

CENTIPEDE GAME PROJECT REPORT

History of Centipede

Centipede designers Dona Bailey and Ed Logg, and programmers Richard M.P. Hanson and Dona Bailey. The game is a vertical oriented Arcade game produced by Atari Games. Another feature that makes the game different is that it is one of the first female player based arcade games.

The game was released on Arcade machines in which we played many known games in the world in June 1981. When released, it produced 46,062 units and sold \$ 1,995. It was Atari's second bestselling money game. However, the game (1982) was later moved to Atari and presented to us. It was one of the most popular and lucrative arcade video games in the golden age. Millipede, which is the continuation of Centipede, was published in 1982. However, Millipede was not so successful. Atari was the developer of both games.

Renewed version of Atari Centipede Hasbro in 1998, the PC was released for the PlayStation and Dreamcast. This version looks and plays very different from the original game, free movement around the map, 3D graphics and a campaign that can be played in single-player or multiplayer mode. The original version of Centipede is available in this version, although it has slightly updated graphics. Then, in 2011, a second reissue of Centipede was released. Since then, many games have been released that mimic and imitate Centipede



Game Overview

The game consists of 6 characters, which are centipede, spider, scorpion, flea, grasshopper, mushroom and player (Bug Blaster). Centipede, spider, flea, scorpion and grasshopper are our enemies. However, the grasshoppers were later removed from the game. The first part of the game involves passing the centipede character through a maze full of mushroom caps. As the centipede moves towards the bottom of the screen, the mushrooms try to adjust its direction. The player character is shown with a small yellow emblem standing at the bottom of the screen and is called Bug Blaster.

The player's task is to shoot down the centipede with a bullet before it hits him. By doing this they can move the character to the right, left, down and up. As the player shoots to the centipede, the distorted parts of the centipede turn into mushrooms. And again it shrinks and shrinks and disappears. By the way, you must escape or destroy scorpions and spiders in your area. As a result, you should eliminate it before centipede comes to you. If this does not happen, the game will be more difficult for you.

Game features:

- Each icon hit by the player has a point value. Scores are as follows;
- >Mushrooms and Poisonous Mushrooms: 1 point (four strokes required to destroy)
- >Centipede (Trunk): 10 points
- >Centipede (Head): 100 points
- >Flea: 200 points (Takes two hits. The first hit accelerates, the second hit destroys it)
- >Spider: 300, 600, 900 points (The closer the Point Spider is to the Insect Bug when hit)
- >Scorpio: 1,000 points When a mushroom patch is reset after a player has died, 5 bonus points restored to the player are partially destroyed / poisoned mushrooms.
- There are 3 lives in the game. When you touch poisonous mushrooms, spiders, fleas, scorpions or centipedes, one health is reduced. And when it's over, the game is over.
- When the centipede is completely hit, the game pass in difficult stages and the game continues until it is renewed.
- The main aim of the game is to achieve the highest score.

Tips and Tricks:

You have an area of five mushrooms high (about 20% of the playing field) to move the Bug Blaster. The game will start when enemies enter the screen. Know your enemies! This is the most important feature of this game. If you don't know how each of the enemies behaves, you won't be long.

Enemies:

- 1) Centipede (Body and Head): Goes back and forth across the screen. When it meets the mushroom or the edge of the playing field, it drops to the next level. When a poisonous mushroom hits it descends to the bottom.
 - 2) Scorpio: These appear in Wave 3. It moves across the screen and poisons all the mushrooms in their path.
 - 3) Flea: These appear on Wave 2. They appear when you clear most of the mushrooms in the player area.
 - 4) Spider: These appear on the top left or right side of the player area. Either they jump at an angle of 45 degrees across the player's area, or they jump at an angle of 45 degrees, they jump up and down several times, appear at an angle of 45 degrees, jump a few up and down, then jump. right side (at an angle of 45 degrees), exit the up and down area. They destroy the mushrooms they pass.
- You can slow the speed of oncoming centipedes by hitting regular and poisonous mushroom caps.
 - Although players can shoot with unlimited laser beam sources, there is a risk of mushroom filling, which you can use with caution. More mushrooms on the screen send it to your centipede area faster. Be picky, target the most dangerous enemies, and you will be able to predict the next moves of the centipede.
 - Try clearing the wooden column column instead of moving back and forth to hit random opponents. To do this, you must first take one shot, cleaning the mushroom caps. Also fleas are targeted, but at first don't worry too much about other opponents. After getting rid of most of the mushroom caps, go after scorpions and spiders. This is where you can choose to focus all your attention on the centipede and greatly increase your accuracy.
 - Skilled players can also use some kind of trap from mushroom caps. This is done intentionally on the tip and middle parts of the centipede to create a virtual 'web' of mushroom caps. Remember that centipedes can cause splitting, which will force your focus. If done successfully, centipede (s) and a few other groups of friends will not reach the bottom. Note that there are several opponents that will appear randomly, so the trap technique does not fully protect the Bug Blaster

