

WEB BASED EDUCATION GAME  
RELATED TO FARMING AND ARITHMETIC  
MATHEMATICS

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## **SUPERVISOR'S DECLARATION**

I hereby declare that I have checked this project and in my opinion, this project is adequate in terms of scope and quality for the award of the degree of Bachelor of Computer Science (Software Engineering) in .....

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## **STUDENT'S DECLARATION**

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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ARITHMETIC MATHEMATICS

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for the award of the degree of  
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## ABSTRAK

Teknologi pada masa ini telah berkembang dengan pesat sehingga orang bergantung kepadanya setiap hari. Kanak-kanak hari ini kurang pendedahan mengenai pertanian dan matematik kerana kemajuan teknologi. Selain itu, sesetengah kanak-kanak mempunyai masalah dalam pembelajaran matematik secara konvensional. Oleh itu, permainan pendidikan berasaskan web telah dibangunkan untuk memberi tumpuan kepada menyelesaikan masalah ini dengan mendedahkan kanak-kanak dalam bidang kemahiran asas dengan pengiraan aritmetik semasa aktiviti pertanian. Aplikasi ini dibangunkan untuk kanak-kanak berumur 7 hingga 12 tahun. Permainan ini terdiri daripada tiga peringkat; mudah, pertengahan dan susah. Semua peringkat mempunyai matlamat tertentu untuk dicapai. Setiap peringkat mengintegrasikan kemahiran pertanian dan pembelajaran aritmetik masing-masing. Permainan ini dibangunkan berdasarkan Agile dengan menggunakan RPG Maker MV dan bahasa JavaScript. Ujian telah dijalankan menggunakan kaedah ujian penerimaan pengguna (UAT) dan tinjauan kepuasan. Tiga pengguna yang dipilih secara rawak telah menguji sistem menggunakan kaedah UAT, berdasarkan hasilnya, 25 dari 26 fungsi berjaya melepasi ujian yang menjadikan projek 96% berjaya. Sepuluh pengguna yang dipilih secara rawak telah menjawab kaji selidik kepuasan dan berdasarkan hasilnya, 4 daripada 5 markah adalah penilaian purata yang diberikan oleh mereka untuk projek tersebut. Secara kesimpulannya, aplikasi yang dibangunkan ini dapat membantu kanak-kanak untuk didedahkan dan mendapat pengetahuan asas pertanian dan mempelajari matematik aritmetik dalam cara yang tidak konvensional.

## **ABSTRACT**

Technologies nowadays has advanced so rapidly people depend on it every day. Kids these days have less exposure on farming and mathematics due to the advancement of the technologies. Furthermore, some kids have problems in learning mathematics in conventional way. Thus, web-based education game was developed to focus on solving this problem through exposing children in basic skill farming with arithmetic calculation during the farming activities. This application was developed for kids from 7 to 12 years old. This game consists of three levels; easy, intermediate and hard. All levels have specific goals to be achieved. Each level integrates the skills of farming and learning arithmetic respectively. This game was developed based on Agile by using RPG Maker MV and JavaScript language. Testing was carried out using the method of user acceptance test (UAT) and satisfaction survey. Three randomly selected users have tested the system using UAT method, based on the results, 25 out of 26 functions successfully passed the tests making the project 96% successful. Ten randomly selected users have answered the satisfaction survey and based on the results, 4 over 5 ratings were the average ratings given by them for the project. As a conclusion, this developed application able to help the kids to be exposed and gain the basic knowledge of farming and learn the arithmetic mathematics in non-conventional ways.

## TABLE OF CONTENT

<b>DECLARATION</b>	
<b>TITLE PAGE</b>	
<b>ACKNOWLEDGEMENTS</b>	<b>ii</b>
<b>ABSTRAK</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>TABLE OF CONTENT</b>	<b>v</b>
<b>LIST OF TABLES</b>	<b>viii</b>
<b>LIST OF FIGURES</b>	<b>ix</b>
<b>LIST OF ABBREVIATIONS</b>	<b>xi</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
1.1 Introduction	1
1.2 Problem Statement	2
1.3 Objectives	3
1.4 Scope	3
1.5 Significance	4
1.6 Thesis Organization	4
<b>CHAPTER 2 LITERATURE REVIEW</b>	<b>5</b>
2.1 Introduction	5
2.1.1 RPG Maker MV	5
2.2 Review of the Existing Systems	5
2.2.1 System #1 (Addingtons)	5



