

Final Project Report – Attack of The Evil Snowmen

By: Binjian Yu & Rosmeeah Hasnat

Demonstration Link: https://youtu.be/J_qjridTal8

Game Overview:

"Attack of the Evil Snowmen" is a fast-paced, winter-themed arcade game where players must help a young boy defend himself against incoming evil snowmen. Using a PS2 keyboard, the player can move left and right and throw snowballs to stop them from advancing towards him

Gameplay Mechanics:

Levels:

The game consists of three levels that gradually increase in difficulty. To advance, players must hit three snowmen with snowballs in each level. If a snowman passes the player without being hit, one of the player's three lives is lost.

Difficulty:

As the player progresses through the levels, the number of evil snowmen and the speed at which they approach the player increase, making each level more challenging than the previous one.

Power-Ups & Debuffs:

- Power-ups appear randomly and temporarily boost the player's snowball-throwing and movement speeds.
- Debuffs reduce throwing and movement speeds, making it more challenging to dodge snowmen and land hits.

Players must tactically collect power-ups and avoid debuffs to survive.

Sound Effects:

The game features a sound effect for throwing snowballs, enhancing the gameplay experience.

Collision/Boundary checks:

The game includes precise collision and boundary checks to ensure that snowball hits register accurately and that all characters, including the player and the snowmen, stay within the visible game area. Since the game does not occupy the full screen and has black borders on each side, these checks prevent any objects from moving off screen or appearing outside the intended play space.

Game End Conditions:

- **Victory:**
The player wins by completing all three levels and hitting the required number of snowmen at each stage, as long as at least one life remains.
- **Defeat:**
The player starts with three lives, shown in the top right corner of the VGA screen. A life is lost whenever a snowman gets past the player without being hit. Once all lives are lost, the game switches to the game-over screen.
- **Restart:**
After reaching either the victory or game-over screen, the player can press the “Enter” key to restart the game. This returns them to the main menu and resets all progress.

Task & Description	Contribution
Game structure and code architecture	Binjian
PS2 keyboard interface and character movement logic	Binjian
Screen initialization and background setup	Binjian
Audio	Binjian & Rosmeeah
Main game loop and control logic	Binjian & Rosmeeah
Collision detection for snowballs and snowmen	Rosmeeah & Binjian
Snowball rendering and animation smoothing	Rosmeeah & Binjian
Snowmen design, snowy background, menus, and victory/game over pages	Rosmeeah
Level progression and difficulty scaling, including buff/debuff logic	Rosmeeah
Debugging and gameplay refinements	Rosmeeah

Block Diagram:

