420-SF3-RE PROGRAM DEVELOPMENT IN A GRAPHICAL ENVIRONMENT

# ZOMBIED

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## Task Description

Our application is called Zombied.

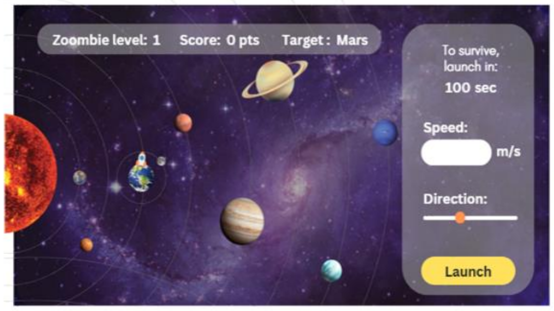
It’s an educational game where players launch a projectile through space and try to hit a target planet. To do this, they set the speed and direction of a projectile, practicing basic physics concepts along the way.

Zombied has multiple levels and keeps score as players progress. After entering the values and clicking “Launch,” the projectile travels according to the player’s input.

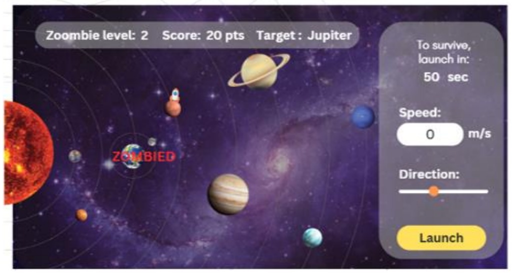
- If it reaches the planet, the score and level go up.
- If it misses, the game explains why, helping players learn from the outcome.

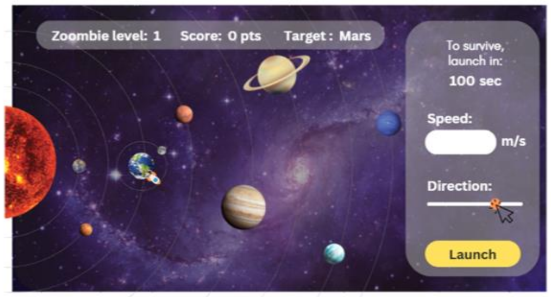
With a space-themed background and planet targets, Zombied turns physics practice into an engaging simulation.

## Interface Visualizations

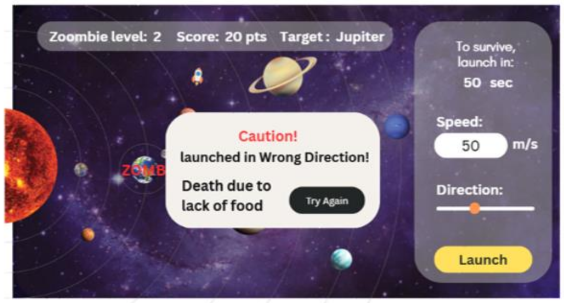

Zoombie level: 1 Score: 0 pts Target : Mars
To survive, launch in: 100 sec
Speed:
m/s
Direction:
Launch

Next Level


Zoombie level: 2 Score: 20 pts Target : Jupiter
To survive, launch in: 50 sec
Speed:
0
m/s
Direction:
Launch
ZOMBIED


Zoombie level: 1 Score: 0 pts Target : Mars
To survive, launch in: 100 sec
Speed:
m/s
Direction:
Launch

Direction Change

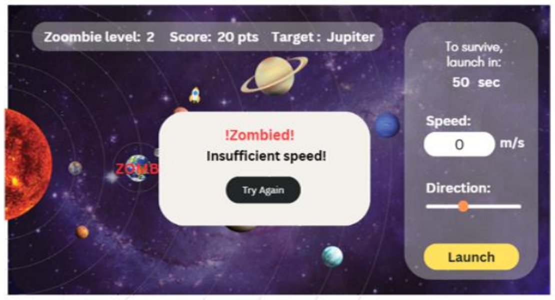

Zoombie level: 2 Score: 20 pts Target : Jupiter
To survive, launch in: 50 sec
Speed:
50
m/s
Direction:
Launch
Try Again

Caution!

launched in Wrong Direction!