FEATURES OF OUR PROJECT

In our project we have player and enemies. The player moves certain area on display screen and try to kill enemies with fire. Enemies are centipede, spider and flea. Also there are randomly placed mushrooms on the display screen. When the player shoots the one of enemies, player gets different scores according to the enemies. We wrote a game with three levels with increasing difficulty.

MENU DISPLAY SCREEN

This is view of menu display screen. Users have options about game mode. Easy mode, normal mode and hard mode have different challenges. Also users can see what features each enemy has, enemies and the player are guided by the keys in handbook option. Users can quit the game when press the exit option. Menu screen has opening sound.



EASY MODE DISPLAY SCREEN

The player is moving in certain area in display screen and has three lives.

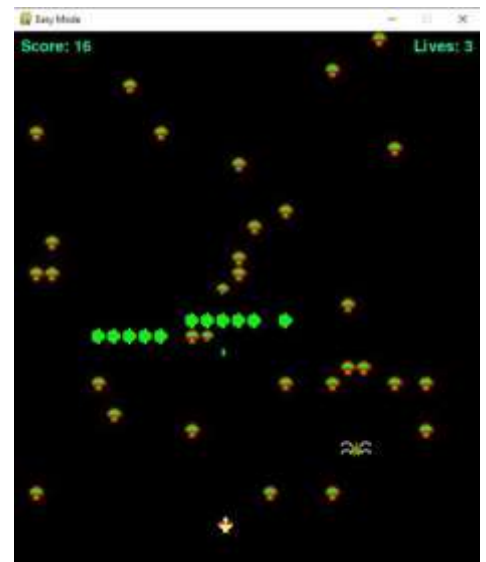
When the player collides with one of the enemies, the lives of the player decreases.

The speed of the player in the easy mode is higher than the speed of the player in the hard mode.

The opening music continues until the player shots.

There are sounds when the player fired or collided enemies.

An explosion gif appears when player collided with enemies.



NORMAL MODE DISPLAY SCREEN

The player is moving in certain area in display screen and has three lives.

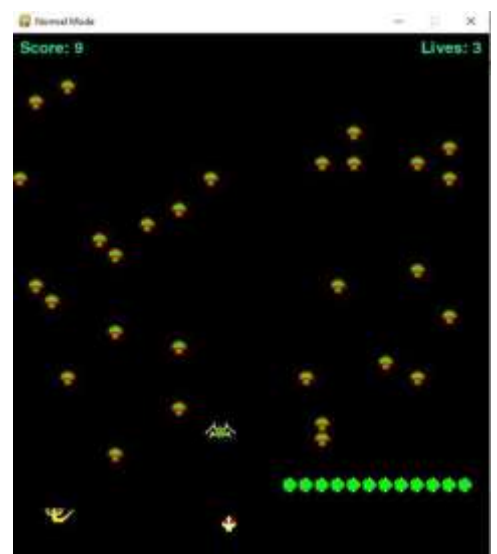
When the player collides with one of the enemies, the lives of the player decreases.

The opening music continues until the player shots.

There are sounds when the player fired or collided enemies.

An explosion gif appears when player collided with enemies.

We add scorpion which is moving right left then going down.



HARD MODE DISPLAY SCREEN

The player is moving certain area in display screen and has three lives like easy mode.

However, in this mode, the player can move in a more restricted area than easy mode.

When the player collides with one of the enemies, the lives of the player decreases.

