DESIGNING ROGUELITE PLATFORMER GAME "BONE AND SOUL"
BASED ON WINDOWS

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ABSTRACT
The game "Bone and Soul" is a roguelite platformer game that tells the journey of a character who has been deceived by the Demon King. After being deceived, the only thing that remain is bones and half of his soul. Therefore, the main character will climb the Demon King's Tower to fight against him and reclaim his lost half soul. The Demon King's Tower is composed of various rooms and are procedurally generated. As the game progresses, the main character will acquire other characters to help him defeat the demon king. Bone and Soul is a 2D pixelated game created using the Unity game engine and can be played on the PC platform.

Keywords: Bone and Soul, Pixelated, procedural, Rogue-lite, Unity

1. INTRODUCTION

The world of technology has been rapidly advancing at present. One of these advancements is in the realm of gaming. Games are essentially a form of entertainment because playing games brings joy to the users. In today's era, games are presented with sophisticated visual quality due to technological support, allowing players to interact more freely according to their own preferences and making them feel immersed in the game.[1]

The roguelike genre was initially introduced by a game called "Rogue: Exploring the Dungeons of Doom" in 1980, commonly known as "Rogue." The objective of "Rogue" is for players to reach the bottom of the underground dungeon and acquire the Amulet of Yendor. The concept of the game mixes RPG elements with hardcore gameplay, leading players to experience multiple deaths and requiring them to start over from the beginning, striving to do better each time.[2]

Therefore, genres like this are referred to as Roguelike games. Typically, Roguelike games are very challenging to play, and lighter variations of the genre are called Roguelites. The Roguelite genre essentially shares the same characteristics as the Roguelike genre. After experiencing multiple deaths or defeats, players can make upgrades or improvements to make their subsequent attempts easier.

Pixel art games are easier to create compared to modern games that use 3D graphics or even more complex 2D graphics. This allows for game development to be done at a lower cost and faster pace than modern games. As a result, many indie games have adopted the pixel art graphical style.
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faster pace than modern games. As a result, many indie games have adopted the pixel art graphical style.

Game References

One of the games that has been designed and provided inspiration for the game Bone and Soul is the game Arcana Memories. Arcana Memories is a 2D roguelike platform-based game developed by Johny Andersen. The game is created using the C# programming language with Unity Engine development. In this game, players will take on the role of a young man who is trying to regain lost memories. The objective of the game is to obtain the character's memories by completing tasks such as exploring a constantly changing dungeon, defeating enemies within the dungeon, reaching the final room, and defeating the boss inside the dungeon. [3]

2.   RESEARCH METHOD

Before creating a game, it is important to have a design method that serves as a framework for the game development process. While there is no specific template that must be followed in game development [4] there are several key considerations to keep in mind. These include: [5]

1.   High Concept
    The High Concept is a brief description of the game being designed. Its purpose is to ensure that the game development stays on track with the intended design. The game to be created is titled "Bone and Soul," featuring a 2D-themed roguelite platformer genre. In this game, players will control a skeletal character and navigate through various rooms filled with enemies and obstacles. Players can choose to engage in combat with the enemies or strategize to bypass the challenges. The ultimate victory is achieved when the player reaches the final room and confronts the boss. The proposed specifications for "Bone and Soul" are as follows:
    a.   Game Title: Bone and Soul
    b.   Genre: Roguelite, Platformer
    c.   Language: English
    d.   Audience: Children aged 13 and above to adults
    e.   Number of Players: Single player
    f.   Graphics: 2D pixelated art
    g.   Game Engine: Unity Engine
    h.   Programming Language: C#
    i.   Controls: Keyboard and Mouse
    j.   Platform: Windows 8 and above

2.   Gameplay
    The gameplay in "Bone and Soul" involves climbing the Demon King's tower to complete rooms and battle against bosses. Players can choose to complete procedurally generated rooms. There are several types of rooms within the tower, including enemy rooms, elite rooms, merchant rooms, obstacle rooms, prison rooms, and boss rooms.