Death due to lack of food

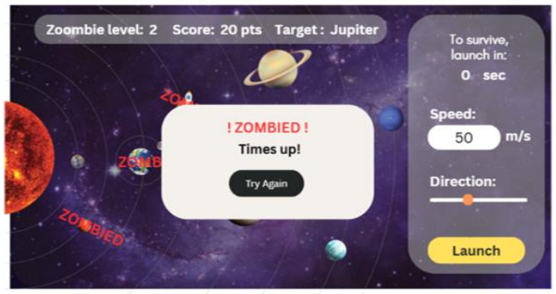
Game Ended: wrong direction


Zoombie level: 2 Score: 20 pts Target : Jupiter
To survive, launch in: 50 sec
Speed:
0
m/s
Direction:
Launch
Try Again

!Zombied!

Insufficient speed!

Game Ended: insufficient speed


Zoombie level: 2 Score: 20 pts Target : Jupiter
To survive, launch in: 0 sec
Speed:
50
m/s
Direction:
Launch
ZOMBIED
Try Again

! ZOMBIED !

Times up!

Game Ended: Zombied

## Proposed Implementation Approach

1. **Programming Language and Framework**
    - **Language:** Java
    - **Framework:** JavaFX (for GUI, animation, and event handling)

2. **Libraries, APIs, and Tools**
    - **JavaFX:** For GUI components, 2D graphics, animation, and user interaction.
    - **JavaFX AnimationTimer/Timeline:** For rocket movement and countdown timer.
    - **JavaFX Media:** For adding simple sound effects (launch, explosion, zombie warning).
    - **IDE:** NetBeans or IntelliJ IDEA (for development).
    - **Version Control:** GitHub/Git for version tracking and collaboration.
    - **Organization:** Trello for organizing the tasks among team members.

3. **Project Structure**
    - **Programming Language and Framework**

      The project will be developed using Java as the primary programming language. For the graphical user interface, animations, and event handling, the team will use JavaFX, which provides robust support for 2D graphics, scene management, and user interaction.

    - **Project Structure**
        - **Main Application**
            - `ZombiedApp` → Entry point, initializes JavaFX application, sets up scenes.
        - **Controllers**
            - `MenuController` → Handles the main menu (start, instructions, exit).
            - `GameController` → Manages gameplay logic, user input (speed/direction), and launching projectiles.
            - `ResultController` → Displays outcomes, explanations, and learning feedback.
            - `SoundController` → Plays sound effects (launch, hit, miss).
        - **Models**
            - `Projectile` → Stores physics values (speed, angle), calculates trajectory.
            - `Planet` → Represents the target with position and hit detection.
            - `GameState` → Tracks score, level progression, and attempts.

- **Utilities**
    - `PhysicsUtil` → Contains methods for projectile motion and trajectory calculations.
    - `CollisionUtil` → Determines whether a projectile collides with a planet.
- **Views (FXML Layouts)**
    - `menu.fxml` → Menu screen.
    - `game.fxml` → Main gameplay interface.
    - `result.fxml` → Feedback and learning screen.

- **Libraries, APIs, and Tools**

  Java (17+) with JavaFX → Core language and framework for GUI, graphics, and animations.

  AnimationTimer/Timeline → For projectile and countdown animation.

  IDE (NetBeans/IntelliJ) → Development environment.

  GitHub/Git → Version control and collaboration.

## Trello Link:

https://trello.com/invite/b/68c30d964704cec08b1ecd08/ATTI7396e035fbf17e8f70d5e5f886a14a40226D801D/sem-3-programmingfinalproject

## GitHub Link:

https://github.com/ZeelDGajjar/Sem3-Final_Project.git