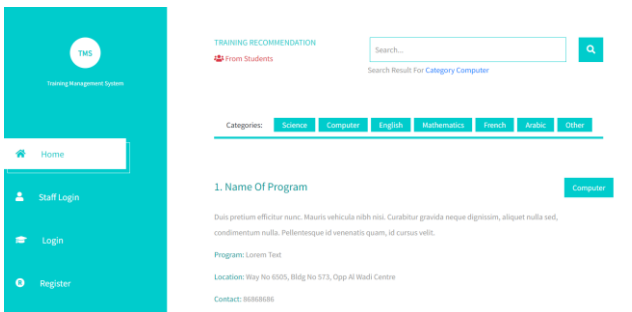
III. IMPLEMENTATION OF THE DESIGNED SYSTEM

HOME Page

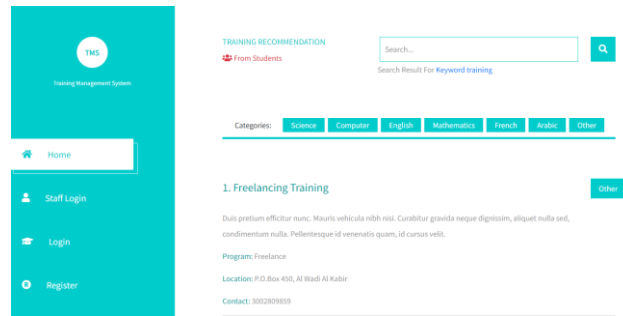
TMS home screen displays all the training details by the students which are approved by the staff or administration.



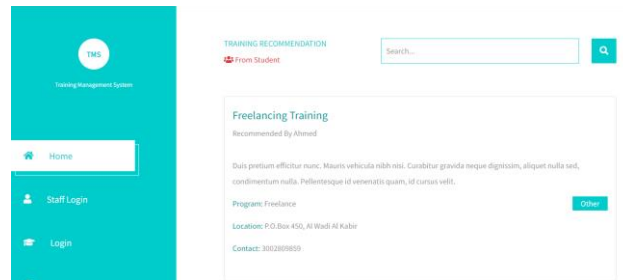
Users can also search for training details based on training category for which all the related results displayed.



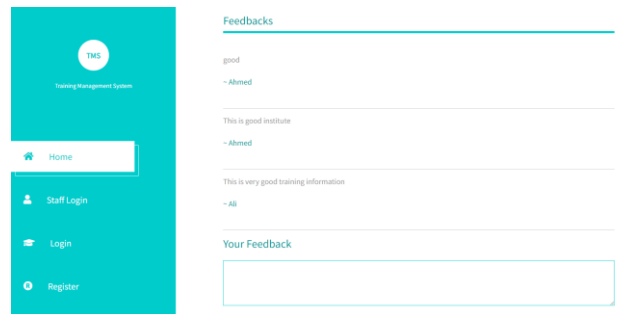
Users can also search for training details based on keywords and search result displayed if any of training detail matched.



All the displayed training details redirects to single detail page where all the training detail is displayed with student's feedbacks.



There is a feedback option for students to add feedback for specific training detail which helps others to find a best training recommendation.

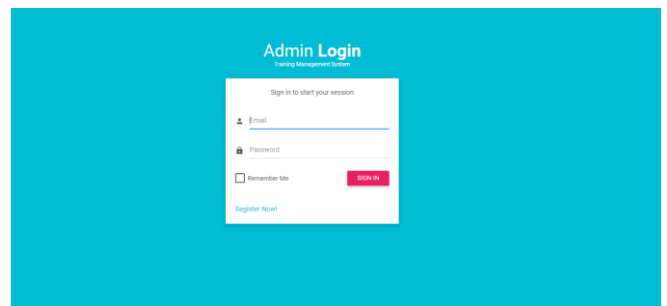


ADMIN Page

Admin Module is designed for administration of a web system, whose login link is not there in home screen of system, this is a secret link only admin have.