    If the player completes an enemy room or an elite room in "Bone and Soul," they will receive a certain amount of coins and karma. Coins can be used to restore health and purchase potions in the merchant room. "Karma" is used to enhance the character's stats through a ritual in the basecamp. In obstacle rooms, players will only receive coins. Prison rooms are meant for unlocking additional characters, and the characters obtained will be randomized. Once all characters have been unlocked, the prison room will

disappear. The boss room is the final room that contains a boss character, and the player must defeat the boss character to complete the game.

The game "Bone and Soul" consists of 7 levels. Levels 1 to 6 will be comprised of various types of rooms, including enemy rooms, elite rooms, merchant rooms, obstacle rooms, and prison rooms. The number and types of rooms will be procedurally generated. Level 7 will feature the boss room, serving as the final challenge in the game. There are several important aspects of gameplay, including:

a. Control design
The controls used in the game "Bone and Soul" are keyboard-based, while the mouse is used for navigation. The keyboard can be used for light attacks, skills, movement, character swapping, and using potions. These controls can be found in Table 1.

Table 1. Game Control

Tombol	Fungsi
a	Bergerak ke kiri
s	Turun
d	Bergerak ke kanan
spasi	Lompat
1	bertukar ke karakter 1
2	bertukar ke karakter 2
3	bertukar ke karakter 3
z	Menggunakan potion 1
x	Menggunakan potion 2
c	Menggunakan potion 3
j	Serangan ringan
k	skill

b.   Character design

The character design in the game is divided into two categories: player characters and enemy/monster characters that need to be defeated. Both types of characters have pixel art design characteristics. Here are the character designs in the game:

1) Playable Character

In the game "Bone and Soul," the main character is a skeletal frame wielding a sword. As the game progresses, additional characters are introduced to assist the main character in their journey. The main character can be seen in the Figure 1. And the other character can be seen in the Figure 2 to 4.

Figure 1. Main Character

Figure 1. Bow Character

Figure 2. Spear Character

Figure 3. Mage Character

Figure 4. Hammer Character

Each character has a unique set of attacks, and the damage inflicted by each character is multiplied according to their individual traits. There are three types of   stats,   namely

Health, Attack, Critical, each of this stats can be improved by the player using points called karma.

2) Enemies

There are two types of Monster characters, Norm and Elite, each with different sets of stats. Both Norm and Elite monsters will reduce the player's health by 0.5. The Elite character has special abilities such as throwing rocks and having high health points.

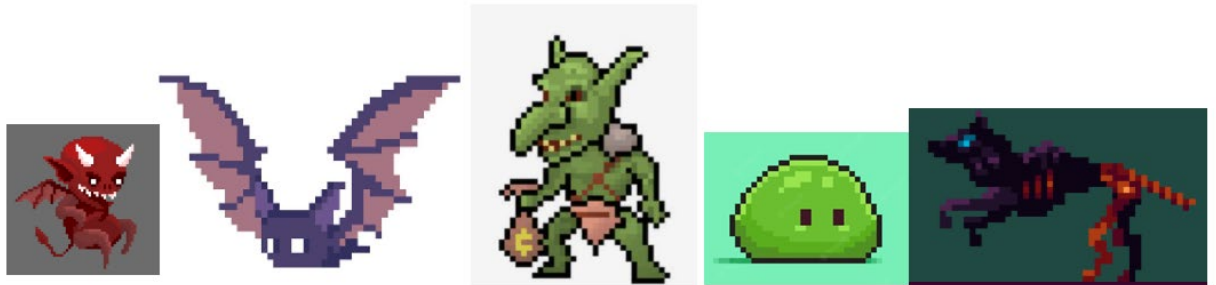Norm enemies can be seen in Figure 5. And the Elite monster can be seen in Figure 6
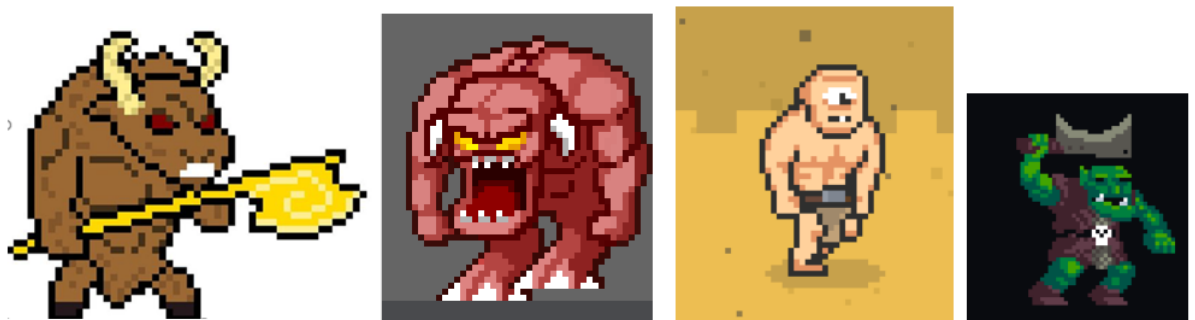

