

Superfly Adventures Final Report

Ye Olde Bucklers of Swash:
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1 Story

“Alas! Princess Pabst has been kidnapped again by the insidious King Evan! Journey to West Dorm, overcoming King Evans vast goon hordes to come to the rescue of the fair princess!”

2 Gameplay Overview

The player takes on the role of Superfly, neophyte mathemagician of the Abelian Kingdom, in his race to rescue his beloved Princess Pabst. The player will guide Superfly through a series of treacherous levels packed with a fierce menagerie of enemies in an effort to stay one step ahead of King Evan. Superfly Adventures is a 2D, sidescrolling adventure/puzzle game implemented in the POP framework. The game is loosely based on the Super Mario Bros. series by Nintendo and attempts to capture its core gameplay elements.

2.1 Objective

The objective of the game is to navigate the player through all three levels of the game and defeat the fair princess’s captor, King Evan. After all three preliminary levels have been completed, the player will fight King Evan. If the player defeats King Evan, the game is completed.

2.2 Controls



The game uses the arrow keys and the space bar. The controls are as follows:

← Move Superfly left

→ Move Superfly right

↑ Jump

↓ Not used

Space Hurl math (see Section 2.3.1 for more details)

2.2.1 Super Jumping

Upon landing on an enemy if you press \uparrow at the correct time, Superfly will jump high into the air. This skill is terribly useful for acquiring extra Pabst cans and powerups. It is important for a player to learn this trick because it often is the only way around a treacherous region.

2.3 Power-ups

There are two power-ups available in the game. The first, a mathematical formula, allows the player to damage enemies at range by hurling mathemagical balls of energy. The second, a pogo stick, increases the player's speed and allows him to jump higher than normal. A powerup is obtained simply by moving Superfly onto it. Once Superfly is powered up, he remains in the powered state until either he is damaged by an enemy, falls into a pit, or gains a different power-up. If Superfly is damaged by an enemy while powered up, he returns to his normal state, but does not lose a life. However, if he falls into a pit while powered up, he loses a life in addition to reverting to his normal state. When Superfly moves over a power-up when he is in a powered state, he loses his old powerup and gains the abilities granted by the new power-up.

2.3.1 Hurl Math (Mathemagic)



If the player picks up a Hurl Math powerup, which appears as the equation $\int \frac{1}{x} dx$, the player gains the ability to repeatedly launch the $\#$ symbol using the space bar. These is launched upward and in the direction Superfly last moved. These bounce ahead for 3 seconds or until they collide with an enemy or a wall. When the math symbol collides with an enemy or bullet, the math symbol is destroyed and the enemy receives damage. If the symbol collides with a wall, it bounces off. The player is awarded points for destroying enemies with math symbols just as if he had destroyed them by jumping on them.

2.3.2 Pogo Stick



If the player picks up a Pogo Stick powerup, which appears on the screen as a pogo stick with a yellow star on it, then the player gains the ability to jump higher. Additionally, when using the pogo stick, Superfly moves laterally 33% faster. The pogo stick does not allow the player to destroy

spiker enemies by jumping on them, but walker enemies and cannon balls may be destroyed as normal. The player is awarded points for destroying enemies by jumping on them as if he were unpowered.

2.4 Pabst Cans



As Superfly progresses through the game, he may collect cans of delicious Pabst Blue Ribbon beer. These cans are collected by moving Superfly over them. Each can of Pabst Blue Ribbon gives the player 10 points.

2.5 Platforms and Pits

Superfly walks on platforms. These are placed mostly along the bottom of the screen, but also appear higher up on the screen. The absence of a platform at the bottom of the screen is a pit. If Superfly falls into a pit, he is killed and the level resets. Walking enemies may also fall into pits. If they do, they are killed and removed from the world.

2.6 Reset Level

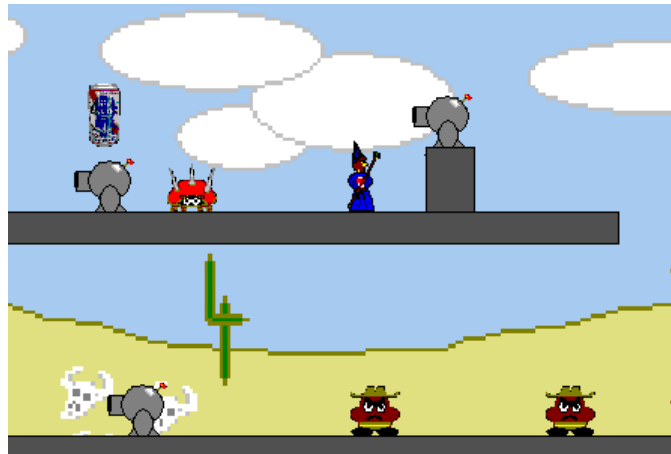
When Superfly dies before completing a level, the level is reset. When a level is reset, all enemies, powerups and Pabst cans are moved back to their starting positions. Additionally, Superfly is moved back to the far left-hand edge of the level.