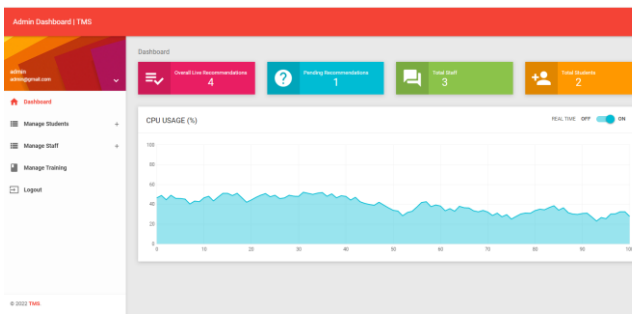
Admin Login

Admin login page include email and password, only person with write admin credentials can access admin portal.



Admin Dashboard

Admin can login to following admin dashboard, with all the brief detail in their dashboard.



Manage Students

Admin have access to manage all students where they can view all students, can edit student details, and delete any student.

CONCLUSION

Students seeks for best recommendations for their training from other experienced students. To fulfill student's demand and provide them with a platform in which they can share their personal experiences regarding training details, institute, a Training Management System was proposed. TMS help the students to add complete training details. This system saves the user's time and effort and also everyone looking for student's experiences in completed trainings.

In the designed and developed system, three types of users are included: student, staff and administrator. The web site can be visited also by anyone else without authentication but with limited functionalities. The system allows the registered students to give their feedback on specific training detail which will attract students' attention and make the information authenticated and stamped. Students can also view all their added training details and their statistics such as how many training offers are currently available, or still pending. The students can add feedbacks on their experiences. A staff or admin have access to approve or disapprove training detail. Staff are managed by admin who can add, delete or update their details.

This project basically helps the students to find a suitable place of their choice for trainings thanks to the detailed information provided on each training and to other student's feedbacks.

REFERENCES

[1] J. Bahlis, *Training Management System – The Missing Link*. 2018.

[2] R. K. Ellis, *A Field Guide to Learning Management Systems*. American Society for Training & Development (ASTD), 2009.

[3] S. Hawamdeh, "Knowledge Management", 2005. Available: 10.1142/5971 [Accessed 31 July 2022].

[4] S. Zygiaris, "DataBase: Administration and Security", *Database Management Systems*, pp. 195-

217, 2018. Available: 10.1108/978-1-78756-695-820181007 [Accessed 31 July 2022].

[5]G. Hutcherson, "Data coding, management and manipulation", *Journal of Modelling in Management*, vol. 6, no. 1, 2011. Available: 10.1108/jm2.2011.29706aab.001 [Accessed 31 July 2022].

- [6] H. Shahir, S. Daneshpajouh and R. Ramsin, "Improvement Strategies for Agile Processes: A SWOT Analysis Approach", *2008 Sixth International Conference on Software Engineering Research, Management and Applications*, 2008. Available: 10.1109/sera.2008.33 [Accessed 31 July 2022].
- [7]B. Boehm and R. Turner, "Management Challenges to Implementing Agile Processes in Traditional Development Organizations", *IEEE Software*, vol. 22, no. 5, pp. 30-39, 2005. Available: 10.1109/ms.2005.129 [Accessed 31 July 2022].
- [8]H. Shahir, S. Daneshpajouh and R. Ramsin, "Improvement Strategies for Agile Processes: A SWOT Analysis Approach", *2008 Sixth International Conference on Software Engineering Research, Management and Applications*, 2008. Available: 10.1109/sera.2008.33 [Accessed 31 July 2022].
- [9]"Website Development Tutorial", *Tutorialspoint.com*, 2022. [Online]. Available: https://tutorialspoint.com/website_development/. [Accessed: 31- Jul- 2022].
- [10]"PHP Tutorial", *W3schools.com*, 2022. [Online]. Available: <https://www.w3schools.com/php/>. [Accessed: 31- Jul- 2022].