**OOP Mini-Project Requirements**

**Project Title**: Dodge ball game (pseudo bullet hell)

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**Project Aims**

* To create a fully functional game with moving elements
* The player must be able to move freely
* The system must spawn/create more enemies the longer we go
* The system must be able to determine when a player has lost
* The system must be able to detect both mouse and keyboard inputs
* The game must contain more then 1 kind of enemy to try and survive against
* The game must calculate a score based on how long we survive
* The game must have a menu that can be interacted with (working buttons, back button, replay button)
* Different kinds of enemies should move in different ways

**Citations and Sources**

I have viewed a lot of different guides and code specific websites to learn the code and how to implement it into my own project.

I took inspiration for the project from Ikaruga on Steam a game designed and developed by Treasure

I went from websites such as GitHub and W3Schools for some general information.

But most of the help came from numerous YouTube guides for writing games in java

* The How to Make a 2D Game in Java series by RyiSnow was very helpful <https://www.youtube.com/watch?v=om59cwR7psI>
* I also skipped through Code a 2D Game Engine using Java by freeCodeCamp.org on youtube <https://www.youtube.com/watch?v=025QFeZfeyM> I did not understand a lot of what was happening
* How to make a Video Game in Java (2D Basics) by Learn Code By Gaming
* Java Tutorial How to Develop Game in Java (Snake Game) by Awais Mirza <https://www.youtube.com/watch?v=_SqnzvJuKiA>
* Game Loop and Key Input – How to Make a 2D Game in Java #2 by RyiSnow <https://www.youtube.com/watch?v=VpH33Uw-_0E>

I also purchased a Java book bundle before on HumbleBundle so I referenced a little from there

Books by O’Reilly

* Think Java
* Java Threads
* Java Pocket Guide
* Java Generics and Collections

Books by Packt

* Beginning C++ Game Programming
* Game Physics Cookbook

I can provide any of the books if required I also have a few different ones which I have not touched yet.

I found out about game loops on <https://java-design-patterns.com/patterns/game-loop/>

I unfortunately don’t remember where I found the loop I used, it is called the Dewitt game loop and Is widely popular I do not understand how it works all the code for it came from one source and was written by Dewitt

public void run() {  
 this.requestFocus();  
 long lastTime =System.nanoTime();  
 double amountOfTicks = 60.0;  
 double ns = 1000000000 / amountOfTicks;  
 double delta = 0;  
 long timer = System.currentTimeMillis();  
 int frames = 0;  
 while(running){  
 long now = System.nanoTime();  
 delta += (now - lastTime)/ns;  
 lastTime = now;  
 while(delta >= 1){  
 tick();  
 delta--;  
 }  
 if(running)  
 render();  
 frames++;  
  
 if(System.currentTimeMillis() - timer > 1000){  
 timer += 1000;  
 // System.out.println("FPS:"+ frames);  
 frames = 0;  
 }  
 }  
 stop();  
}

