Synopsis on

Role-Playing Game

Department of Information Technology

By

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Under the guidance of

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St. Thomas' College of Engineering and Technology

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St. Thomas' College of Engineering and Technology
Final Year Seventh Semester Synopsis

We are submitting the synopsis on Role-playing game as a part of our final year seventh semester project under the guidance of Dr. Arindam Chakravorty.

Binish Shamim Shabnam Preteen Sambit Saha Sohamee Khanra

Arindam Chakravorty

STCET-IT

Vision:

To promote the advancement of learning in Information Technology through research-oriented dissemination of knowledge which will lead to innovative applications of information in industry and society.

Mission:

- To incubate students, grow into industry ready professionals, proficient research scholars and enterprising entrepreneurs.
- To create a learner – centric environment that motivates the students in adopting emerging technologies of the rapidly changing information society.
- To promote social, environmental, and technological responsiveness among the members of the faculty and students

PEO:

Graduates of Information Technology Program shall

PEO1: Excel in professional career, higher education and research.

PEO2: Demonstrate professionalism, entrepreneurship, ethical behaviour, communication skills and collaborative team work to adapt the emerging trends by engaging in lifelong learning.

PEO3: Exhibit the skills and knowledge required to design, develop and implement IT solutions for real life problems.

Project Mapping with Program Outcomes

PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
3	3	3	3	3	2	-	2	3	3	3	3

Justification:

1. Engineering knowledge: Application of the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems is required in this project, hence, it satisfies PO1.

2. Problem analysis: Identifying, formulating, reviewing research literature, and analyzing complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences is highly required in this project, hence, it satisfies PO2.

3. Design/development of solutions: Designing solutions for complex engineering problems and designing system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations are required to be done in this project, thus, PO3 stands applicable.

4. Conduct investigations of complex problems: Using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions is required to a great extent. PO4 stands applicable.

5. Modern tool usage: Appropriate modern tools and methods are used. Hence PO5 stands applicable

6. The engineer and society: Application of reasoning informed by the contextual knowledge to assess cultural issues and the consequent responsibilities relevant to the professional engineering practice is recognized in this project, hence, PO6 stands applicable.

7. Environment and sustainability: This project's impact is more cultural and technology based, hence, PO7 is not applicable.

8. Ethics: Applying ethical principles and commitment to professional ethics and responsibilities and norms of the engineering practice is required. PO8 is applicable.

9. Individual and team work: Functioning effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings: this is applicable here.

10. Communication: Communicating effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, making effective presentations, and giving and receiving clear instructions: PO10 is substantially applicable in this project.

11. Project management and finance: Demonstrating knowledge and understanding of the engineering and management principles and applying these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments: this is applicable in this project, hence PO11 is applicable.

Program Specific Outcomes

Project Mapping with Program Specific Outcomes

PSO1	PSO2
3	3

Justification:

PSO1 (Professional Competency): Application of knowledge in the field of information technology and establishment of skills in high performance computing, software engineering, programming is required in this project. Hence it satisfies PSO1.

PSO2 (Academic Aptitude): Demonstration of proficiency in analytical and critical thinking, methodologies of practical design, data analysis and interpretation through technical expertise is applicable in this project hence it satisfies PSO2

Chapter 1: Introduction

1.1 Problem statement:

To design, author and implement a Role-Playing Game (RPG) using Unity Game Development Software.

1.2 Problem definition:

-Animation: A presentation that delivers audio, video, image, text which is developed electronically to make understand the target audience.

-Role Play Game: A game in which players assume the roles of characters in a fictional setting. Players take responsibility for acting out these roles within a narrative, either through literal acting or through a process of structured decision-making regarding character development.

-Unity: It is a cross-platform game engine developed by Unity Technologies, first announced and released in June 2005 at Apple Worldwide Developers Conference as a Mac OS X game engine. The engine has since been gradually extended to support a variety of desktop, mobile, console and virtual reality platforms. It is a tool that allows you to accomplish different types of tasks related to the game production process. Unity provides game developers with a 2D and 3D platform to create video games.

1.3 Objectives:

The main goal is to entertain players and provide them with an enjoyable and immersive experience. This involves creating engaging storylines, interesting characters, and captivating worlds.

-To develop a compelling narrative that captures players' attention and keeps them invested in the game world. This often includes creating a rich backstory, well-defined characters, and meaningful choices for the players.

