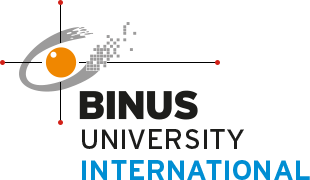
Even Semester (2022)



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| Assignment Cover Letter  (Individual Work) |

**Student Information:**

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**Course Code :** COMP6047001 **Course Name :** Algorithm and Programming

**Class :** L1AC **Lecturer :** Jude Joseph Lamug Martinez, MCS

**Type of Assignments:** Term Final Project

**Submission Pattern**

**Due Date :** 17 June 2022 **Submission Date :** 10 June 2022

The assignment should meet the below requirements.

1. Assignment (hard copy) is required to be submitted on clean paper, and (soft copy) as per lecturer’s instructions.
2. Soft copy assignment also requires the signed (hardcopy) submission of this form, which automatically validates the softcopy submission.
3. The above information is complete and legible.
4. Compiled pages are firmly stapled.
5. Assignment has been copied (soft copy and hard copy) for each student ahead of the submission.

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**Declaration of Originality**

By signing this assignment, I understand, accept, and consent to BiNus International terms and policy on plagiarism. Herewith I declare that the work contained in this assignment is my own work and has not been submitted for the use of assessment in another course or class, except where this has been notified and accepted in advance.

Signature of Student: Andrean Hasan.

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**Class Diagram**

**A picture containing diagram

Description automatically generated**

**Please open it in** [a.drawio - diagrams.net](https://app.diagrams.net/) and use a.drawio file

**Project Specification**

This project is about my dream to make a game verse/ my own game developing studio, for this project I make another game, this is my second game for my wannabe indie developer dream, the first game is my first semester final project which I did not finish it yet. This game is completely different with my first game. So, I again make another experiment. This experiment come on my mind when I play a horror game and an arcade game. So, I was thinking why not just combining these two genres. However, there is another problem, horror-arcade game is really boring to play because it will be just the same again and again. That’s why I add progression to my game. I make this game upgrading mechanic so people will grind the game to reach certain power/level. However, it will not help the boring thing. That is why I make the ghost mechanic and the upgrading currency will spawn in random coordinate. I add completely different spawn coordinates within the map I created. I also add some simple detail that make the game looks kind of great and hopefully fun to play.

* Program input :
* Left click of the mouse
* Space-key
* W-key
* A-key
* D-key
* M-key
* Coordinates of mouse pointer
* Program output :
  + Home screen
  + Idle animation when the player stops moving
  + The animation when the player moves to left or right
  + Spoopyz school background that my girlfriend drew
  + Raining overlay that I drew
  + Upgrade button (speed and coin)
  + Raining background music (loud)
* Inside spoopyz school screen
* Floor tiles
  + Block tiles (with collider)
  + Player moving animation up, down, left, and right
  + Ghost idles animation
  + Ghost moving to left and right animation
  + Coin animation
  + Chat box when interact with statue
  + Some furnitures
  + Notification when die
  + Notification when exit the school
  + Scary background music
  + Raining background music (low)
  + Sound effect when collide with coin
  + Sound effect when you die
* Libraries I used :
* JFrame

To open the window for the game.

* JPanel

Running the game panel of the game.

* Random

For doing all of the gacha percentage.

* Graphics

To input sound effects and background music.

* URL

To open up a music folder for the game.

* Javax.sound

To input the music for the game and to run the sound in loop or just once

* Java.event

To read what user input (mouse movement,key pressing)

**Solution Design**

There are 2 interfaces in this game, the first interface just a home screen where you can do upgrading and to go to the main screen, which is the second screen, the inside of the school, where you play and get coins.

The 2 interfaces:

1. Home Screen

In this screen you can use your coins that you already took in the school, you can upgrade your speed and also the gold loop that can boost you to gain more coins.

1. Inside School Screen

You can move your character to left, right, and up, down with using WASD key. In this screen you can find coins, but be careful because there will be a ghost, and you might want to evade the ghost because if you touch the ghost you will lose half of your coin

**Program Notes**

Just run the main file to run the game.

You can’t adjust the screen, and maybe if your screen height and width is different with my laptop, you might want to ask me (please just ask me sir I will fix it for you). Or maybe use different laptop/pc

Also kindly read the README.md to gain some knowledge of the game.