Figure 5 Norm monsters

Figure 6 Elite monsters

3) Boss

The boss character is the Demon King that must be defeated by the player. This boss character is only encountered in level 7. To complete the game, the player must defeat this boss character three times. The boss can teleport and unleash fireballs periodically. However, each time the boss character is defeated, it becomes stronger and gains new moves, such as summoning more fireballs or spawning elite monsters. The boss character can be seen in Figure 7.
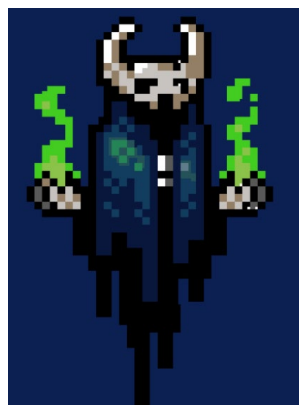

Figure 7 Bos (Demon King)

c.   Object design
There are various objects in "Bone and Soul". Coins are currency objects that can be used to assist the player in completing the game. Coins can be used to purchase various items in the game, including:

1) Attack Damage Potion:
This potion can be purchased for 20 coins. It increases the character's base attack by 2 points and lasts for 20 seconds.

2) Critical Rate Potion:
This potion can be purchased for 30 coins. It increases the character's base Critical Rate by 5% and lasts for 20 seconds.

3) Critical Damage Potion: This potion can be purchased for 30 coins. It increases the character's Critical Damage by 20% and lasts for 20 seconds.
The 3 potions can be seen in Figure 8.

Figure 8. Critical Rate Potion, Critical Damage Potion, and Attack Damage Potion

Karma is used in the Rituals at the Basecamp to enhance the character's status, such as total health, attack damage, and critical rate. Items purchased with coins will be lost when the game ends, while items purchased with karma are permanent upgrades.

In the game "Bone and Soul," there are various obstacle objects found in the Obstacle rooms. These obstacles are designed to hinder the players' progress. If a player touches or collides with an obstacle, they will receive damage of 0.5. The obstacle objects include:

1) Spike
This obstacle is shaped like a sharp triangular spike. Players will receive damage upon touching it.

2) Lava
This obstacle is in the form of a pool of lava. Players will receive damage upon touching the lava and continue to receive damage every 3 seconds.

3) Poison pipe
This obstacle is shaped like a pipe and releases toxic gas. Touching the pipe itself won't cause damage, but players will receive damage upon touching the poisonous gas.

4) SawBlade
This obstacle is in the form of a moving saw blade that follows a predetermined path. Players will need to avoid touching the saw blade as it moves along the path.

d.   Level design

In the game "Bone and Soul," there are several rooms that players can encounter. These rooms include: enemy room, elite room, merchant room, obstacle room, prison room, and boss room. Here are the details of each room:

1) Enemy room:

   The enemy room is where players engage in battles against normal monsters. The appearance of the monsters in the enemy room is randomly calculated based on the available types of normal monsters. Since there are only 5 types of normal monsters, each has a 20% chance of appearing. Upon completing the enemy room, players receive 25 coins and 30 karma. The red circle in the enemy room indicates the spawn point.

2) Elite room:

   The elite room has a similar appearance to the enemy room, but there will be at least one randomly spawned elite monster with a 25% chance of appearing, considering there are 4 types of elite monsters. The elite room rewards players with 50 coins and 45 karma.

3) Obstacle room:

   In the obstacle room, players do not need to fight any monsters. Instead, they encounter various obstacles that need to be overcome. Successfully completing this room rewards players with 30 coins.