2.7 Level Progression



At the end of each level, there will be an exit portal. Jumping into this portal will advance the player to the next level. This will increase the player's score by 150 points. Each level has a different background image, set of enemies, and platform architecture. Superfly begins each level on the far lefthand side and the exit portal for each level is on the far righthand side. Each of the first three levels has a distinct theme based on a West Dorm party, and contains both the mathemagic and pogo powerups. The last level, Evan's Lair, is styled after a single in West Dorm and contains only a pogo powerup.

2.7.1 Level 1 - Wild Wild West



Level 1 is modeled after the Wild Wild West party. Accordingly, the enemies follow an Old West theme and the background is a typical desert scene. This level is meant to introduce the player to the mechanics of the game and so does not favor any particular level design style. Rather the level is an amalgamation of cannon, jumping and walking enemy puzzles. This level is decidedly easier than the later levels.

2.7.2 Level 2 - Trick or Drink



The second level is based on Trick or Drink. The enemies in this level are Halloween themed, and the background is a spooky cemetery at night complete with haunted house. This level focuses more on avoiding spiker type enemies (modeled as a grim reaper) more than platform hopping or cannon dodging. This level is significantly harder than the first.

2.7.3 Level 3 - TQ Nite



The last of the preliminary levels is based on TQ Nite. As a result, the level has a vague south of the border flavor. Since this is the last level before Superfly reaches Evan's lair it takes place in West Dorm. According to TQ Nite tradition, the dorm is swamped with lemons, and overflowing with recycling. This level is heavily biased towards platform hopping and cannon puzzles and is far and away the most challenging of the three levels.

2.7.4 Evan's Lair

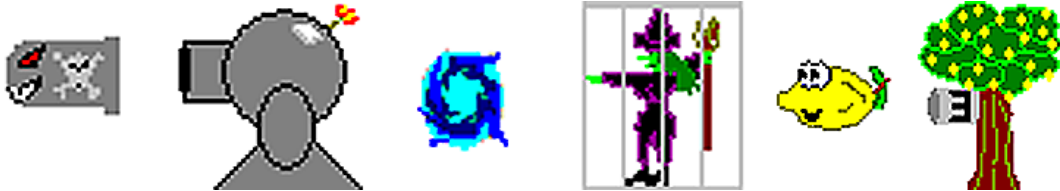


Evan's lair is a standard West single. The level is therefore quite small. Evan is the only enemy on this level (see Section 3.4 for more on Evan). When Evan is defeated, a portal appears. When Superfly passes through this portal, the game ends and a dialog box is displayed. The dialog box displays the player's score and invites him to begin a new game. The player is allowed to keep the powerup he ended the game with if he starts a new game in this way.

3 Enemies

There game contains 4 basic types of enemies: cannons, walking enemies, spiked enemies, and Evan.

3.1 Cannons



Cannons are stationary, indestructible enemies that fire bullets. Cannon balls travel in a straight line to the left, passing through walls for 3 seconds or until they hit Superfly. Superfly may avoid damage from a collision with a bullet by jumping on it, which yields 2 points. Otherwise, Superfly is damaged by impact with a cannon ball. The cannons themselves are effectively walls. Superfly may stand on top of a cannon, but cannot walk through it. Similarly, other enemies may not walk through cannons.

3.2 Walkers



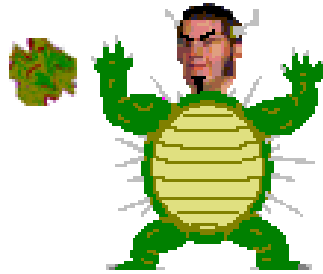
Walkers are created walking toward the left side of the screen. When they collide with a wall or another enemy, they will reverse direction. Walkers are destroyed when they collide with the Superfly. Superfly is damaged in this situation unless he is jumping on the walker. Walkers are also destroyed if they fall into a pit (see Section 2.5) or are hit by mathemagic (see Section 2.3.1). The player gains 5 points for jumping on a walker or destroying it with mathemagic.

3.3 Spikers



Spikers walk in the same manner as walkers. However, they are not destroyed when they collide with Superfly. When they collide with Superfly, he is damaged and thrown upward if the damage doesn't kill him (see Section 2.3 for more information about Superfly being killed by damage). Spikers may only be killed by mathematical energy (see Section 2.3.1) or by falling into a pit (see Section 2.5). Killing a spiker yields the player 20 points.

