

Chapter 7

Web-based Industrial Training Management System

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Abstract

Industrial training is compulsory for each student in higher education towards completion their study. Meanwhile, managing data become problematic when it is involved complex steps for many users. Systemic information flow is key when dealing with a large sample size with complicated infection. Inefficient information will cause problem to grow exponential when processing the information for a report. The same problems were occurred in faculty to manage and Industrial training process and flow especially in monitoring the student's placement. Therefore, a Web-based management system was planned, designed and developed to simplify the process of industrial training management flow. The modularity of Model View Controller (MVC) framework is used to achieved the whole implementation of complex interaction. Furthermore, it is allowed the system development to accommodate for multiple variables (role) in a system. With the systematic data management that is hosted on cloud made the centralized accessed from all primary role (coordinator, students, industry and lecturer) of the system. The Web-based industrial training system has successfully developed to facilitate the process flow of industrial training management.

Introduction

At present, Faculty of Electrical Engineering, Universiti Teknologi MARA (UiTM) Caw. Pulau Pinang was realized that industrial training course is an important element to be provided in Curriculum syllabus for their undergraduates program (Ramlan S.A et al, 2017) especially for Diploa Electrical Engineering program. The course was designed to fulfill and equip the skills throughout real-time experienced such as technical skills, hands-on activity, soft skills and communication skills. The benefit of industrial training for higher education students has been discussed in previous study such as by Kingsley. K. and Niroshani. P.(2015) and Sahrir, M. S et al (2016).

Systematic interaction especially in multiple roles is required to have a system with enable the centralized communication. N. Rathod et al (2013) has been developed an efficient monitoring system with online based. Beside that, Web-based system such as Learning Management System (LMS) has been discussed by Chung. C., et al (2013) in their previous research. Meanwhile, Leff, A., & Rayfield, J. T. (2001) was introduced a flexible concept in Web development by using MVC framework. Therefore, a Web based system with MVC framework is appropriate to meet all the requirements for managing an industrial training especially in student placement and evaluation process.

Industrial training is one of the most critical process during professionals training where the years of studying will be put into a state of actual implementation or hands on (Pillai, S., and Yusoff, M, 2007). The process will involve several element that will interact and impact the student's experience.

At the end of the industrial training, a summary of the industrial training will be made with a collection of information. This will introduce some level of delayed feedback, where the information

is delayed up to 3 month where the start of industrial training until the ended of it. Delayed reporting may result in various issues including the missing information from poor reporting, slow response in potential misalignment of project assigned and even potential hazards that might be exposed to the students.

Cross Interaction

Interaction of multiple roles from the industrial training can be illustrated from figure 1 where each interaction between each group is handled via LI Management System by individual unique interactions and purpose.

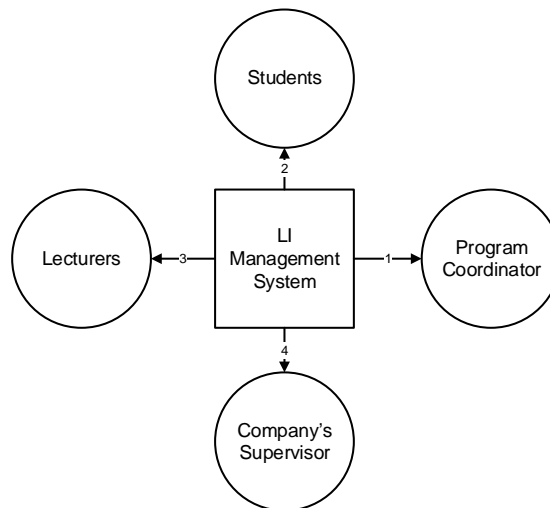


Fig. 1 Interactions of 4 group of user with LI Management System

- a. Program Coordinator
Program coordinator will be focusing in configuring environment and blasting informing. Previous methods is using whatsapp group as the methods, however due limited control over whatsapp group, cause the objective to be diluted with useless information that will flood the groups, a dedicated messaging channel will be integrated with the system for streamlined and fitting the objective.
- b. Students
Students has the most interaction with the system. This started once the program coordinator start to inform the program, applying for placement from company, selecting the placement, writing report and ultimately being graded of their Industrial Training performance.
- c. Lecturers
Lecturer will be using the system interactively in ways to either support the program coordinator, grading the students or identifying the students to be visited.
- d. Company's Supervisor
Supervisor that was assigned during the industrial training is one of the most important feedback that the system would like to have & the most flexible feature with out rigid structure. This is due to the nature of some company are lacking of investment in IT area in the job nature which make mandating the feature to be not possible.

Functionality

The management of the system basically broken down to several main modules that critical to ensure the interaction to work. This is to ensure that any further work that wishes to be done with

the system, does not require to rewrite the system, but to only interact with the desired component as required.

a. Communication Module

Communication is the most critical in managing the system. The impact of broken communication modules will be disastrous where the misinformation or delayed information will cause problems to the any involving party. Communication Modules is using the common interfaces to ensure stream next level integration is simple.

- a. eMail is the most simple method for Communication modules but most powerful. This methods is reactive, where any email that wish to be send, is required to be cc'ed to the system email. With this, the information shall be fully integrated into the management system
- b. MQTT is one of the technology that is being used as chatting program such as Whatsapp. However taking just the technology & building the system dedicated app will provide the required prompt & interactive interface to the end user.

b. Information Entries

The feature are basic & plain, however required & critical, where entering information for the system is required to be available via web interfaces. This feature has link to each of the group interactions and is stored as required.

c. Reporting Modules

One of the most used feature by program coordinator and lecturer is to identify the current status of the program. This is where reporting modules will play the role without exporting.

Conclusion

The management system will allow continuous improvement while maintaining the operation of industrial training in control. Witj the mechanism designed, the system value can ve improved without a need to rewrite the software.

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