4) Prison room:

   The prison room contains locked characters behind iron bars. To unlock these characters, players need to pay a fee of 30 coins. Once all the characters are unlocked, the prison room disappears and is replaced by a different room.

5) Merchant room:

   In the merchant room, players can use their coins to restore their health and purchase potions.

6) Boss room:

   The boss room is the final room to complete the game. Only boss characters will appear in this room.

   The game "Bone and Soul" consists of 7 levels. Levels 1 to 6 will be procedurally generated with various types of rooms, including enemy rooms, elite rooms, merchant rooms, obstacle rooms, and prison rooms. In each ascent, there are limitations such as the presence of 0 to 2 elite rooms and merchant rooms, and only 0 to 1 prison room. As an example, the appearance of a procedurally generated room can be seen in Figure 9.

Figure 9. Map Example

e.   Sound design

The sounds used in this game are divided into two types: Background Music and Sound Effects.
Here's an explanation of each type:
1) Background Music:
   As the name suggests, Background Music is the music that plays throughout the game.
   The theme of the music is adjusted to match the dungeon being explored. This is done to
   enhance the atmosphere and immersion within the game's dungeons.
2) Sound Effects:
   Sound Effects are audio effects that play in response to specific events or actions. For
   example, when the player attacks an enemy, there will be the sound of sword slashing,
   blood splattering, or the screams of monsters being hit. These sound effects add depth
   and realism to the game's combat and interactions.

3.   Story
   The background of this game begins with a young man who has become desperate due to
   a life filled with debt. Suddenly, the Demon King appears and offers him a deal to change
   his life. Filled with despair, the young man signs the agreement without knowing the
   dangers that await him. In an instant, his body and soul are drawn into the demonic
   world.

   The young man realizes that half of his soul has been taken by the Demon King. As a
   skeletal being, he sets out to find and reach the tower where the Demon King resides.
   This is why the game is called "Bone and Soul." In the game, players will control the
   main character who wields a sword. As the game progresses, the player will encounter
   other characters who have been deceived by the Demon King. These characters can be
   recruited to assist the player in completing levels and defeating the Demon King.

However, even after defeating the Demon King, he doesn't truly die but manages to escape. Therefore, to complete the game, the player must confront the Demon King three times. Once the Demon King is defeated, the souls of the main character and the other characters will be released, and a portal will appear to return them to the human world.

4.   Audience
    This game is designed for all age groups, starting from a minimum age of 13 years, according to the guidelines of IGRS (Indonesia Game Rating System), which is an implementation of the Ministry of Communication and Informatics of the Republic of Indonesia Regulation No. 11 of 2016 on the Classification of Electronic Interactive Games.
5.   Software and Hardware
    Software and hardware requirements explain the minimum specifications of the hardware and software needed to play the designed game.
6.   Visual Design
    Visual design pertains to the user interface (UI) design of the game being created.

Roguelike

The Roguelike genre is a subgenre of Role-Playing Games (RPGs) with several important features, including item randomization, procedural dungeon crawling with generated levels, and permadeath, which means permanent character death. However, this has sparked debates about whether games of this kind can truly be considered roguelike. As a result, a conference called "Berlin's Interpretation" was held in 2008. This conference established 8 factors that can define a roguelike game:[6]
Random Environtment Generation
    a) PermaDeath
    b) Turn-Based
    c) Grid-Based
    d) Non-Modal
    e) Complexity
    f) Resource management, exploration, and discovery
    g) Hack and slash
These factors serve as guidelines to define what constitutes a roguelike game. However, it's important to note that not all games in the genre adhere strictly to all these factors, leading to variations and interpretations within the roguelike genre.

Roguelite

In the Roguelite genre, the basic factors are similar to those in the roguelike genre mentioned above. However, these factors are simplified, for example, the player character does not experience permadeath or permanent death. The player character will grow and progress throughout the game.
In the roguelite genre, there are fixed events or predetermined paths that are designed to reduce pure randomness. [7] For example, each level leading up to a boss fight is specifically designed

to provide a certain challenge or objective. This adds a sense of structure to the gameplay experience while still retaining elements of randomness and replayability.