-To allow players to shape and evolve their characters over time. This includes character customization, skill progression, and decision-making that affects the character's story arc.

-To design visually appealing environments, characters, and assets that complement the game's theme and contribute to the overall atmosphere. Artistic elements are crucial for immersion and conveying the intended mood.

-To ensure the game runs smoothly and is free from major technical issues. This involves optimizing performance, minimizing bugs, and providing a seamless gaming experience.

-To influence target audience with audio and visual activity.

1.4 Background Study:

According to research done prior to the beginning of this project, some information regarding game development was collected. In preparation for developing a game in Unity, a comprehensive background study is indispensable. This study encompasses a multifaceted understanding of the Unity game engine, delving into its interface, scene organization, and scripting capabilities in C#. Analysis of successful games within the desired genre, especially those employing a third-person perspective, helps identify key design elements such as camera systems, character movement, and engaging gameplay mechanics. Consideration is given to the creation and integration of 2D assets, ensuring they align with the envisioned visual style and are optimized for performance. Additionally, planning extends to the development of a user-friendly UI, incorporating health bars, inventory menus, and other interactive elements. Scripting practices, coding standards, and optimization strategies are delineated to foster a modular and efficient codebase. Testing phases are outlined, encompassing playtesting sessions for feedback and rigorous debugging processes. Moreover, it includes community engagement strategies, anticipating the need for comprehensive documentation, user guides, and ongoing support for a successful game development journey in Unity.

1.5 Brief discussion:

Designing, authoring, and implementing a Role-Playing Game (RPG) in Unity involves a collaborative and iterative process that draws upon both creative and technical expertise. In the design phase, a thorough understanding of the game's narrative, characters, and world is crucial. Unity's visual interface facilitates the creation of detailed 2D environments and characters, allowing designers to bring their concepts to life. The authoring process involves scripting in C# to define the game's logic, character behaviors, and interactive elements. Unity's scripting capabilities offer flexibility in implementing complex RPG mechanics such as character customization, skill systems, and quest structures. The integration of assets, including models, animations, and audio, is streamlined through Unity's Asset Store, providing a wealth of resources for developers.

During implementation, careful consideration is given to user interface design, ensuring a seamless and intuitive player experience. Unity's cross-platform capabilities allow for deployment on various devices, broadening the game's accessibility. The iterative nature of development involves continuous playtesting and refinement, with Unity's real-time editing features facilitating quick adjustments. Collaboration among team members, including designers, artists, and programmers, is enhanced through Unity's version control and collaboration tools.

Optimization for performance is a key consideration, with Unity providing profiling tools to identify and address bottlenecks. As the game nears completion, comprehensive testing ensures a polished and bug-free experience. Unity's community forums and documentation serve as valuable resources for troubleshooting and problem-solving. In conclusion, designing, authoring, and implementing an RPG in Unity is a dynamic and collaborative process that leverages the platform's robust features. The combination of creative vision, technical proficiency, and Unity's development environment empowers teams to create immersive and engaging RPG experiences for players.

Chapter 2: Concepts and Problem Analysis:

2.1 Target Audience: Any person of age 8 and above.

System Requirements:

For developers:

Software Specifications

- Windows 10 and above operating system.
- Unity Hub
- Unity Version 2022.3.7f1 or above.
- Visual Studio Code with C# extension

Hardware Specifications

- AMD Ryzen 7 3750H with Radeon Vega Mobile Gfx 2.30 GHz or above
- Minimum 10GB Hard disk space.
- Minimum 8GB RAM (16 GB better) with 3200rpm
- NVIDEA GTX 1650 graphics card
- SVGA Color Monitor.
- Mouse and Keyboard.
- Speaker

For Users:

Software Specifications

- Windows 10 and above operating system.

Hardware Specifications

- SVGA Color Monitor.
- Minimum 4GB RAM
- Intel i3 5th gen / AMD Ryzen 5 3000H or above
- Minimum 200MB Hard disk space
- Speaker
- Mouse.

2.3. Design Methodology:

2.3.1 Story

The story is about the land Bahavia where everyone lived peacefully. The King, Alex was the ruler at that point of time and was very popular among his soldiers and the common people for his kindness and bravery. He lived with his wife, Mary the Queen and son, Prince Clovin.