2.2.2	System #2 (Farmerella)	8
2.2.2	System #3 (Family Barn)	10
2.3	Comparison between Three Web Based Game Systems with WBEG	13
2.3.1	Opinion Based on the Three Web Based Games	13
2.4	Development Technologies	14
2.4.1	Process Models	14
2.4.1.1	Extreme Programming	14
2.4.1.2	Scrum	15
2.4.1.3	Agile	16
2.4.2	Tools of Development	18
2.5	Summary	20
<b>CHAPTER 3 METHODOLOGY</b>		<b>21</b>
3.1	Introduction	21
3.2	Methodology	21
3.2.1	Phase 1 Requirement and Analysis	22
3.2.2.1	Context Diagram	23
3.2.2.2	Use Case Diagram	24
3.2.3	Design Phase	25
3.2.3.1	Interface	25
3.2.4	Development Phase	26
3.2.5	Testing Phase	26
3.3	Hardware Requirement and Software Requirement	27
3.3.1	Hardware Requirement	27
3.3.2	Software Requirement	28
3.4	Work Breakdown Structure	29

3.5	Summary	29
<b>CHAPTER 4 IMPLEMENTATION, RESULTS AND DISCUSSION</b>		<b>30</b>
4.1	Introduction	30
4.2	Implementation	30
4.2.1	Software Development Environment	30
4.2.2	Implementing Events/Functions	33
4.2.3	Algorithms of Events	35
4.3	Testing	37
4.3.1	User Acceptance Tests	37
4.3.2	UAT Satisfaction Survey	38
4.4	Results and Discussions	39
4.5	Overall Result Discussion	44
4.6	Summary	44
<b>CHAPTER 5 CONCLUSION</b>		<b>45</b>
5.1	Introduction	45
5.2	Research Constraint & Limitations	46
5.3	Commercial Values	46
5.4	Future Works	47
<b>REFERENCES</b>		<b>48</b>
<b>APPENDIX A</b>		<b>49</b>
<b>APPENDIX B</b>		<b>50</b>
<b>APPENDIX C</b>		<b>51</b>
<b>APPENDIX D</b>		<b>52</b>

## LIST OF TABLES

Table 1.1 Project Scope	3
Table 2.1 Advantages and Disadvantages of System #1	6
Table 2.2 Advantages and Disadvantages of System #2	8
Table 2.3 Advantages and Disadvantages of System #3	10
Table 2.4 Comparison of Game Features	13
Table 2.5 Extreme Programming Advantages and Disadvantages	15
Table 2.6 Scrum Advantages and Disadvantages	16
Table 2.7 Agile Advantages and Disadvantages	17
Table 2.8 Tools of Development	18
Table 3.1 Hardware Requirements	27
Table 3.2 Software Requirements	28
Table 4.1 Item Counter algorithm	35
Table 4.2 TransfertoNewScene (no door) algorithm	36

## LIST OF FIGURES

Figure 2.1 Game screen when player starts the game	6
Figure 2.2 Game screen when te player completed a round	7
Figure 2.3 Game screen that shows the main menu	7
Figure 2.4 Game screen of the main area	8
Figure 2.5 Game screen of shop UI	9
Figure 2.6 Game screen in the player’s house	9
Figure 2.7 Interactive tutorial game screen when the player loads the game	11
Figure 2.8 Main game screen when the player enters the game	11
Figure 2.9 Window popup in the game screen when the player enters the game	12
Figure 2.10 Extreme Programming Model	14
Figure 2.11 Scrum Model	15
Figure 2.12 Agile Model	17
Figure 3.1 Agile based cycle	22
Figure 3.2 Context Diagram of WBEG	23
Figure 3.3 Use Case Diagram of WBEG	24
Figure 3.4 Farm area interface designed for WBEG project	25
Figure 3.5 Player’s house interface designed for WBEG project	26
Figure 4.1 RPG Maker MV basic layout	31
Figure 4.2 RPG Maker MV Database	31
Figure 4.3 List of plugins used in RPG Maker MV	32
Figure 4.4 Core coding in the RPG Maker MV	33
Figure 4.5 Interface of the software after it is started	33
Figure 4.6 Interface of the event editor	34

