

SISTEM STANDARD KECERGASAN FIZIKAL KEBANGSAAN

GUNASUNDRI A/P RAJUNAN

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

BORANG PENGESAHAN STATUS TESIS

JUDUL: _____

SESI PENGAJIAN: _____

Saya _____
(HURUF BESAR)

mengaku membenarkan tesis (PSM/Sarjana/Doktor Falsafah) ini disimpan di Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dengan syarat-syarat kegunaan seperti berikut:

1. Tesis dan projek adalah hakmilik Universiti Teknikal Malaysia Melaka.
2. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan Fakulti Teknologi Maklumat dan Komunikasi dibenarkan membuat salinan tesis ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. ** Sila tandakan (/)

_____ SULIT

(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

_____ TERHAD

(Mengandungi maklumat TERHAD yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

_____ TIDAK TERHAD

(TANDATANGAN PENULIS)

(TANDATANGAN PENYELIA)

Alamat tetap: _____

Nama Penyelia

Tarikh: _____

Tarikh: _____

CATATAN: * Tesis dimaksudkan sebagai Laporan Akhir Projek Sarjana Muda (PSM)
** Jika tesis ini SULIT atau TERHAD, sila lampirkan surat daripada pihak berkuasa.

SISTEM STANDARD KECERGASAN FIZIKAL KEBANGSAAN

GUNASUNDRI A/P RAJUNAN

This report is submitted in partial fulfilment of the requirements for the
Bachelor of Computer Science (Database Management)

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
AUGUST 2016**

DECLARATION

I hereby declare that this project report entitled
System Standard Kecergasan Fizikal Kebangsaan Sekolah
is written by me and is my own effort and that no part has been plagiarized
without citations.

STUDENT : _____ Date: _____
(GUNASUNDRI A/P RAJUNAN)

I hereby declare that I have read this project report and found
this project report is sufficient in term of the scope and quality for the award of
Bachelor of Computer Science (Database Management) With Honours.

SUPERVISOR : _____ Date: _____
(DR.NORASWALIZA BINTI ABDULLAH)

DEDICATION

To my parents for all their love and support and putting me through the best education possible. I appreciate their sacrifices and I wouldn't have been able to get to this stage without them.

To my siblings whom are always support and encourage me when I'm stressed up and the contribution they has done to complete this project.

To my special man whom been a backbone for me to complete this project and motivated me when I'm needed.

ACKNOWLEDGEMENTS

I would like to thank all who have contribute knowingly and unknowingly to the development of this system, from my parents and family, lecturers and other mentors to course participants, clients and people encountered on my way. Thank you all.

I'm especially grateful to Dr.Noraswaliza Binti Abdullah, my supervisor, whom suggested the title for this Final Year Project and for her guidance to complete the project.

ABSTRACT

Sistem Standard Kecergasan Fizikal Kebangsaan (e-SEGAK) is an online web based system which is developed for Sekolah Menengah Kebangsaan Telok Mas, Melaka. As per education ministry, all school need to undergo the physical fitness activities at school starting from standard 4 to form 5 students. This system is developed upon the school management request to manage and calculate the student's information and Body Mass Index (BMI). By using the system, school management can prevent data loss of the physical fitness information of the students. Besides that, the system can keep track the information of the student fitness level in a report format and can generate an analysis report based on the student's physical fitness record. This project is done by using the Agile, which is a System Development Life Cycle (SDLC) methodology.

ABSTRAK

Sistem Standard Kecergasan Fizikal Kebangsaan (SEGAK) adalah sistem berasaskan web yang dibangunkan untuk Sekolah Menengah Kebangsaan Telok Mas, Melaka. Selaras dengan program Kementerian Pelajaran Malaysia, semua sekolah perlu menjalani aktiviti kecergasan fizikal di sekolah bermula dari pelajar darjah 4 hingga tingkatan 5. Sistem ini dibangunkan atas permintaan pengurusan sekolah untuk mengurus maklumat pelajar dan mengira Indeks Jisim Badan (BMI) pelajar. Dengan menggunakan sistem ini, pengurusan sekolah boleh mengelakkan kehilangan data kecergasan fizikal pelajar. Selain itu, sistem boleh menyimpan dan mengesan maklumat tahap kecergasan pelajar dalam bentuk format laporan dan boleh menjana laporan analisis berdasarkan rekod kecergasan fizikal pelajar. Projek ini dilakukan dengan menggunakan kaedah Agile iaitu salah satu metodologi (SDLC).

