

**ORIGIN: THE DEVELOPMENT OF A 2D ACTION RPG SIDE-SCROLLING  
PLATFORMER GAME**



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**ORIGIN: THE DEVELOPMENT OF A 2D ACTION RPG SIDE-SCROLLING  
PLATFORMER GAME**



This report is submitted in partial fulfillment of the requirements for the Bachelor of Information Technology (Game Technology) with Honours.

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY  
UNIVERSITI TEKNIKAL MALAYSIA MELAKA  
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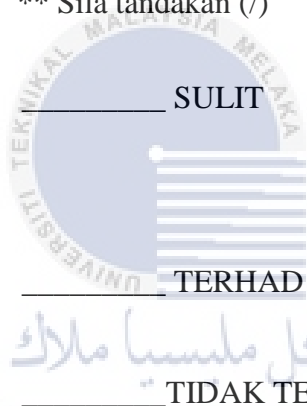
JUDUL: ORIGIN: THE DEVELOPMENT OF A 2D ACTION RPG SIDE-SCROLLING PLATFORMER GAME

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I hereby declare that I have read this project report and found this project is sufficient in term of the scope and quality for the award of Bachelor of Information Technology (Game Technology) With Honours.

SUPERVISOR:  Date: 21/08/2017  
(DR. IBRAHIM BIN AHMAD)

## DEDICATION

To my beloved family, especially my dear mother, Mrs. Morrien Lo for her endless support, to Dr. Ibrahim Ahmad for believing in my potential and much love for my wonderful peers who became my trustworthy source of inspiration in life.



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First and foremost, I wish to express my deepest gratitude to Universiti Teknikal Malaysia Melaka (UTeM) for giving me the opportunity to work on this Final Year Project and providing all the guidelines and facilities needed to facilitate the progression of the project.

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Finally, I would like to express my appreciation to my family and friends who directly and indirectly assisted into the development of *ORIGIN*. With their constant moral support and assistance, I was finally able to complete this project within the required date.

## ABSTRACT

*ORIGIN* is a project involving the development of a 2D Action RPG side-scrolling Platformer game. Generally, the aim of this final year project is to study the elements of Action RPG game genres and skeletal animation to implement into the development of *ORIGIN* as well as analyse the usability of the finished prototype. With the aim, the project has three objectives to accomplish: to study the characteristics of Action RPG game genres and implement them into *ORIGIN*, to differentiate between modern 2D skeletal animation and traditional 2D sprite sheet animation, to evaluate the game experience and usability heuristics of the *ORIGIN* prototype. The methodology used for this project is called the Agile Development Life Cycle where there are three stages (Pre-production, production and post-production) and five phases in all stages involved, namely Planning, Analysis, Design, Implementation and Testing. Majority of the development of the prototype is done during the first four phases while the evaluation of the usability of the *ORIGIN* is done during the Testing phase where a sample of 30 target users of the age 10 years old and above of different gaming experience demography and 3 experts are involved. To fulfil the evaluation objective of this project, the Game Experience aspects is looked in terms of difficulty, entertainment and emotion while the Usability Heuristic have several factors: consistency, provide feedback, provide help, simple and clear menu, game controls as well as audio and visual support. From the testing phase, the outcome is that the visual, animation and narrative aspect of the game became its greatest appeal while the lack of responsive control became its weakness. In conclusion, the development of *ORIGIN* fulfils all the objectives required.