Also do not forget to enjoy the games.

**Program Implementation**

The main idea of this game is just to keep grinding and grinding until you are happy with your level. However, this game provide infinite progression, meaning you can upgrade even until trillions level.

The project idea is to combine progression, arcade, and some horror in one game, to make a fun and fresh idea in the pixel-based game developer community. And to create a game that I enjoy playing with.

This game algorithm that I made is different with other game because I count it by myself to find a perfect upgrade cost, speed upgrade, and gold loot to achieve the highest level of fun. Bot mechanic such as gold spawn and ghost spawn also made by myself, so it will really fun in my opinion, hopefully in your opinion too sir.

* **Main, Game Panel, Key Handler, and Sound**

Unlike python project before, where I just put platformer game in one file, and just split function code. Now, in this OOP final project I split up all the code in some classes. And, because unlike before, there was pygame library where you can easily combine all together, the music/mixer, drawing, and the game runner. I don’t need to make all the mechanic from “scratch”. However, now I need to make classes and function by myself. In the bright side, my application run in high FPS (60 FPS), well I can run it higher than that, however I think 60 FPS looks much better and it is better for player with low specs PC/Laptop, no offense for those people.

Text

Description automatically generated

This is a simple main class that has purpose to appears the window/screen and draw all and run game panel on that window. In the game panel it will catch all of the function in all of the other classes, including music class.

Text

Description automatically generated

In this music class, you can add sound URL, so It will find the sound file based on the URL. The sound/music must be in WAV type of files.

A screenshot of a computer

Description automatically generated with medium confidence

It also has functions to play the sound files that you already input in the class. It also plays it on loop, and can stop the sound.

Text

Description automatically generated

In game panel, I override the music class functions so it will have the abilities to run the sound once or run it on loop, it also can split music variable so you can add multiple different sound and different volume. I use this ability to make raining sound in the school lower than outside the school, so it will give nice sound system, so user really feel going into the school.

Text

Description automatically generated

For the key handler/key input, I add if else statement that can ready which key I press/type/release. For this game, I add if else statement for WASD M Space key for different purposes.

Text

Description automatically generated

For the mouse listener, I add mouse movement listener, so people will have nice hovering animation for different button and to know what the exact coordinates of the mouse pointer so, it will give consistent placement for some functions.

Text

Description automatically generated

The mouse listener also has function to check whether player already click or not, this makes player can has hover animation of the button when they press some button.

Graphical user interface

Description automatically generated

In the game panel, first it has a need to state the row and column of the tiles/blocks. And from that number of tiles, it will give the exact height and width to the main class, so the main class know what the window screen will be.

Text

Description automatically generated

Game panel also run all the updates and drawing components in decided FPS. The function to run in certain FPS Is also added in game panel, so it can smoothly run all the animation and mechanic in exact same/slightly different FPS (59-61).

* **Tile Manager and Floor Manager**

A screenshot of a video game

Description automatically generated with medium confidence

To draw every block images/tile image, I implement a two-dimensional array to set the location, the value, and collision effect. Collision will be explained in next point.

Background pattern

Description automatically generated

I am using for loop, to check every int value in the array. From that value I will set what image will be used in that coordinate and whether the block has collision effect or no.

Text

Description automatically generated

This if else statement will draw every block for every coordinates based on the array.

Floor manager code is the same with tile manager, however it will be drew before the tiles.

* **Collision**

Background pattern

Description automatically generatedCollider is important for all of the game, with collider developer can manage where is the right path for all users will be using for the game. In this game, I use collider for furniture and walls.

There is no something special for tiles collider, however for the wall, I use precise collider. Meaning the collider will not based on the decided tile size, but it will go precisely a third of the tile.

For those purposes I make an array three times bigger the tiles array so, it will read collider even for a third portion from the tiles.

Text

Description automatically generated

First it will check first what is the coordinates of the left side of player, right side, upside, and downside.

Text

Description automatically generated

With that value, it will check what blocks on every side of the player. If the blocks have true Boolean collider in it, it will tell the player class to not give any direction and making the player go idle.

* **Movement and Animation**

A screenshot of a computer

Description automatically generated with medium confidence

First, we will take the user key input to know which direction the user want to go and that, with that information it will check if the direction will collide with a block or no. If no, it will increase or decrease x/y coordinates of player.