TABLE OF CONTENTS

CHAPTER	SUBJECT	PAGE
	DEDICATION	III
	ACKNOWLEDGEMENTS	IV
	ABSTRACT	V
	ABSTRAK	VI
	TABLE OF CONTENTS	VII
	LIST OF TABLES	X
	LIST OF FIGURES	XII
	LIST OF ABBREVIATIONS	XIII
	LIST OF APPENDICES	XIV
CHAPTER I	INTRODUCTION	1
	1.1 Project Background	1
	1.2 Problem statements	2
	1.3 Objective	2
	1.4 Scope	2
	1.5 Project significance	5
	1.6 Expected Output	5
	1.7 Conclusion	5
CHAPTER II	PROJECT METHODOLOGY AND PLANNING	6
	2.1 Introduction	6
	2.2 Project Methodology	6
	2.3 Project Schedule and Milestones	9
	2.4 Conclusion	10
CHAPTER III	ANALYSIS	11
	3.1 Introduction	11
	3.2 Problem analysis	11

3.3	The proposed improvements/solutions	15
3.4	Requirement analysis of the to-be system	16
3.4.1	Functional Requirement (Process Model)	16
3.4.2	Non-functional Requirement	21
3.4.3	Other Requirements	22
3.5	Conclusion	23
CHAPTER IV	DESIGN	24
4.1	Introduction	24
4.2	System Architecture Design	24
4.3	Database Design	25
4.3.1	Conceptual Design	25
4.3.2	Logical Design	27
4.3.2.1	Data Dictionary	28
4.3.2.2	Query Design	32
4.3.3	Physical Design	33
4.4	Graphical User Interface (GUI) Design	37
4.4.1	Navigation Design	37
4.4.2	Input Design	38
4.4.3	Output Design	40
4.5	Conclusion	43
CHAPTER V	IMPLEMENTATION	45
5.1	Introduction	45
5.2	System Development Environment Setup	45
5.3	Database Implementation	55
5.3.1	Data Definition Language (DDL)	58
5.3.2	Implementation of main process	62
5.4	Conclusion	63
CHAPTER VI	TESTING	64
6.1	Introduction	64
6.2	Test Plan	64
6.2.1	Test Organization	64
6.2.2	Test Environment	65
6.2.3	Test Schedule	65
6.3	Test Strategy	66

6.3.1	Classes of tests	66
6.4	Test Design	67
6.4.1	Test Description	67
6.4.1.1	Functionality Testing	67
6.4.1.2	Unit testing	78
6.4.2	Test Data	89
6.4.2.1	Functionality Testing	89
6.4.2.2	Unit Testing	94
6.5	Test Results and Analysis	99
6.5.1	Summary of Functionality Testing	100
6.5.2	Summary of Unit Testing	101
6.5.3	Summary of User Acceptance Test	102
6.6	Conclusion	103
CHAPTER VII	CONCLUSION	104
7.1	Introduction	104
7.2	Observation on Weaknesses and Strengths	104
7.3	Propositions for Improvement	105
7.4	Contribution	106
7.5	Conclusion	107