Platformer

Platformer games are 2D gaming environments characterized by platforms where characters can move. These platforms can be arranged at varying heights and distances from the player's starting position, and the player must navigate them by jumping onto platforms that may contain enemies, hard-to-reach areas, moving platforms, or traps.[8]

Software Utilized for Development

There are various software used to develop the game "Bone and Soul". These software are utilized to accomplish various tasks such as character creation, character animation, and scripting. Some of the tools used for these purposes include:

1. Unity
   Unity, as the primary platform for game development, provides a multitude of features that facilitate the creation of interactive 3D content. With its robust engine and comprehensive toolset, developers can build immersive environments, implement realistic physics, and bring characters and objects to life. Utilizing Unity's capabilities, game creators can unleash their creativity and deliver engaging and visually stunning experiences for players.
2. Visual Studio Code
   Visual Studio Code is a powerful code editor that will be utilized for scripting and debugging tasks during the development process. Its robust features and intuitive interface make it an efficient tool for writing and troubleshooting code. With Visual Studio Code, developers can enhance their productivity and streamline the development workflow.
3. Aseprite
   Aseprite is an application that can be used to create images and animations with 2D pixel art and retro-style graphics. It offers a wide range of features that make the process of creating pixel art and animations much easier

3. RESULT AND DISCUSSION

The game to be created is titled "Bone and Soul," featuring a roguelite platformer genre with a 2D theme. This game will be exclusively available for PC with a minimum operating system requirement of Windows 8 and can be played by a single player. In "Bone and Soul," players must defeat a boss located in the boss room on the 7th level. Levels 1 to 6 will consist of procedurally generated rooms, offering a unique and challenging experience with each playthrough.

Module Design

"Bone and Soul" features several Module design, including:

1. Main Menu Module

This module is the first module that appears when the player opens the game. In this module, players can choose to start the game by selecting the "Start" module or load a saved game, and they can also access the "How to Play" module.
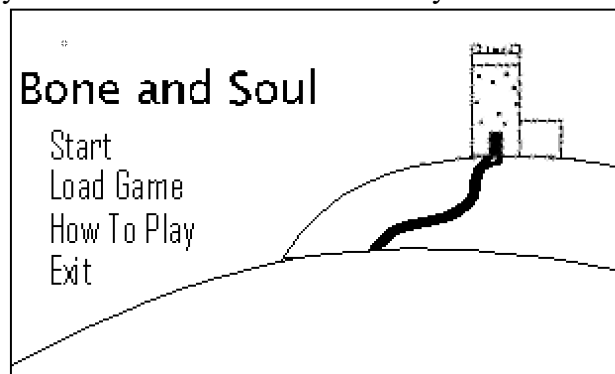

Figure 10. Main Menu Module

2. Basecamp Module
    This module is for players to access the Ritual Module, Party Module, Practice Module, and Game Module. It will appear when the player loads a saved game or when the game ends.
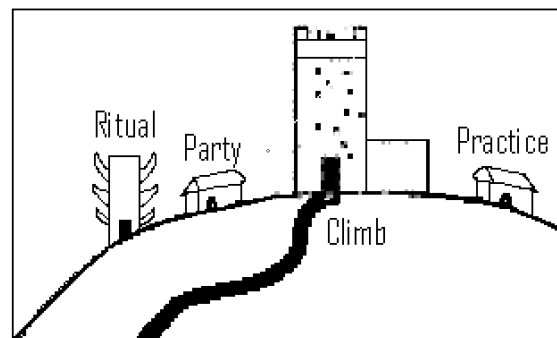

Figure 11. Basecamp Module

3. Ritual Module
    This module is for players to upgrade their character's stats to make the game easier. To improve the stats, players only need to click on the buttons that display the prices to increase their character's stats.
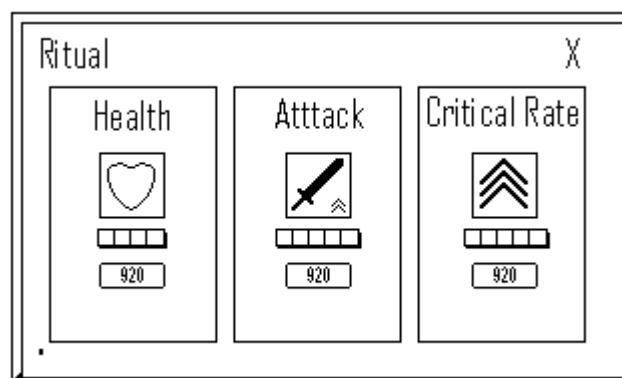