## ABSTRAK

*ORIGIN* adalah sebuah projek yang melibatkan pembangunan permainan RPG Aksyen skrol sisi Platform 2 Dimensi. Secara umumnya, matlamat projek sarjana muda ini adalah untuk mengkaji elemen-elemen permainan RPG aksyen dan animasi rangka untuk diimplementasikan dalam pembangunan prototaip *ORIGIN* di samping menganalisis pengalaman permainan dan heuristik *usability* prototaip tersebut. Dengan matlamat tersebut, projek ini mempunyai tiga objektif untuk dicapai, iaitu: untuk mempelajari karakteristik-karakteristik genre permainan RPG aksyen dan mengimplementasikannya ke dalam *ORIGIN*, untuk membezakan antara animasi rangka 2D moden dan animasi lembar sprite tradisional, untuk menilai *usability* prototaip *ORIGIN* dalam kalangan sasaran pengguna. Metodologi yang digunakan untuk projek ini adalah dipanggil *Agile Development Life Cycle*, di mana terdapat tiga langkah (Pre-produksi, Produksi dan Pos-produksi) yang mempunyai lima fasa terlibat, iaitu: Perancangan, Analisis, Desain, Implementasi dan Pengujian. Sebahagian besar daripada pembangunana prototaip dilakukan sewaktu empat fasa pertama manakala evaluasi kebolegunaan prototaip *ORIGIN* dilakukan sewaktu fasa Pengujian di mana sejumlah 30 pengguna sasaran berumur 10 tahun dan keatas dari pelbagai demografi pengalaman bermain permainan dan 3 pakar terlibat dalam persampelan. Untuk memenuhi objektif penilaian projek ini, aspek Pengalaman Permainan telah dilihat dari segi kesukaran, hiburan dan emosi. Heuristik *Usability* mempunyai beberapa faktor: konsistensi, pemberian maklum balas, pemberian bantuan, menu mudah dan jelas, kawalan permainan serta sokongan audio dan visual. Daripada proses evaluasi tersebut, dapatan akhir adalah visual, animasi dan naratif game tersebut menjadi faktor tarikan sementara kekurangan kawalan responsif menjadi kelemahan projek tersebut. Kesimpulannya., pembangunan *ORIGIN* ini telah memenuhi segala objektif-objektif yang diperlukan.



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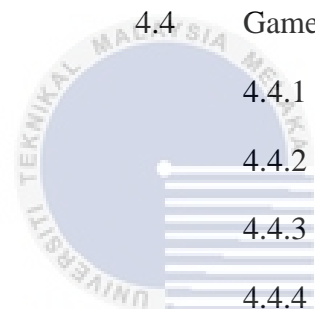
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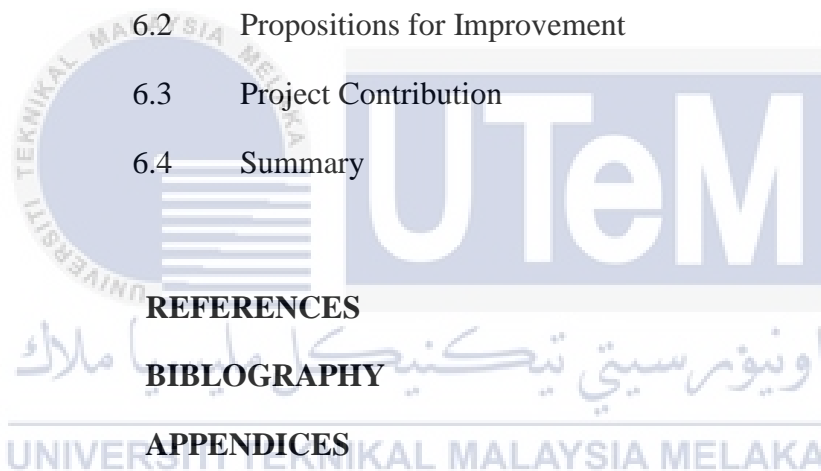
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## LIST OF ABBREVIATIONS

TERM	EXPLANATION
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2D	2-Dimension
----	-------------

NPC	Non-playable character
-----	------------------------

RPG	Role-playing games
-----	--------------------

UI	User Interface
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## CHAPTER I