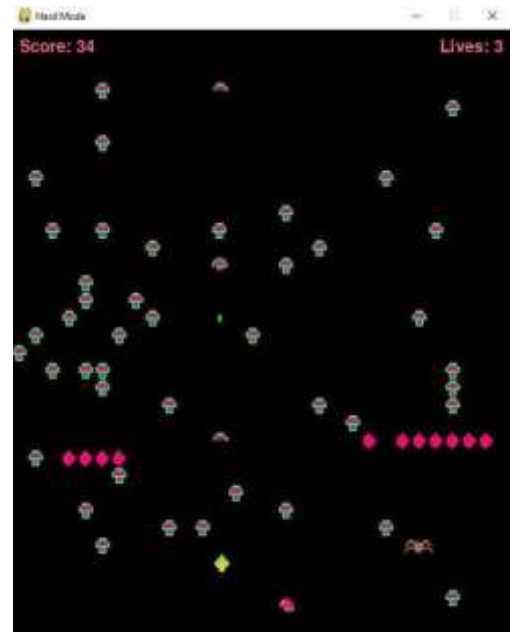
We wanted to make things harder, we reduced the player's speed and added another enemy.

Flea is moving vertical and leaves mushrooms.

The opening music continues until the player fires.

There are sounds when the player fired or collided enemies.

An explosion gif appears when player collided with enemies.



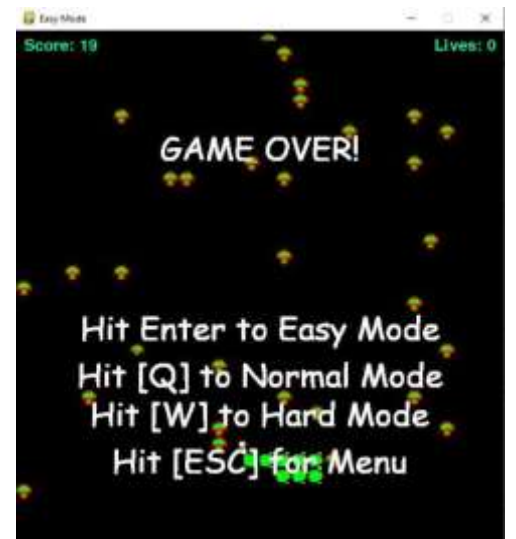
GAME OVER DISPLAY SCREEN

The users will see game over screen when lost the game.

There is a instructions which are guide to the player.

The users can also switch between game modes without going to the menu. When the users want to change mode they should press "Enter", "Q" or "W" keys according to mode.

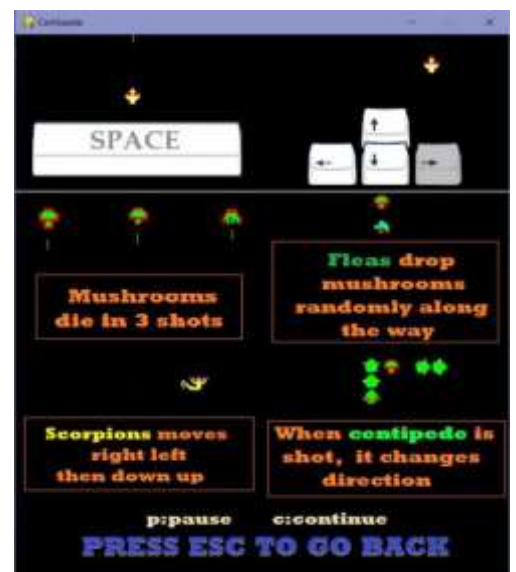
The users can go to the menu display screen with "ESC" key.



HANDBOOK DISPLAY SCREEN

Users can learn how to play centipede game and features about enemies in handbook display screen. As shown in picture;

- The player start to fire when the user press the "space" key and the player moves with the arrow keys.
- Mushrooms die in 3 shots.
- Fleas drop mushrooms randomly along the way.
- Spider can't go back where it comes from, moves up, down and diagonally only.
- When centipede is shots, it turns into a half of mushroom and change direction.
- The scorpion is moving right left then going down.



The game has pause function. When the user press "P" display screen will pause, the game continues from where it left off when the user press "C".

The user can mute the game with "M" in menu, easy or hard mode and handbook display screens. The user also can unmute the game with "N" in menu, easy or hard mode and handbook display screens.