Figure 4.7 Playtest button in red circle to test the application created	35
Figure 4.8 UAT for Play Game use case	37
Figure 4.9 Survey Questions	38
Figure 4.10 Main menu of the game successfully loaded	39
Figure 4.11 Windows of the saved game files successfully loaded	39
Figure 4.12 Farm area with the crops ready to be harvested	40
Figure 4.13 Windows of the player's inventory after the player successfully picked up an ingredients or items	40
Figure 4.14 Failed function of answering mathematics questions	41
Figure 4.15 Chart for Question #1	41
Figure 4.16 Chart for Question #2	42
Figure 4.17 Chart for Question #3	42
Figure 4.18 Chart for Question #4	43
Figure 4.19 Chart for Question #5	43

## LIST OF ABBREVIATIONS

SRS	Software Requirement Specification
SDD	Software Design Document
NPC	Non-Playable Characters
EOVG	Edutainment Online Video Game
RAD	Rapid Application Development
UI	User Interface
RPG	Role Playing Game
2D	Two Dimension
SDLC	Software Development Life Cycle
UML	Unified Modelling Language
CPU	Central Processing Unit
RAM	Random Access Memory
TB	Terabyte
GB	Gigabyte
MB	Megabyte

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

Nowadays, the technology of video games has increased rapidly, attracting the audience from all sorts of ages. Games has the ability to entertain the users in a complete media form which contain the music, animations, videos, texts and graphics. The game's popularity has boomed its technology to improve rapidly due to the outstanding demands from the users.

Farming is one of the activities in agriculture, it is the activity of growing crops or keeping the animals for food and raw materials. Farming has started thousands of years ago, but no one was sure the exact date when it firstly introduced to the civilization. Having a basic knowledge on farming is important as it has several importance regarding it. One of them is the raw material, many of the materials can be gained from farming certain crops for example cotton, sugar and oils. They are dependent on farming. The next importance is the as a support to the local markets and the economies. Not all people here will be a farmer, so they are all depending on the farmers for the deliverance of raw materials and food. Without the knowledge of farming, there will be less farmers thus the production of the food and materials will be insufficient for the civilization.

In this project, it is having been proposed to make a video game targeted for primary school students that will basically teach them education related to farming and mathematics in a fun way, as known as web-based education game.

## **1.2 Problem Statement**

Although farming is essential to the people, they do not really have the basic knowledge of farming especially the urban folks. This is because they do not see the need to obtain such knowledge since they are all provided with the farm's product by the people that lives in rural areas. Farming knowledge are important to be gained, at least the basic ones. It is preferably to give the knowledge to the kids so that they can bring the skills in their life for a better lifestyle and future. Information and knowledge such as price or how long a certain crop is needed to be grown fully is unknown to the kids so implementing a web-based education game related to the farming is much needed. This is because the kids are not being taught with the basic of farming in school because it is not in their syllabus.

Same goes to the mathematics, it is one of the difficult subjects ever taught in schools aside from science subjects and many kids are having trouble with it. Even after doing a lot of mathematics homework, the kids still are not good with it because of the way they learn it. Some kids prefer homework over other styles, some kids can learn much more efficient through games that are related to mathematics. So this is where a web-based education game related to the mathematics is needed to provide an effective way to learn mathematics more and at the same time give an entertainment to the players. A basic mathematics knowledge should be taught in the game.

Another problem is that not all the kids, especially the one that lives in the urban areas will have the experience in farming, so the proposed project is to give education, interaction to the kids on how it is to farm through a web-based education game. This project can also provide the alternate ways to learn maths to the kids which certain kids may enjoy and efficiently make use of it.



### 1.3 Objectives

1. To identify the requirements and features that will be implemented in the web-based education game.
2. To develop web-based education game for children in learning farming and mathematics.
3. To validate the user's acceptance of the objectives in the web-based education game.

### 1.4 Scope

Table 1.1 below shows the Project Scope of Web-Based Education Game Related to Farming and Mathematics.

Table 1.1 Project Scope

Scope	Descriptions
User	<ul style="list-style-type: none"><li>• Kids (7 years old to 12 years old)</li></ul>
Technology	<ul style="list-style-type: none"><li>• 2D Video Game RPG style technology in RPG Maker MV</li><li>• Web-Based Education Game</li></ul>
Tools	<ul style="list-style-type: none"><li>• RPG Maker MV - v.1.6.1 Beta</li><li>• JavaScript</li></ul>
Features	<ul style="list-style-type: none"><li>• Allow the players to farm in the game.</li><li>• Allow the players to solve mathematics questions in the game.</li></ul>

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