3.4 Evan



Evan will randomly wander around, evading Superfly's magic if it is hurled at him. Unlike other enemies, Evan possesses the ability to jump. These jumps occur at random intervals, and King Evan may jump even when already in the air. Evan is also able to fire projectiles at Superfly. However, these projectiles are so foul that Superfly receives damage even when he jumps on them. Superfly may damage Evan by jumping on him or by hitting him with mathematical energy. When Superfly jumps on Evan, he will be propelled away from Evan. Superfly will have to damage Evan for 30 points of damage, where jumping on Evan will do 10 points of damage and hitting Evan with mathematical energy does 1 point of damage. When Evan is killed, the player is awarded 150 points and portal is spawned. When the player jumps through this portal, he is awarded a further 150 points and the game ends.

4 Scoring

The player is awarded points for defeating enemies, collecting Pabst cans and completing levels. The player is awarded 2 points for destroying a cannonball, 5 points for destroying a walker enemy and 20 points for destroying a spiker enemy. Collecting a Pabst can gives the player 10 points. The player is granted 150 points for completing each of the 3 preliminary levels and 300 points for defeating King Evan.

4.1 Extra Lives

The player begins the game with 3 lives. Every time the player accumulates 100 points, he is granted an additional life.

5 Graphical Interface

5.1 Status Message

There is a status message at the bottom of the window which displays the current score, number of lives, and frame rate.

5.2 Perspective

This game is a 2D side-scrolling adventure game.

6 Sound

The game features sounds voiced by the incomparable Superfly. They are played at various points in the game as follows:

- Being hit by a Walker, Bullet, or Evan while in a powered state
Sound: "My powers!"
- Being hit by a Spiker while in a powered state
Sound: "Yipes!"
- Being killed by a damage source
Sound: "Oh no!"
- Falling into a pit
Sound: "WAAAAAAA!"
- Being killed and having no lives remaining
Sound: "Mamma mia."
- Obtaining the mathemagic power-up
Sound: "Mathemagic!"
- Obtaining the pogo stick power-up
Sound: "Bounce Time!"
- Ending a stage that is not Evan's Lair
Sound: "Suck it!"
- Ending the game
Sound: "My dear Pabst."

7 Framework

This game is built using the POP framework written by Rudy Rucker.

8 Budget

Our budget was strictly \$0.

9 Changes in the Design

The design of our final boss, Evan, changed during development due to gameplay issues. It was originally specified that only 3 points of damage would be required to destroy Evan. This has been changed now to 30 points. Jumping on his head deals 10 points of damage, and mathemagic deals 1 point of damage. This makes the boss more fair. Evan also now jumps randomly. This can result in multiple jumps while still in the air, creating an effect similar to flying. Also, Evan increases his speed as he gets closer to Superfly.

In order to make mathemagic useable against Evan, we have enabled mathemagic to be shot either toward the left or toward the right, depending on the direction Superfly was last moving. If Superfly has not yet moved, he will shoot toward the right.

Super jumping (see Section 2.2.1) was an unintended feature that resulted from the combined acceleration of bouncing off of an enemy and jumping. Once it was realized that this was possible, we embraced it as a feature and designed the levels to incorporate super jumping as a means of reaching certain areas and obtaining powerups.

9.1 Implemented Extra Features

9.1.1 Extra Lives

Every time Superfly gains 100 points, he will gain an extra life, as specified in Section 4.1.

9.1.2 Sound

Sounds are triggered by many events in the game, as specified in Section 6.

10 Known Issues

Due to the use of the POP framework, there are a few issues with timing. These include the maximum jump height depending on the frames per second, as well as occasional large variations in jump height. If jump height becomes too small or too large, the game can become quite difficult, even impossible. Additionally, hiccups in the POP internal timer can occasionally cause Superfly to jump much higher than he should be able to. This is relatively infrequent and we don't anticipate it causing any major gameplay problems.

Re-sizing Evan's Lair caused POP to zoom too far in. This could not be resolved, so we blocked the majority of the level off with walls and changed Superfly's spawning location to be within the new boundaries.

11 Possible Future Improvements

11.1 Timer

Each level could have a time limit for the level to be completed within. If Superfly takes longer than this amount of time, he would die and the level would reset. A score bonus would be attributed to the player for time not used in the completion of the level.

11.2 Extra Levels

Since the core gameplay mechanic is complete, it is just a matter of timing and artwork to add levels. So, an obvious improvement to the game is to simply add additional levels or lengthen the existing ones.

11.2.1 Extra Boss Levels

In addition to new levels, we might create sub-bosses representing Evan's more powerful lackeys. The end of each level could result in Superfly being transported into a lair of one of Evan's lieutenants. These bosses would act similar to the way that Evan behaves, but would be substantially easier.

12 Acknowledgments

We would like to acknowledge Jason Murcko for providing us with sounds. We also acknowledge Rudy Rucker for designing the POP framework.