### INTRODUCTION

#### 1.1 Project Background



The folklore of *Huminodun* is a familiar legend among Sabah's Kadazandusun community and the mythical tale of her sacrifice forms the basis of Sabah's well-celebrated festival: "*Tadau Kaamatan*" (Harvest Festival). *Huminodun*'s tale is often a story passed down to the communities to reflect on the meaning of "ultimate sacrifice for the people" as it is the central theme of the story. The tale itself also gave birth to the existence of the grand beauty pageant "*Unduk Ngadau*" as part of the compulsory event when celebrating *Kaamatan*. While the folklore itself is well-known to native Sabahans, there is a distinct lack of media showcasing it, especially on an international spectrum. (Wati, 1991)

Games, as an interactive medium provides a different experience of storytelling than any other text medium does. Narrative in games allows individuals to gain their own interpretation or experience behind the meaning of the texts in the game, not just solely on the reading of the text itself. Games involve their players differently than most of other media where in a game, as mentioned by Hitchens and Drachen (1997),

the player is a part of its world in action, while in a book, readers are merely passive audiences. With games, people can be exposed to certain types of influence depending on the game content or experience it has given, whether it be in brief cognitive thinking or emotional empathy. (Teleoperators, Environments, & Barbara, 2008) Action and RPG games are seen as the genres that put a great deal of emphasis in promoting game titles in the market.

Henceforth, the development of *ORIGIN* is done with the intent of being an interactive media in showcasing elements from the folklore with hopes of evaluating its effect on the play experience of the players. *ORIGIN* is a 2D action role-playing side-scrolling platformer game where its main theme revolves around a retelling of the folklore and cultural beliefs of the Kadazandusun ethnic. The visual direction of the game is done to specifically to focus on the traditional aesthetics that are native to the Kadazandusun ethnic while incorporating significant elements of the folklore. *ORIGIN* also features simple action-based combat where player would need to maneuverer on side-scrolling platforms to progress into the story. Furthermore, this project involves an exploration of an important aspect of 2D game development: animation production. This project puts an emphasis on skeletal animation for the development of *ORIGIN* where there is the production effort in achieving smoother looking motion from 2D images and is regard as one of the techniques that is gaining popularity for its dynamism and versatility in animation (Vasilakis & Fudos, 2009). Even so, sprite sheet animation has been around ever since the start of the video game industry from its arcade days and pixel-based sprite sheet animation is becoming more influenced in the current indie game development due to its simplistic nature. Both 2D animation need different sets of requirements and this results into different pipelines and performances.

Moreover, the development of *ORIGIN* involves the studies of the Action RPG game genre and its common characteristics are implemented into the gameplay. The final prototype is then evaluated through the target user's play experience and the usability of the game to further assess its ability as an influence on the player.

## 1.2 Problem Statement

As mentioned before, Wati (1991) described how there is a lack of writing or artefact on the sources of ethnology, cult and laws of the Kadazandusun beliefs, including folklores. This in return pose a question on how the local Sabahan legends can be introduced to people so that it may gain interests for multiple studies. Just as how Greek mythology is famous in entertainment games, local folklore should also be implemented into games as one of the medium to introduce to people who are foreign to the origins of the culture.

Hence, the main theme of *ORIGIN* is to showcase the inspiration attained from one of Sabah's important legend, *The Legend of Huminodun* as its main narrative in the game. Next, the development of *ORIGIN* depends on several important elements within the scope of Action RPG game genres, it is important to know what interactions should exist within the system that obey the nature of an Action RPG game. Arsenault (2009) stated that game genre in innovation is mainly understood as either the exploration of new mechanism for the birth of a new genre, or tinker existing mechanics with the intent of improvement as well as taking the existing genre to a new generation of audiences Henceforth, a study on the game genre is done to identify the game mechanics that are prevalent in the Action RPG game genre so that it may be implemented into *ORIGIN*.

Then, on a technical side, this project poses a question to the nature of 2D skeletal animation and how it differs from the more common 2D sprite sheet animation. With the involvement of a newly released authoring tool, this project explores on how the Spine 2D software can be integrated into Unity 3D 5.5 game engine. Subsequently, the play experience and usability of the produced prototype needs to be evaluated. How players feel about the game during their play experience indicate whether the interactions in the game makes sense and what impression does the game content gives them.

