SOFTWARE DEVELOPMENT'S HUMAN RESOURCE ALLOCATION SYSTEM

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DECLARATION

I hereby declare that this project report entitled

SOFTWARE DEVELOPMENT'S HUMAN RESOURCE ALLOCATION SYSTEM

is written by me and is my own effort and that no part has been plagiarized without citations.

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DEDICATION

To my beloved parents

Daddy & Mummy

(Baldev Singh & Jasbir Kaur)

dearest sister Sharan and brother Balvin

Thank you for the blessing and given encouragement

All my respected lecturers

And fellow friends especially Emi for the encouragement given

"Where there is a will, there is a way"

ACKNOWLEDGEMENT

First and foremost, my word of gratitude goes to God. Without his blessings I would not been able to complete this project.

I would take this kind opportunity to thank Miss Zeratul Izzah bt. Mohd. Yusoh, for the help and guidance rendered to me throughout the completion of this project.

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ABSTRACT

This project caters the need of a Project Leader at the preliminary stage of a software project development. It specifically caters the need of assigning staff to the proposed task. The nature of task is taken into account before the system allocates a staff to the task. At the meantime, staff information is stored in the system for record purpose. This information is also used as a help in the decision making. The information consists of personal particulars and also the skills record including the three skills. This system also keeps into account the information of a project that the Project Leader is handling. It may store the past project records as well as the current record. These records will be a great help in completing the project because the vendor's information is stored in detail. Currently, task allocation in software houses in Malaysia is done manually. Therefore, with the development of Software Development's Human Resource Allocation System, it will be a huge help for the Project Leader. As a conclusion, this system is basically, a decision support system (DSS System).

ABSTRAK

Sistem ini memenuhi kehendak seorang pengurus projek perisian. Sistem mampu mengagihkan tugas kepada seorang staf berdasarkan latar belakang tugas itu. Sistem akan membandingkan latar belakang tugas tersebut sebelum memadankan staf yang sesuai dengan kemahiran yang sedia ada. Pada masa yang sama, maklumat staf juga disimpan dalam sistem. Maklumat ini bertujuan membantu dalam penyimpanan rekod kerja staf. Maklumat ini secara langsung membantu sistem dalam membuat keputusan semasa pengagihan tugas. Sistem ini juga menyimpan maklumat mengenai maklumat projek yang pernah dan sedang dibangunakan oleh pengurus projek. Maklumat lengkap projek itu termasuk pelanggan disimpan. Ini bagi memudahkan peringkat akhir penyelesaian projek. Pada dasarnya, sekarang, system pengagihan tugas seperti ini tidak wujud lagi dan ianya dijalankan secara manual. Ini memakan masa yang lama. Justeru itu, system ini dibangunkan. Secara kesimpulannya, sistem ini membantu dalam membuat keputusan. Ia lebih ke arah menyelesaikan masalah pengurus projek dalam membahagikan tugas dalam ssesuatu pembangunan projek perisian.

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INTRODUCTION

1.1 Project Background

This system is intended to be used by the Project Leader for the assigning of staffs in the process of developing a software project. It is called "Software Development's Human Resource Allocation System". It has the influence of Decision Support System (DSS), as it aids in decision making for the Project Leader.

Before this application assigns a task to a staff, it takes into account the skills of the staffs and nature of the tasks involved of all the available staffs. Then, it compares the start date and end date of a task to check the availability for staffs. This information is given by the Project Leader to the application. A staff will not be able to view or edit his/hers personal particulars because that information is considered confidential. But, staff has access to view the reports.

After matching the nature of the task, start date and end date with all the staffs, this application will suggest the names of the staffs that are available. Then, it will be the Project Leader's duty to allocate the task to the most suitable staff. The task allocation report can be viewed by both the Project Leader and all staffs.

Apart of storing personal particulars about the staff and the allocation results, this application also stores information about the projects handled. That includes

information such as a project's start date and end date, priority and project status. This report can also be viewed by both the users.

This application is stand-alone using Visual Basic 6.0. Microsoft Access will be the database. The installation for this application will be done using package deployment wizard in Visual Basic. The installation package will be stored in a compact disc and later installed directly to the station (personal computer).