One day, the enemies from town Anexia came and attacked Bahavia to capture the land. They had targeted Bahavia since ages but was unable to attack due to King Alex's bravery. But, unfortunately King Alex was unable to stop them. They entered the empire and attacked everyone.

Seeing the situation, Alex told Mary the Queen, "I cannot sit back here and wait for them to come and kill my family. They have already killed many and now I need to go and fight for my family".

Listening to Alex, Mary the Queen replied, "How can you go there? If you go, they will definitely try to kill you. They have killed most of our soldiers and their next target is you. "

"For the sake of my family, I will go. If anything happens to me, take care of yourself and Prince Clovin", saying these words, he left.

Soon news came that King Alex was killed.

Mary the Queen was shattered after hearing the news but thinking about Prince Clovin, she decided to control her emotions and escape from Bahavia with her son.

Unfortunately, Prince Clovin was kidnapped by the enemies so that they can kill him also. But Prince Clovin is no less. He somehow managed to escape but the enemies are constantly chasing him.

Will Mary the Queen be able to save her son and fight them to victory to save her son and her land?

2.3.2 SCRIPT:

Acronyms and characters referred:

ABBREVIATION	**MEANING**
A	Animation
AT	Animated Text
BI	Background Image
BM	Background Music
BT	Button
SND	Sound
T	Text
I	Image
VO	Voice Over

CHARACTER NAME	**CHARACTER IDENTITY**
Clovin	Prince of Bahavia
Alex	King of Bahavia
Mary	Queen of Bahavia

SAMPLE SCRIPT

SCENE 1:

BI1.1: Background Image of the Game

AT1.1: Name of the Game

BM1.1: Background Music

BT1.1: Start Button, hyperlinked to Scene 2

BT1.2: Button of Background Music On/Off

SCENE 2:

A2.1: Animated clip of the story

VO2.1: Voice over of the story with respect to the dialogues of the animated clip

BT2.1: Guideline, hyperlinked to Scene 3

SCENE 3:

T3.1: Right arrow allowing the character to move in the forward direction

T3.2: Left arrow allowing the character to move in the backward direction

T3.3: Up arrow allowing the character to jump to avoid obstacle

T3.4: Shift allowing the character to take power run

T3.5: Single Click allowing the character to attack enemy normally

T3.6: Triple Click allowing the character attacking enemy in combo attack

BI3.1: Background Image of the Game

AT3.1: Guidelines of the Game

BT3.1: Tap to Play Button, hyperlinked to Scene 4

SCENE 4:

A4.1: The background of the Game showcasing the real environment of the situation with respect to the animated clip.

A4.2: The main character trying to escape from the enemies.

A4.3: The enemies trying their best to attack the main character

A4.4: The obstacles placed in such a way that obstructs the main character to escape.

A4.5: A lifeline range showing the main character's chance to play

BM4.1: Background Music

BT4.1: Button of Background Music On/Off

BT4.2: Pause Button, hyperlinked to Scene 5

SND4.1: Sound of attacks (attack.mp3)

SND4.2: Sound of people screaming (scream.mp3)

SND4.3: Sound of horse galloping (gallop.mp3)

SCENE 5:

BT5.1: Resume Button, hyperlinked to fourth scene

BT5.2: Quit Button, hyperlinked to third scene

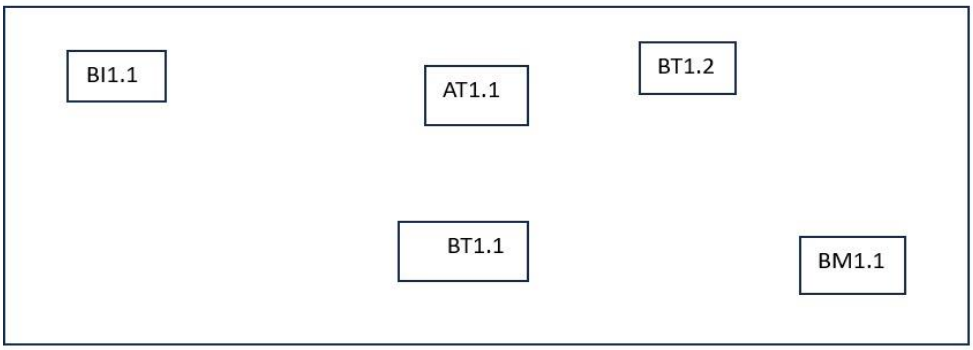
BI5.1: Background Image of the Game

BM5.1: Background Music

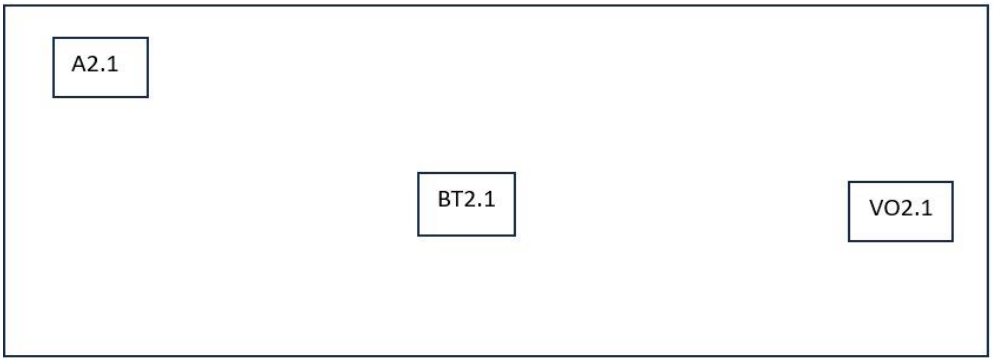
BT5.3: Button of Background Music On/Off

STORYBOARD:

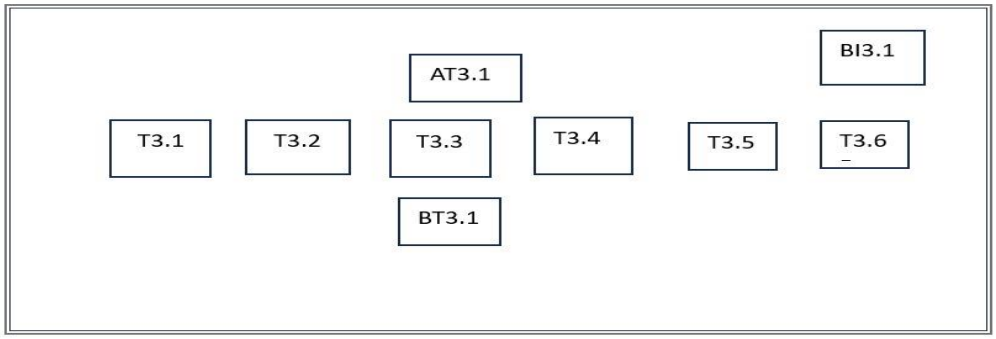
SCENE 1:



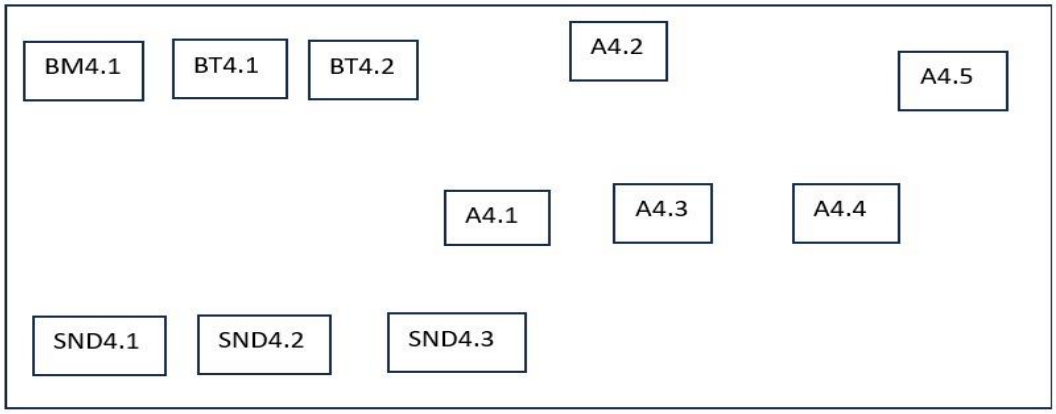
SCENE 2:



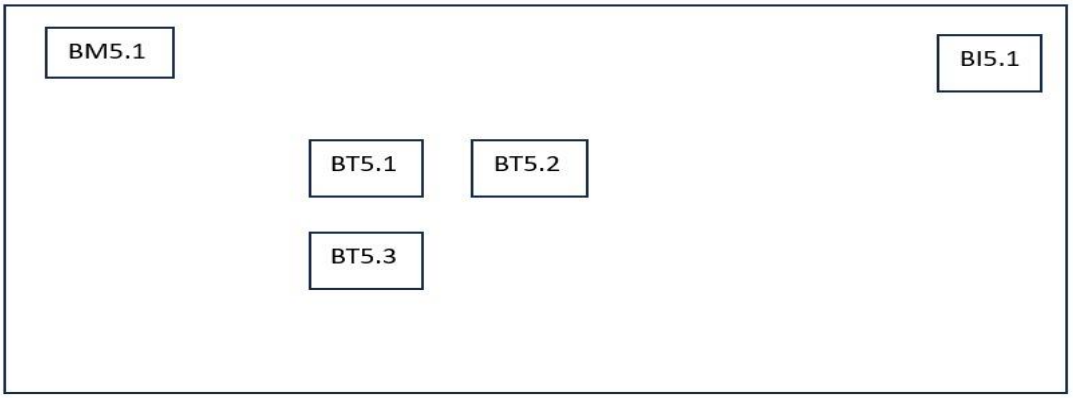
SCENE 3:



SCENE 4:



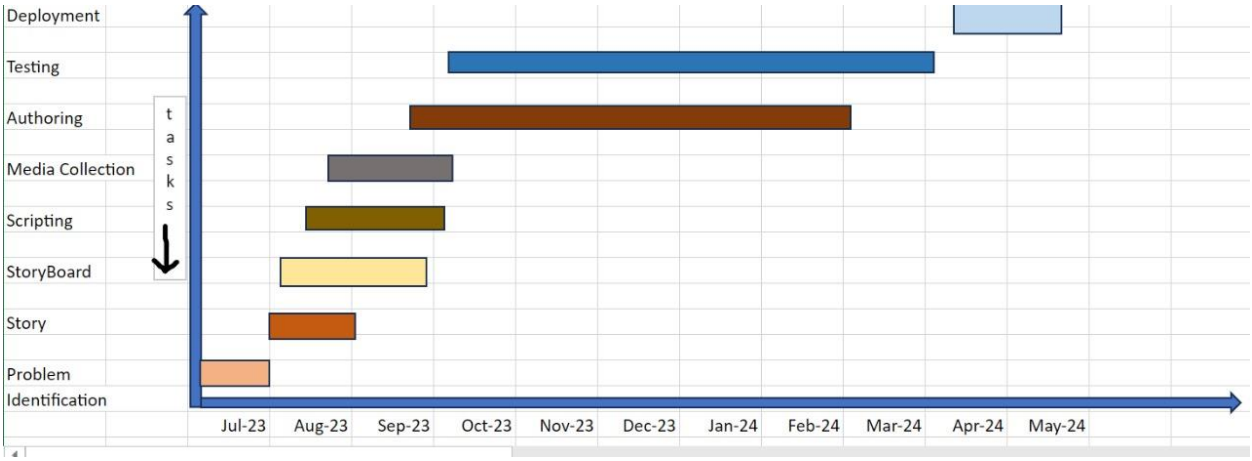
SCENE 5:



COSTING:

Serial Number	Task	Person-Month
1.	Problem Identification	4
2.	Story	5
3.	Story Board	5
4.	Scripting	3
5.	Media Collection	3
6.	Authoring	7
7.	Testing	6
8.	Deployment	7
	TOTAL	40 PM

PROGRESS CHART:



Months⟶

Chapter 3: Conclusion and Future scope

3.1 Conclusion:

In conclusion, the development of a Multimedia Game using Unity has been an exciting and challenging journey, filled with valuable experiences and lessons. This project aimed to create an engaging and interactive game that incorporated various multimedia elements, including graphics, audio, and animation, to provide players with an immersive gaming experience. The goal of the game is that the players will enjoy and appreciate the game that is created, and that it will serve as a testament to our dedication and hard work throughout this final year project.

3.2 Future Scope:

More features in the game such as multiplayer features can be added, more weapons and life saver features can be implemented. There is a scope of creating this 2d game in 3d game by using Unity game development engine. This can be done by using Unity's features like 3D Modelling and Animation ans many more features.

References and Bibliography

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3. Introduction to Game Design, Prototyping, and Development- Jeremy Gibson Bond.
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6. https://www.udemy.com/course/2d-rpg-alexdev/