Besides, the aspects of usability are further explored based of the Usability Heuristics defined by Nielsen (1993) and Korhonen and Koivisto (2006).

### 1.3 Objectives

The aim of this final year project is to develop a 2D Action RPG side-scrolling platformer game with local content in the context of Sabahan folklore. This project also serves the intent of creating a game to showcase local elements while presenting an interactive gameplay. By the end of the development, the prototype of the game should be tested for the quality of its game experience and usability heuristics. To accomplish the development, several objectives are pursued.

Therefore, the objectives of this project are:

- To study the characteristics of Action RPG game genres and implement them into *ORIGIN*,
- To differentiate between modern 2D skeletal animation and traditional 2D sprite sheet animation,
- To evaluate the game experience and usability heuristics of the *ORIGIN* prototype among the target users.

### 1.4 Scope

This game is developed with the intention for entertainment to the general audience of the age 10 years old and above with no specific gaming ability. This is because to correlate with the game elements within *ORIGIN* that possesses the themes that may require minor supervision such as the involvement of omnipotent deity, fantasy

violence, as well as interaction input appropriate for intuitive play and general reading comprehension for audience above the age of 10.

The narrative of the game is done with illustrations that are accompanied by texts to provide players some part of a retelling of the *Legend of Huminodun*. The texts are written in simple grammar to allow players as young as 10 years old to understand the context of the narration. Players are also required to have a simple grasp of hand to eye coordination to execute actions within the game such as jumping, attacking and manoeuvring the platforms in the game. With no specific gaming ability in target, the prototype of the game is evaluated in terms of game experience and usability heuristics to identify design and technical flaws for future improvements.

## 1.5 Project Significance

Picucci (2014) stated that games have expressive potential to create fictional worlds beyond dimensions and populate them with large arrays of characters; with the appeal to being able to make them navigable in the world itself, it harnesses a more dynamic expression in the medium. One of the significance of this game is that it focuses on providing an engaging media to showcase the culture of the Kadazandusun's mythology. This project will assess whether the cultural context, in terms of visuals and overall storytelling, within the game content supports the reception of *ORIGIN* among the target users.

Next, this project explores into the study of Action and RPG game genres. Game genres study is a formal approach to defined generalized form of categories through the analysis of conventions relating to game mechanics. (Clearwater, 2011.) With this study, an outline of criteria that satisfy the scope of the Action and RPG genre can be made so that it can be influenced into the game design of *ORIGIN*. The

outline can be used as references for other study ventures that wishes to design or develop game of similar nature.

Moreover, this thesis also documents the comparison done between traditional 2D sprite sheet animation and modern 2D skeletal animation. Both animation techniques have their own advantages and drawbacks which can be used as future references for anyone who wishes to explore any one of the technique that is the best for their own development project.

## 1.6 Summary

In summary, Chapter I is a detailed introduction of this project. *ORIGIN* is a 2D game with a purpose to entertain and player above the age of 10 is introduced to the retelling of the *Legend of Huminodun* as an effort to showcase its existence to people. Then, the aim of this project is to study the characteristic of Action RPG games and implement them into the development of *ORIGIN* so that the game features are relevant to its genre. This project is also introduced as a development project with the emphasis on 2D animation production with skeletal animation and the testing of the prototype is done on the quality of its usability involving 30 target users and 3 experts.

In the next chapter, literature review is done to explore and discuss on several related topics in relation to the main questions arise for the project. The elements within the Action RPG game genres are identified and its characteristics are defined so that it may be implemented into the game design of *ORIGIN*. In addition, 2D animation in games are discussed with the primary focus on 2D skeletal animation and 2D sprite sheet animation so that differences between both types can be identified and listed. Studies on game experience and usability heuristics in games are also explored so that proper focus for the requirements and aspects of evaluation for *ORIGIN's* usability heuristics can be done more systematically.