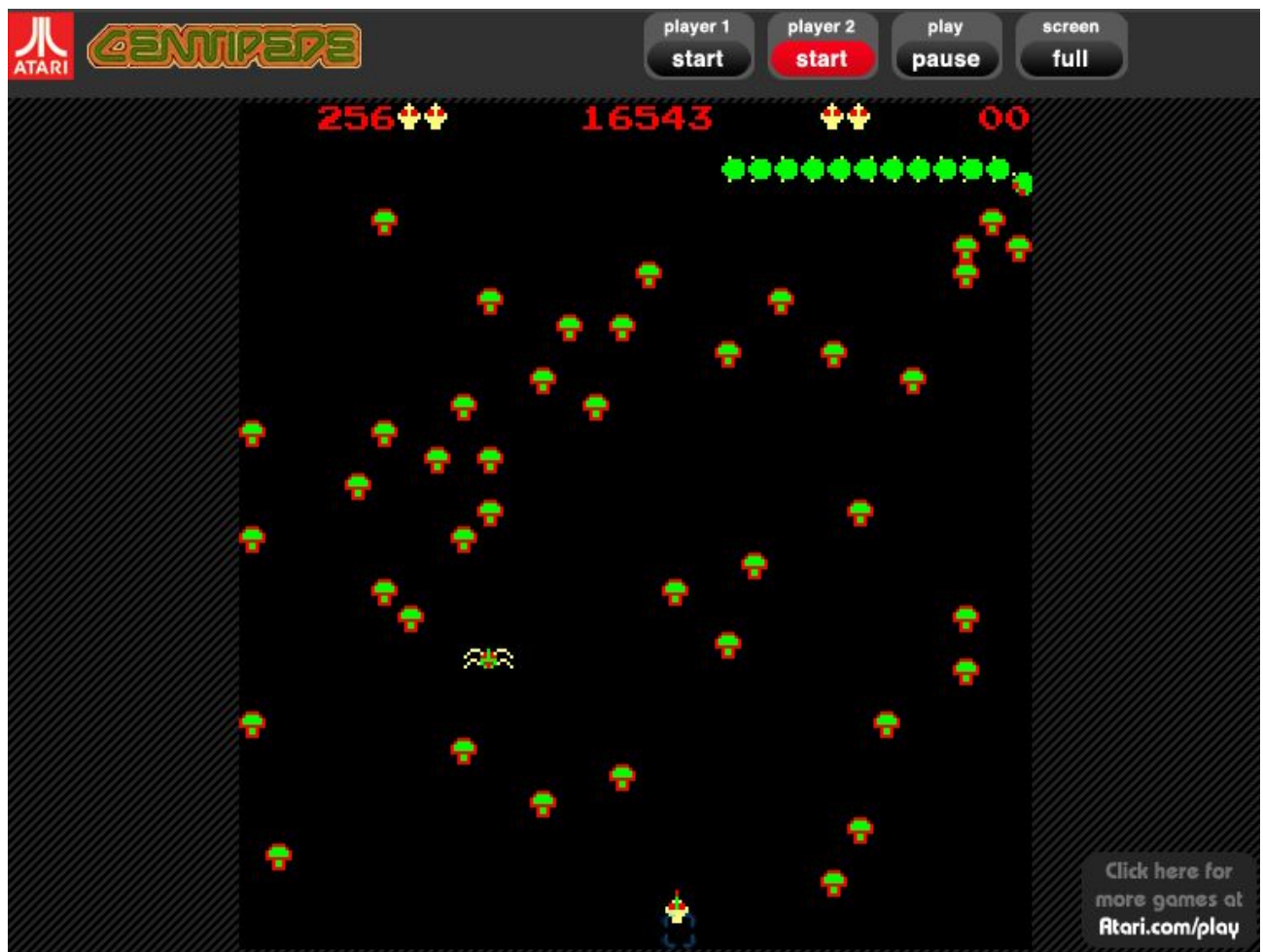


Unity developer test

Centipede game

[https://en.m.wikipedia.org/wiki/Centipede_\(video_game\)](https://en.m.wikipedia.org/wiki/Centipede_(video_game))

<http://www.arcadedivision.com/classicgame3/shooting/centipede.html>



Design and implement Centipede game using Unity engine.

Minimum Requirements:

- The game is a single screen without GUI
- It displays Player on the bottom and one enemy centipede above
- The game board is a 2D grid (NxN)
 - Size of the grid is configurable
 - All movements (player, enemies) are based on the grid cells
 - For example player can occupy only one grid cell at the time, if he moves left he will move to the new left cell
- Player movement
 - Player can move on the grid left and right to the edge of the screen
 - Player can move up and down, but only up to 15% of the screen height
 - Use keyboard arrows for movement
 - Player can shoot bullets with spacebar
 - Player can occupy only one grid cell at the time
 - Speed of player is configurable (number of cells / second)
- Score is displayed on the top of the screen (for example: "Score: 500")
- Player has M lives, M is configurable and set to 3 by default
- Centipede enemy
 - Centipede has L parts of the body, L is configurable, by default it is set to 15
 - Each part of the body can occupy only one cell at the time, so centipede on game start should occupy exactly 15 grid cells
 - Centipede will start to move from left to right of the screen, when it hits the end of the screen it moves one cell down and turns to the other side
 - When centipede reaches the bottom of the screen it starts moving in up direction
 - Speed of the centipede is configurable (number of cells / second)
- Player Attack
 - Player can shoot centipede with bullets
 - Bullet speed is configurable (number of cells / second)
 - When bullet and centipede part meet in the same cell, centipede part is destroyed and centipede is divided into 2 parts:
 - Right body parts will start moving to the **right** direction
 - Left body parts will start moving to the **left** direction
- When centipede and player meet in the same grid cell, player dies and his life-count is decreased by 1
- When player is killed and has 0 lives the game stops and displays "Game Over"
- When displayed "Game Over" you can press "spacebar" to restart the game
- When player kills the centipede (all parts) the game stops and displays "Game Over"

- Mushrooms
 - Mushrooms are randomly placed in game board (see the flash game example)
 - One mushroom occupies exactly one cell
 - Mushroom can be destroy with bullets (required at least 3 bullets, but can be configured)
 - Player or centipede cannot share the same cell
 - If player reach the mushroom cell, it will collide and stop
 - If centipede hit the mushroom cell, it will collide and react same as when it reaches the edge of the screen (move down/up and reverse direction)

Additional feature (for senior level applicants, bonus for others)

These features are required only for senior level applicants.

- Spider
 - Spider is spawned in the middle of the screen
 - Spider moves towards the player
 - Use grid pathfinding to find shortest way to the player
 - Spider can't move through mushroom cells
 - If player changes the position, the path should be recalculated
 - Speed of movement is configurable (number of cells / second)
 - Spider should never reach Player grid row, it should stay minimum one cell above
 - Spider kills the player if it's one cell above the player for at least 0.5 second
 - Spider can be killed by single bullet
 - If spider is killed, a new spider will reappear after 10 seconds

Limitations

- No 3rd party libraries or assets are allowed
- No Playmaker

Art

- Art can be anything that looks like the example. Quality of the art does not matter. You can take screenshots and crop the images from the example or use for example google images.

Evaluation

- The test evaluation is based on:
- Completeness
- Architecture
- Data structures
- Time & memory complexity of algorithms
- Overall Performance
- Code readability
- Code cleanliness
- Quality of art is NOT subject of evaluation