LIST OF TABLES

Table 2.1 Project milestones	9
Table 3.1 Software Requirement	22
Table 4.1 Data Dictionary	28
Table 4.2 Sample data of Table Pelajar	30
Table 4.3 Sample data of Table Kelas	30
Table 4.4 Sample data of Table Guru	30
Table 4.5 Sample data of Table kelas_pelajar	30
Table 4.6 Sample data of Table guru_pj	31
Table 4.7 Sample data of Table jadual_ujian	31
Table 4.8 Sample data of Table ujian	31
Table 4.9 Sample data of Table bacaan_ujian	31
Table 4.10 Sample data of Table bacaan_bmi	32
Table 4.11 Triggers in e-SEGAK	34
Table 4.12 Procedures in e-SEGAK	36
Table 6.1 Test Schedule	65
Table 6.2 Functionality testing for e-SEGAK login interface	68
Table 6.3 Functionality testing for insert student interface	68
Table 6.4 Functionality testing for search student interface	69
Table 6.5 Functionality testing for update student interface	70
Table 6.6 Functionality testing for insert mark interface	71
Table 6.7 Functionality testing for view student mark interface	71
Table 6.8 Functionality testing for update student mark interface	72
Table 6.9 Functionality testing for insert teacher interface	73
Table 6.10 Functionality testing for search teacher interface	73
Table 6.11 Functionality testing for assign teacher interface	74
Table 6.12 Functionality testing for update class students interface	75
Table 6.13 Functionality testing for individual report (by session) interface	75
Table 6.14 Functionality testing for individual report interface	76
Table 6.15 Functionality testing for BMI analysis report interface	77
Table 6.16 Functionality testing for grade analysis report	77
Table 6.17 Unit testing for Login page	78
Table 6.18 Unit testing for Insert student page	79
Table 6.19 Unit testing for Search student page	80
Table 6.20 Unit testing for update student page	82
Table 6.21 Unit testing for insert mark page	82
Table 6.22 Unit testing for view student mark page	83
Table 6.23 Unit testing for update mark page	84
Table 6.24 Unit testing for insert teacher page	84
Table 6.25 Unit testing for search teacher page	85
Table 6.26 Unit testing for assign teacher page	86
Table 6.27 Unit testing for individual report (by session) page	86
Table 6.28 Unit testing for individual report page	87
Table 6.29 Unit testing for BMI analysis report page	87

Table 6.30 Unit testing for grade analysis report page	88
Table 6.31 Functionality Test data for e-SEGAK login interface	89
Table 6.32 Functionality test data for insert student interface	89
Table 6.33 Functionality test data for search student interface (Name)	90
Table 6.34 Functionality test data for search student interface (Class)	90
Table 6.35 Functionality test data for update student interface	90
Table 6.36 Functionality test data for insert mark interface	91
Table 6.37 Functionality test data for view student mark interface	91
Table 6.38 Functionality test data for update student mark interface	91
Table 6.39 Functionality test data for insert teacher interface	92
Table 6.40 Functionality test data for search teacher interface	92
Table 6.41 Functionality test data for assign teacher interface	92
Table 6.42 Functionality test data for update class students interface	93
Table 6.43 Functionality test data for individual report (by session) interface	93
Table 6.44 Functionality test data for individual report interface	93
Table 6.45 Functionality test data for BMI analysis report interface	93
Table 6.46 Functionality test data for grade analysis report	94
Table 6.47 Unit test data for Login page	94
Table 6.48 Unit test data for Insert student page (i)	94
Table 6.49 Unit test data for Insert student page (ii)	95
Table 6.50 Unit test data for Search student page (Name)	95
Table 6.51 Unit test data for Search student page (Class)	96
Table 6.52 Unit test data for update student page	96
Table 6.53 Unit test data for insert mark page	96
Table 6.54 Unit test data for view student mark page	97
Table 6.55 Unit test data for update mark page	97
Table 6.56 Unit test data for insert teacher page	97
Table 6.57 Unit test data for search teacher page	98
Table 6.58 Unit test data for assign teacher page	98
Table 6.59 Unit test data for individual report (by session) page	98
Table 6.60 Unit test data for individual report page	99
Table 6.61 Unit test data for BMI analysis report page	99
Table 6.62 Unit test data for grade analysis report page	99
Table 6.63 Summary of Functionality Testing	100
Table 6.64 Summary of Unit Testing	101

LIST OF FIGURES

Figure 2.1 Agile Methodology	7
Figure 3.1 Flowchart for subject teacher	12
Figure 3.2 Form to fill up individual Body Mass Index (BMI)	13
Figure 3.3 Flow chart for subject coordinator	14
Figure 3.4 Analysis SEGAK based on class or form	14
Figure 3.5 BMI Analysis Report	15
Figure 3.6 Context Diagram	17
Figure 3.7 Data Flow Diagram Level 0	18
Figure 3.8 DFD LEVEL 1 for Manage teacher	19
Figure 3.9 DFD LEVEL 1 for Manage class	20
Figure 3.10 DFD LEVEL 1 for Manage student	20
Figure 3.11 DFD LEVEL 1 for Manage Task Reading	21
Figure 3.12 DFD LEVEL 1 for Generate Report	21
Figure 4.1 Three tier system architecture design	25
Figure 4.2 ERD for Sistem Standard Kecergasan Fizikal Kebangsaan Sekolah	27
Figure 4.3 Login interface	38
Figure 4.4 Insert student information interface	38
Figure 4.5 Search students interface	39
Figure 4.6 Update student Information interface	39
Figure 4.7 Insert and update marks for activities interface	40
Figure 4.8 Interface for view students activity mark	40
Figure 4.9 Interface to display the output	41
Figure 4.10 Interface for individual SEGAK report by session	41
Figure 4.11 Interface for individual report by IC number	42
Figure 4.12 BMI analysis report	43
Figure 4.13 Grade analysis report	44
Figure 5.1 Download WampServer for installation	46
Figure 5.2 WampServer Setup Wizard	46
Figure 5.3 License Agreement	47
Figure 5.4 Select destination location	48
Figure 5.5 Select additional task	49
Figure 5.6 Ready to install window	50
Figure 5.7 Installation window	51
Figure 5.8 SMTP server and email address	52
Figure 5.9 Wamservice Icon in desktop bar	52
Figure 5.10 Successful Installation	53
Figure 5.11 PHP setting	54
Figure 5.12 Get starts with database using command prompt	55
Figure 5.13 Show and create databases	56
Figure 5.14 Database table creation	56
Figure 5.15 Database connection status	58

LIST OF ABBREVIATONS

SEGAK	<i>Standard Kecergasan Fizikal Kebangsaan Sekolah</i>
ERD	Entity Relationship Diagram
BMI	Body Mass Index
GUI	Graphic User Interface2

LIST OF APPENDICES

Appendices	Title	Page
A	Gantt Chart	110
B	Trigger trgAfterUpdateBMI code	111
C	Trigger trgAfterUpdateTotalSkor code	114
D	Trigger trgBMI code	115
E	Trigger trgBeforeUpdateUjian code	118
F	Trigger trgPK_bUjian code	130
G	Trigger trgTotalSkor code	142
H	Trigger trgPk_bmi code	142
I	Trigger trgBeforeUpdateBMI code	143
J	Trigger trgPKKelasPelajar code	143
K	Trigger trgPkGK code	143
L	Trigger trgPk_ujian code	143
M	Stored Procedure GuruKelas code	144
N	Stored Procedure insert_guru code	144
O	Stored Procedure insert_pelajar code	144
P	Stored Procedure KelasPelajar code	144
Q	Stored Procedure proInsertMarkah code	145
R	Stored Procedure updateBMI code	145
S	Stored Procedure updateMarkah code	146
T	Stored Procedure update_guru code	146
U	Stored Procedure update_pelajar code	146
V	Stored Procedure updateKelasPelajar code	147
W	Sample Questionnaire	

CHAPTER I

INTRODUCTION

1.1 Project Background

Malaysian government has come out with a plan which is called National Physical Fitness Standard for Students School Association (*Standard Kecergasan Fizikal Kebangsaan Untuk Murid Sekolah Malaysia - SEGAK*). This plan is to increase student's fitness level to do their daily activity without any tiredness. This Physical Fitness Standard consists of four (4) components which are *Naik Turun Bangku*, *Tekan Tubi*, *Ringkuk Tubi Separa* and *Jangkauan Melunjur*. All students from standard 4 to form 5 need to undergo these fitness activity. These fitness standard activities will be carried out twice in a year, most probably on March and August.

Sekolah Menengah Kebangsaan Telok Mas is interested to come out with a system to record the Physical Fitness Standard score of their students. Currently the school using manual paper-based system to record the student's fitness score and Microsoft Excel to calculate the total score for each student.