Text

Description automatically generated

With the direction, it will call image one by one making it blit an animation for the player.

* **Camera**

Different with previous platform game, The Poopyz. In this game, you can go beyond the screen. Well, you will not go through the screen, for that I used moving camera, to make camera just like moving, I change tiles coordinate minus walking increment.

Text

Description automatically generated



With that meta, your player can stay in the middle of the screen while it looks like it is moving.

* **Coin**
* Coin Spawning

A screenshot of a computer

Description automatically generated with medium confidence

Because I don’t want my game will doing the same thing every time player going in school. I give some algorithm and statement so the coin spawns in random area where player still can reach it. And it will be in the same place until player take the coin, the coin will respawn after the player reach the coin.

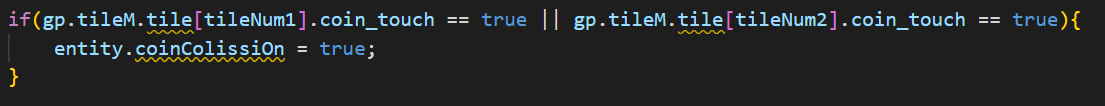
* Coin animation

Text

Description automatically generated

To make it look nicer, I also add animation for the coin. As you can see it will draw tile[109] image but I add spritenum, so it will blit different image of the coin, every 12 frame when the game is running which is 60/12 second.

* Coin collides and gain



So, every time you touch the coin. Coin collision will be true. After that, it will take random value again so it will spawn in different coordinate. It will increase the coin number by 1.

A screenshot of a computer

Description automatically generated with medium confidence

As you can see, it will increase the amount of the coin + the gold loot if the player already does upgrades for their account.

* Get full coins

You can get full coins that you already take from the school going out manually from the school.

Text

Description automatically generated

So, if you go out from the front door of the school you will get full coin. As you can see, after you click respawn from the door. The coin\_money which is your coin bank will be increasing by coin.

A picture containing calendar

Description automatically generated

You just need to hit respawn and you can use your coin to upgrade gold loot and speed for your character.

* **Ghost**
* Ghost spawn

Text

Description automatically generated

Same with coin spawn, the location of the ghost also is randomized, except it is not complicated because ghost will respawn if only player go out from the school and go back to school, so I don’t need to make temporary variable that can take the older value of the ghost.

* Move and animation

Text

Description automatically generated with low confidence

First, I will explain about the algorithm, so basically the ghost will only move if it stay close enough to the player, so whenever the player reach the location of the ghost, the ghost will be reaching player coordinates. It also has direction for animation purpose.

A screenshot of a computer

Description automatically generated with medium confidence

It is the same code implementation as player animation

* Ghost touch

Text

Description automatically generated

The ghost will kill the player if the player touch the ghost, or if the ghost touch the player.

* Player is dead

Text

Description automatically generated

After player is touched by the ghost, player is now dead. After player is dead, player only can get half of the money that player already took from the school.

A red sign with black text

Description automatically generated with low confidence

After you hit respawn, you will only get half of the coins.

* Home screen

A screenshot of a building

Description automatically generated with low confidence

When ever you open the game you will see this screen, it is just a simple screen with background and raining overlay. What special about this screen is upgrade button. With that button you can use your coin to boost your gold loot and speed to gain more coins.

Graphical user interface

Description automatically generated with medium confidence

With this simple if else statement, it can blit upgrades tab.

A sign on a building

Description automatically generated with low confidence

You can choose to cancel or accept but clicking one of the buttons, if you click cancel, nothing will happen, and the upgrades tab go bye. However, if you click accept it will take the needed coin and upgrade your gold loot/speed.

Text

Description automatically generated

If you don’t have enough money to pay the upgrade cost, you will get this notification, it will not affect anything. But it would make you sad because you are broke. You can just click enter to get rid of it.

**REFERENCES**

[Top free game assets - itch.io](https://itch.io/game-assets/free) - free game asset

[Download Free Sound Effects for Videos | Mixkit](https://mixkit.co/free-sound-effects/) – free sound effect and music

Reference on making 2d game.

[How to Make a 2D Game in Java #1 - The Mechanism of 2D Games - YouTube](https://www.youtube.com/watch?v=om59cwR7psI)