Scores:

The player gains 10 points when shots any piece of centipede.

The player gains 50 points when shots spider.

The player gains 30 points when shots flea.

The player gains 3 points when shots mushroom.

Code Review

Centipede Class:

- First ,we initialized Centipede class.

- We checked boundaries and move the centipede when updating the centipede class.

- We did same thing for centipede2 class only we change photos.

Explosion Class:

- We initialized Explosion class.

- We loaded 11 picture and update the explosion class.

Fire Class:

- We initialized the fire class and set the fire's surface.

- We updated the fire class and we defined active deactive situation.

Flea Class:

- We initialized Flea class.

- We defined random position of flea in define update the flea class.

- We defined active deactive situation.

Player Class:

- We initialized Player Class.

- We defined hide for disappear when the player collided.

- We defined player borders in define update the player class.

- We did same thing for player2 class only we change photos.

Scorpion Class:

- We initialized Scorpion class.

- We checked boundaries and move the scorpion when updating the scorpion class.

- We define moves of scorpion when collide with mushrooms.

Spider Class:

- We initialize Spider class.

- We set moving of spider which is diogonal down,diogonal up,up and down in define update the spider class.

- We checked boundaries in define update the spider class.

- We updated the spider class and we defined active deactive situation.

- We did same thing for spider2 class only we change photos.

Visualization Class:

- We set background.

- We loaded mushroom's photos,menu's photos and handbook's photos in visualization class.

SpriteGroup Class:

- We created all sprites for each level.

- We defined centipede range.

Main Class:

- We added fonts.
- We define set up game map after that we draw game map for each level.
- We define handbook game mode and we defined speeds of instructions and quit key.
- We defined game mode menu:
 - We set key down and up
 - We added options.
- We defined game mode game over:
 - The location of the options adjusted when the game ended .
 - We set option's keys when the game ended.
- We defined game mode easy level.We set fire key,centipede's move,mushrooms,activated spider and we write collisions for each.We wrote score and the player lives on the display screen.
- We defined game mode normal level.We set fire key,centipede's move,scorpion,mushrooms,activated spider and we write collisions for each.We wrote score and the player lives on the display screen.
- We defined game mode hard level.We set fire key,centipede's move,scorpion,mushrooms,activated spider,flea and we write collisions for each.We wrote score and the player lives on the display screen.

Pause/Unpause Function

PauseClass/MainClass

```
import pygame

def paused():
    paused = True

    while paused:
        for event in pygame.event.get():
            if event.type == pygame.QUIT:
                pygame.quit()
                quit()

            if event.type == pygame.KEYDOWN:
                if event.key == pygame.K_c:
                    paused = False
                elif event.key == pygame.K_q:
                    pygame.quit()
                    quit()

        pygame.display.update()
```

```
###PAUSE

if game_mode == 'easyLevel':
    keys = pygame.key.get_pressed()
    if (keys[pygame.K_p]):
        game_mode = 'easyLevel'
        pause = True
        paused()

if game_mode == 'normalLevel':
    keys = pygame.key.get_pressed()
    if (keys[pygame.K_p]):
        game_mode = 'normalLevel'
        pause = True
        paused()

if game_mode == 'hardLevel':
    keys = pygame.key.get_pressed()
    if (keys[pygame.K_p]):
        game_mode = 'hardLevel'
        pause = True
        paused()
```

Mute/Unmute Function

MuteClass/MainClass

```
import pygame

muted = False

def muted():
    muted = False
    if muted:
        muted = False
        pass
    else:
        pygame.mixer.music.set_volume(0)
        muted = True

unmuted = False

def unmuted():
    unmuted = False
    if unmuted:
        unmuted = False
        pass
    else:
        pygame.mixer.music.set_volume(80)
        unmuted = True
```