The school facing few problems with the current less computerized method. Firstly, there are many chances to lose the information which is recorded in Excel file.

Besides that, teachers have difficulties to keep track record of the transferred students from other schools.

To overcome these problems, a system called “*Sistem Standard Kecergasan Fizikal Kebangsaan Untuk Murid Sekolah (e-SEGAK)*” will be developed.

1.2 Problem statements

- The school management still using excel file to store the student’s physical fitness information which is less systematic.
- The school teacher’s having problem to keep track the historical data of physical fitness information of the student.
- Teachers are having problem to do analysis of the physical fitness record.

1.3 Objective

- To develop a database information system to efficiently manage the physical fitness information of the students.
- To keep track the information of the student fitness level in a report format.
- To generate analysis reports based on the students physical fitness record.

1.4 Scope

Sistem Standard Kecergasan Fizikal Kebangsaan Untuk Murid Sekolah Malaysia - SEGAK will be used by the management of Sekolah Menengah Kebangsaan Telok Mas. The management here include the headmaster, clerk and teachers. For this

system there would be four (4) different users. They are higher management, clerk, physical education teachers and physical education coordinator.

1) User

i) Higher Management team

- Management team can view teachers' personal information such as teachers' ID, name, contact numbers and their position.
- Other than that, management team also can view analysis reports for a selected session.

ii) Clerk

- Clerk can insert and update student's information such as student identification number, name, age, class for current year, physical activity marks, height and weight of the students.
- Clerk also can insert and update teacher's information such as name, position, office number and mobile number.
- Clerk also can insert and update student's physical fitness information like physical activities reading, physical activities marks and their achievement.
- Clerk can view report on each student's Body Mass Index (BMI), and physical fitness information and the analysis reports as well.
- Clerk also can assign teacher to a class.

iii) Physical Education Teachers (*Guru Pendidikan Jasmani*)

- Physical Education teachers can insert and update student's personal information and physical fitness information of their class students.

- Physical Education teachers can view report for each student's Body Mass Index (BMI), and physical fitness information.

iv) Physical Education Coordinator (*Guru Panitia Pendidikan Jasmani*)

- Physical Education Coordinators can insert and update student's information such as student identification number, name, age, class for current year, physical activity marks, height and weight of the students and Body Mass Index (BMI).
- Physical Education Coordinators can view teachers' personal information.
- Physical Education Coordinators view report on student's personal information and analysis report.

2) System

- System can insert and update student's personal information such as name, age, class, and reading of the task or activity.
- System will calculate Body Mass Index (BMI) of students based on the height and weight recorded by the user.
- System will generate the mark for each task based on the reading recorded by the user.
- System will generate the total score of a student based on the mark of each task.
- System will generate the student achievement level based on the total score gained by student.
- System can generate fitness analysis report based on identification number, gender, class (form) and session.

1.5 Project significance

By developing this system, school teachers and management will get few benefits. It's save the time of the coordinator to get records of physical fitness information from all physical education teachers. Besides that, the teachers can easily analyse the student's fitness level by age, gender, class and year. Through the system users can also print the report for each student easily.

1.6 Expected Output

At the end of the project, it's expected to have an automatic system that can produces needed reports to the users. Besides that, the system also should be able to display the students' marks for each task or activity ("*markah ujian fizikal*") that mention in part 1.1 in this chapter. Below are the expected output of the system:-

- i) Calculate the marks for each student test.
- ii) Generate report for each student.
- iii) Produce physical fitness analysis report based on grade and gender.

1.7 Conclusion

To summarize, this chapter have discussed the basic need for the project. At the end of the project, the system have to meet all the needs that requested by the user. For that this chapter will be a guide line for the developer to come out with a good product.

CHAPTER II

PROJECT METHODOLOGY AND PLANNING

2.1 Introduction

This chapter will discuss about the methodology and planning for the project that would be developed. Every project developer need to come out with a methodology that is related or suitable for the project. This is to make sure the project is developed base on the Database Life Cycle (DBLC). Other than that, for the planning developer need to draft a Gantt chart and Milestone. These Gantt chart and Milestone are to make sure the project can be completed on the given time of period. This will be helpful to finish the project on time.