1.2 Problem Statement

Normally, there are some problems or lacks that leads to the development of a new system. At other times, a current system which has been developed will be enhanced to tackle the inefficiency of the current system. These lacks, problems and enhancements are in the form of functions.

"Software Development's Human Resource Allocation System" is a new creation system. Basically, it is developed in order to help a Project Leader in task allocation because currently the task allocation is done manually. This tool is a help for software houses in Malaysia. Apart of task allocation below are few more problems detected in software houses:

i. Store records manually

Currently, records are documented in paper format. Personal particulars about every staff, information about the projects handled and tasks done are stored. But, this information is not often referred because the manual task allocation is done prior to the understanding of the Project Leader about his staffs.

ii. Manual task allocation

Task allocation is done totally based on manual system, where meetings are held and responds from the staffs are considered. Further, Project Leader decides based on his/ her observations towards a staff. Task allocation is done after checking the availability of a staff. The end dates of current tasks are compared with the start dates of new tasks to check availability. As this process is done manually, it consumes a lot of time.

1.3 Objective

This application is developed in order to meet with several objectives which have been set before the development of this application. These objectives are crucial for the aid of Project Leader. Below stated are the objectives of this application:

i. To help the Project Leader to assign task to staffs before the development phase takes place.
ii. To use all the available resources (staffs) effectively in order to accomplish a task.
iii. To take into account the skills, nature of task, start date of a task and end date of a task for all the available staffs before assigning task.
iv. To store personal and skill information about every staff, information about all the involved tasks in the projects and project information.
v. To allow basic functions of add, delete, modify and search/ find in the system.

1.4 Scope

This application is developed in order to aid and guide the Project Leader in assigning tasks to his/her staffs. Basically, this application is more help to Project Leader compared to the software house staffs. It is designed in such a way, where it concentrates in task allocation before the development phase of software projects starts. Below stated is the scope of this application:

i. It is a stand-alone system.
ii. Will cater for software projects (task allocation for programming) in software house only where the staff's capacity is more than 15 and less than 50 staffs (basically, small scale software houses in Malaysia).
iii. Will be used by Project Leaders to aid them in assigning tasks to their staffs before starting the development phase of a project.
iv. Staff will have limited access to this application, where they can only view the report for task allocation and report for project information.
v. Staffs will also be able to change their password.
vi. Project Leader will have full access to this application, thus the Project Leader will have full control of this application.

1.5 Project Significance

The development of this system has some major significance towards some people in software projects development. This system will be most beneficial for the Project Leader. By using this system he will be able to allocate his staffs efficiently to complete tasks in a project.

At the same time, it will also help the Project Leader to have access to the previous projects that have been completed. The information about the project can be

retrieved including the project ID number. This will be beneficial for the after-sales service.

Regarding the staffs involved, they will have access to view their task allocation based on task ID number for the on-going and completed projects. They may also view the report for project information based on project ID. But, their access is limited, as they will not be allowed to edit, update or delete any information. This gives the Project Leader to fully control the system for security and data protection purposes.

Regarding the staffs personal particulars, the Project Leader will be solely responsible for any changes made. The data may not be exposed to all the staffs as it will cause no privacy. Therefore, due to confidentiality, this information will only be known by the Project Leader. This is important for the Project Leader to assign tasks based on the skills of every staff.

The skills information will be used for the task allocation. This information previously was not documented, but with the development of this system it will be kept as confidential data in the system. Thus, the Project Leader will be able to allocate task to his staffs efficiently. As a conclusion, this system is prominently important to allocate tasks to staffs efficiently and it is not time consuming. Therefore, it will save a lot of time of the Project Leader in task allocating session.

1.6 Conclusion

This system/ software is developed to be used in software houses, concerning only the task allocation which takes place before the development phase in a software development project. It will help the Project Leader to save information about his staffs. The main function of this system is task allocation, where the information kept about a staff will be used in this function.

The objective and scope of this system is basically to aid the Project Leader throughout the development phase of a software project. It also helps to keep the staffs informed about the projects handled by allowing them to access the reports for task allocation and projects.