Figure 12. Ritual Module

4. Party Module

This module is for players to select the character they want to play with. To switch characters, players simply need to click on the panel of the desired character, and the character panel will open.
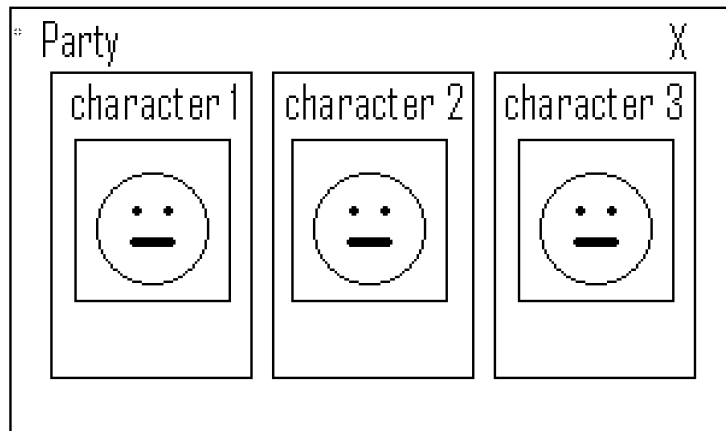

Figure 13. Party Module

5.   Shop Module
This module is for players to restore their health or buy potions that can be used.

Figure 14. Shop Module

6.   Game Module
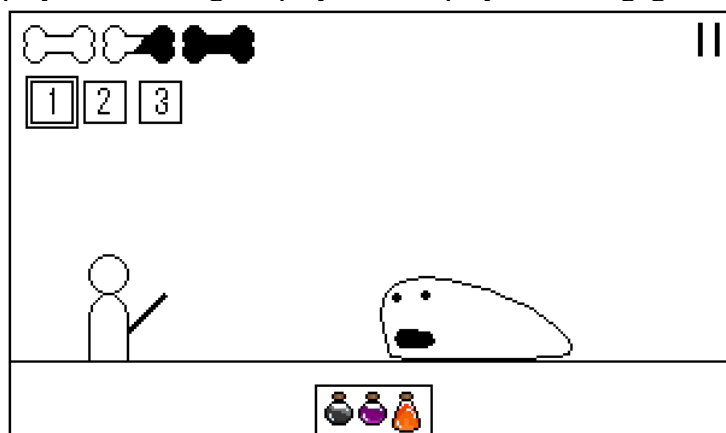This module displays the actual gameplay that the player will engage in.

Figure 15. Game Module

7.   Pause Module

Players can temporarily pause the game being played. In this module, there are buttons to return to the Basecamp Module, go back to the Main Menu, or resume the game.
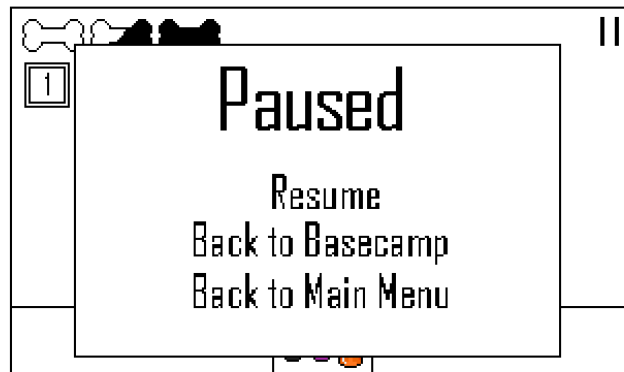

Figure 16. Pause Module

8.   Game Over Module
This module displays the screen when the player dies. In this section, players can choose to return to the Basecamp Module or go back to the main menu.

Figure 17. Game Over Module

4.   CONCLUSIONS AND SUGGESTIONS

Bone and Soul is a Rogue-lite platform game that offers a unique experience in each playthrough. It features room randomization system, allowing players to encounter different room layouts with each run. Players can utilize various characters with different attack styles, purchase potions to aid their gameplay, and upgrade their stats to combat the existing monsters. The objective of the game is to provide players with an engaging and challenging adventure to defeat boss characters in order to restore the character's soul.

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