2.2 Project Methodology

Agile Methodology is used to develop this “*Sistem Standard Kecergasaan Fizikal Kebangsaan untuk Murid Sekolah (e-Segak)*”. The time period for this project is four (4) months. Since Agile methodology is used for small project, it will be suitable for this project. Besides that, Agile methodology focus on three (3) main component, which are resources, time and features. Basically resources and time are fixed in this methodology. Developer need to use the given resources and allocated time to give the best features which would be an estimated value.

Agile model allow the backward features; which mean developer can change the decision of the previous phase easily. Other advantage of Agile model would be, the user feedback. The user has rights to change the requirement at any time by using this model.

There are seven (7) phases in Agile methodology; Conception (requirement gathering), initiation (planning), analysis, design, construction (implementation), testing and deployment.

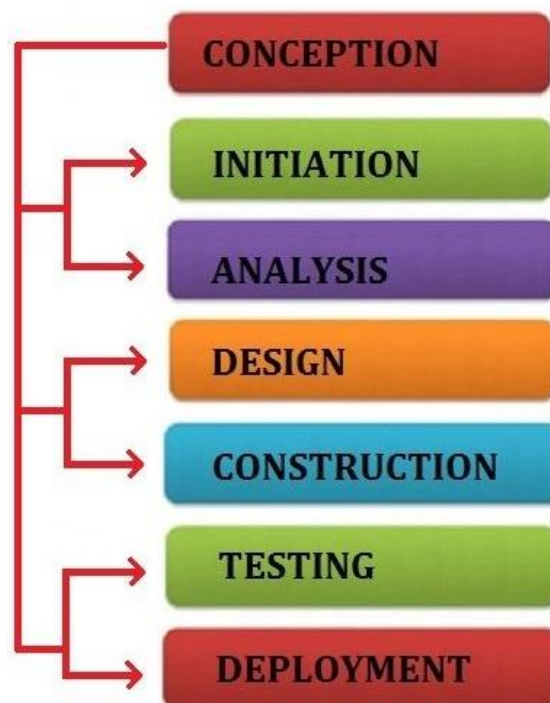


Figure 2.1 Agile Methodology

Conception is the first phase in the Agile Database Life Cycle (DBLC). Conception also known as requirement gathering in some other DBLC. In this conception phase user will collect the information needed from the client which is Sekolah Menengah Kebangsaan Telok Mas teachers, to plan the basic flow of the current and to-be develop system in the next phase. The developer have to meet the teachers, in order to collect the user's requirement to identify and classify the

functional and non-functional requirements. In this phase, user's contribution will help the developer to make any important decision about the to-be develop system.

The second phase would be initiation; also known as planning. Once the developer gathered the needed requirements from the client or user, they have to plan what the system can do, how the flow of the system will work and who can use the system. This is the phase where the developer need to submit a proposal to the supervisor. The proposal must consist of background of the project, problem faced by user, and the objective of to-be develop system.

The third phase would be analysis. In this phase developer should come out with flow charts for each users mentioned in the part 1.4 in chapter 1 and Data Flow Diagrams (DFD) for each main functions. This will ease the developer work in the following phases. The implementation of this phase will be discussed in Chapter 3 of this thesis. Both the second phase and third phase will be take place at a time in Agile DBLC.

The fourth phase would be design. In this design phase developer will come out with Entity Relation Diagram (ERD) based on the flow chart and DFD designed in the previous phase. Besides that, the system architecture design and graphical user design (GUI) also will be take place in this phase. Data dictionary is also another task that should consider in this phase. The task of this phase will be discussed in Chapter 4 of this thesis.

The fifth phase would be construction; also known as implementation. This is the phase where developer start to implement the designs that they draft in previous phases like ERD, DFD, and Context Diagram. System will be complete in this phase. The task of this phase will be discussed in Chapter 5 of this thesis. The design phase and construction phase will be take place at the same time in Agile methodology.