Further research is done about the criteria used by the Project Leader when assigning tasks. The real environment of a Project Leader with his staffs was carried out. In this research a lot was learned. Interviews were also conducted and plus some reading was done about the regarding materials.

All the research done is explained in the following chapter. Explanation is given in detail about the research carried out in literature review. Output of the research is the base/ core of the development of this software.

CHAPTER II

LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

In this chapter, literature review is done based on the decision support system's background. This is because the to-be developed system is grounded on the decision making base, therefore, it is vital to do literature study in depth about the criteria of decision making systems. Facts found that are similar to the to-be developed system are skimmed and scanned and then studied further.

Interviews were also carried out in order to get a clearer view about the process of assigning tasks. Three people who have experience as Project Leader's were interviewed. Two of them were from the IT Department of Freescale Semiconductor (M) Sdn. Bhd, Mr C. C. Liew and Mr Shuy Eng Huat. Mr. Shuy Eng Huat has two years experience of working in a software house.

Apart of that, Mr. Khanapi Abd. Ghani, had experience of working in a software house before pursuing his career as a lecturer in Kolej Universiti Teknikal Kebangsaan Malaysia. Currently, he is abroad furthering his studies. Information about task allocation was gathered through the interview conducted with them.

Information gained from the interview was the real life scenario of task assigning. Therefore, it proved to be very beneficial in this literature study. Furthermore, reading

was done to gather more information about the criteria of decision support system as well as this system has its criteria. Reading was done from books and related websites.

In conclusion, this literature research is done to figure out the basics of task allocation in developing software projects and the criteria involved. On the other hand, a depth understanding developed after conducting this research about the background of this system.

2.2 Fact and finding

Fact and finding is done on two aspects which are Decision Support Systems and the interview sessions conducted with three experienced people who were exposed to the environment in software houses in Malaysia. Below is the result of the study which was done on the subjects. The details have been skimmed and scanned to suit the to-be developed system. The first part of this research will cover the interview conducted and the second part will cover the decision support system.

2.2.1 Interview Session

A few interview sessions were conducted with the Project Leaders. Throughout the interview, information was gathered on how the task allocation is done manually and also the attributes/ criteria involved in task allocation. According to the project leaders, task allocation is the most important part in the software development phase.

If the task is allocated to the wrong staff, it would result in poor performance. Poor performance will prove to be costly to the software house because the project would

not be able to be completed within the dateline. Furthermore, assigning a less skilled staff to a task will not guarantee a maximum output.

According to the project leaders, every staff has programming skills that they are at the best. These skills are later compared to the nature of the task for the task that needs to complete. This comparison is done manually before the task is allocated to a staff. Below are the criteria/ attributes involved in assigning task:

i. Skills (programming language)

Skill is the most important criteria used to assign task to a staff. Skills of a staff are compared with the nature of task. The most compatible/ best matched skills with nature of task are chosen to complete the task proposed.
Below are listed the most used programming language proposed as skills:

- Unix Shell Programming
- Oracle SQL Programming
- Visual Basic
- Java (Server Side)
- VB.Net
- ASP.Net
- Javascript
- VBScript
- Python
- PHP
- C++
- VC++
- C
- C#

ii. Nature of task

Nature of task is same as skills, but the difference is; skills are owned by a staff and nature of task is owned by a task. The programming language that is needed to complete a task is called nature of task. Later, in allocating task, these two attributes are matched.

iii. Start date and end date of a task

Start date and end date of a task is used to check availability of a staff. The start date and end date of a task is matched with the staff's availability (staff bonded to another task). The availability is checked by matching the end date of the current task with start date of a new task.

iv. Domain Knowledge

Domain knowledge is the area of expertise for a staff. This is about experience of programming in different domains. Normally, a staff with a few years of working experience is exposed to one or more domains but a fresh graduate has no domains. But, in this system this attribute is not matched. Below are listed the domains:

- Finance and Accounting – includes accounting, investment finance.
- Insurance – all fields in insurance agencies including policies.
- Medical – all fields in medical
- Banking – automated teller machine and other fields involving banks.