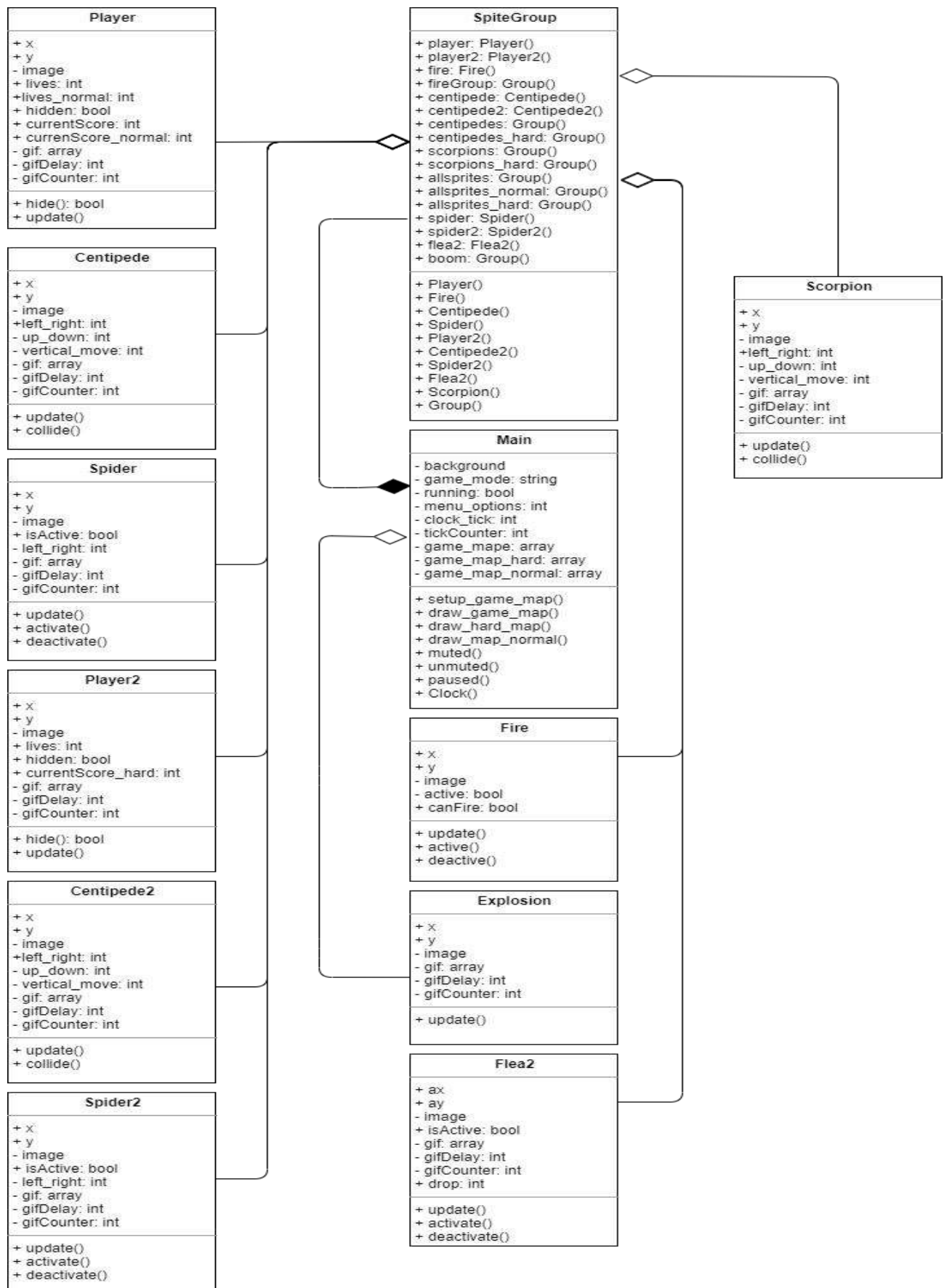
```
##MUTE

if game_mode == 'menu' or game_mode == 'easyLevel' or \
    game_mode == 'hardLevel' or game_mode == 'handbook' or game_mode == 'normalLevel':
    keys = pygame.key.get_pressed()
    if (keys[pygame.K_m]):
        mute = True
        muted()

##UNMUTE

if game_mode == 'menu' or game_mode == 'easyLevel' or \
    game_mode == 'hardLevel' or game_mode == 'handbook' or game_mode == 'normalLevel':
    keys = pygame.key.get_pressed()
    if (keys[pygame.K_n]):
        mute = False
        unmuted()
```


UML DIAGRAM OF CENTIPEDE GAME



REFERENCES:

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