

PUCKMAN - 3D



Team Personnel:

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Game Overview:

PUCKMAN - 3D is a game like the original Pac-Man. The original maze , pellets, power-up, ghosts, and PuckMan are all now 3D. The objective of the game is to clear all the dots (including power-ups) without being hit by the ghost. The game starts with the ghost in a pen at the center of the maze, it emerges from it to chase PuckMan. If PuckMan is caught then a life is lost and the ghost returns to its pen. A new PuckMan is placed at the start position before play continues. If all dots in the maze are eaten, then the maze, PuckMan, and Ghosts are returned to the starting positions and the next round begins. When PuckMan is caught by a ghost and has no more lives remaining, the game is over.

Plot & Setting Information:

The Maze:

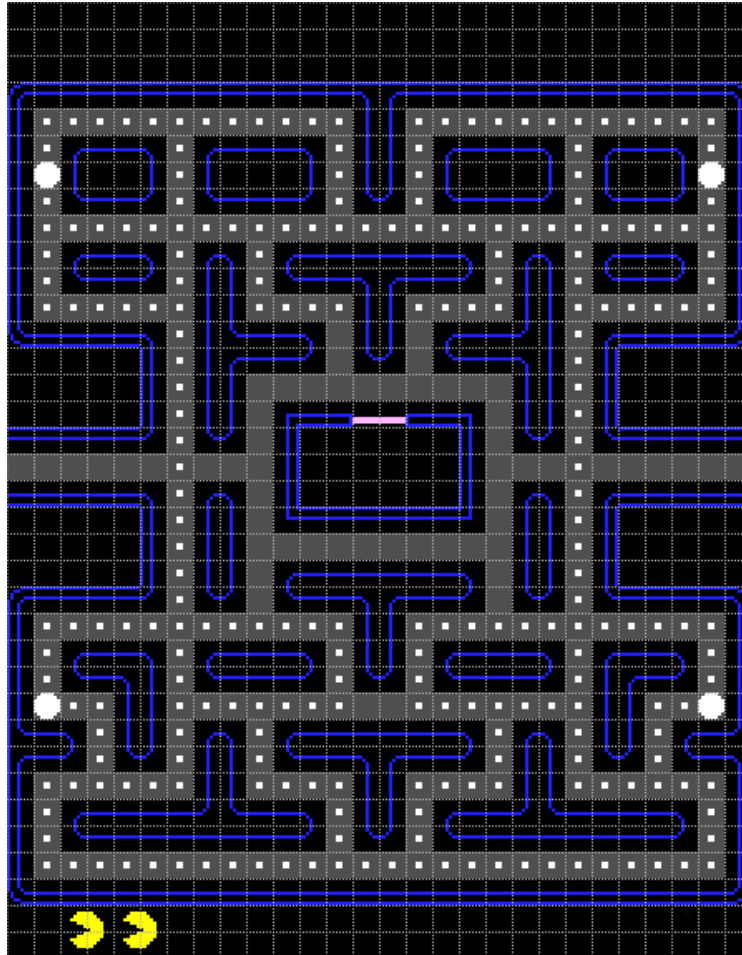
Top Down View



Grid is 28 meters by 36 meters.

UI





Blue Walls:

Height = 0.75 meters

Width = 0.5 meters

Black Floor:

28 meters wide

36 meters long

Core Game Play:

Using a keyboard navigate PuckMan forwards or backwards. Turn using left or right. Avoid ghosts and eat dots in order to clear the maze and advance to the next round. PuckMan has three lives. He can lose a life by being hit by a ghost.

Environmental Elements:

Traps:

Switches will be found throughout the map. When the player or a Ghost moves over one a trap will be triggered and if the player or the Ghost touches them they will die. Traps will be deactivated when you move over the switch again.

Characters:

PuckMan is a yellow sphere that has a diameter of 1.5 meters.

Center is 0.75 meters above the floor.

He is controlled by the player through keyboard input. - WASD/Arrows

He is seen through a Third person camera view by default unless settings are changed to top down view.

PuckMan's Speed while NOT eating dots:

In First level PuckMan's speed is 0.8 meters per second.

In Second to Fourth level speed is 0.9 meters per second.

In Fifth to Twentieth level speed is 1.0 meters per second.

Levels Twenty-one plus speed is 0.9 meters per second.

PuckMan's Speed while eating dots:

In First level PuckMan's speed is 0.71 meters per second.

In Second to Fourth level speed is 0.79 meters per second.

In Fifth to Twentieth level speed is 0.87 meters per second.

Levels Twenty-one plus speed is 0.79 meters per second.

PuckMan's Speed while NOT eating dots and ghost frightened:

In First level PuckMan's speed is 0.9 meters per second.

In Second to Fourth level speed is 0.95 meters per second.

In Fifth to Twentieth level speed is 1.0 meters per second.
Levels Twenty-one plus speed is 1.0 meters per second.

PuckMan's Speed while eating dots and ghost frightened:

In First level PuckMan's speed is 0.79 meters per second.
In Second to Fourth level speed is 0.83 meters per second.
In Fifth to Twentieth level speed is 0.87 meters per second.
Levels Twenty-one plus speed is 0.87 meters per second.

Pellets:

Dull white spheres 0.25 meters in diameter.
Hover above the floor at a height of 0.75 meters to its center.

Power-ups:

Bright white spheres 0.5 meters in diameter.
Hover above the floor at a height of 0.75 meters to its center.

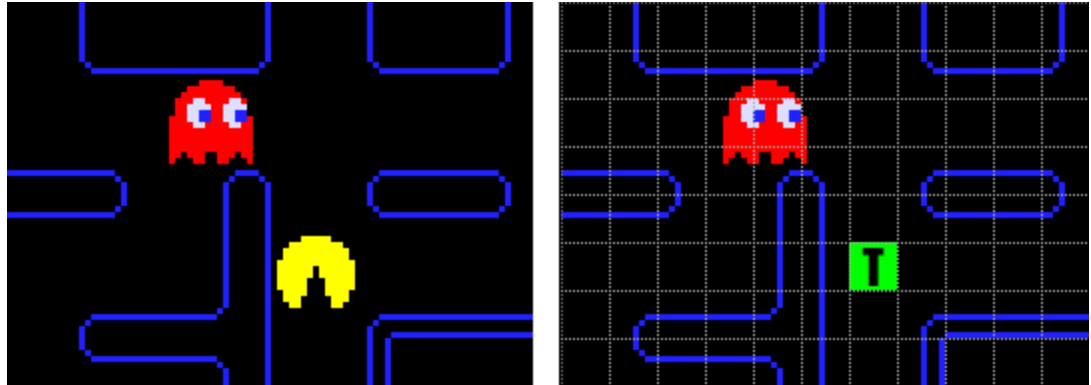
If eaten by PuckMan the Ghosts become frightened and turn to a Dark Blue color and can be eaten by PuckMan while in this state.

Fog:

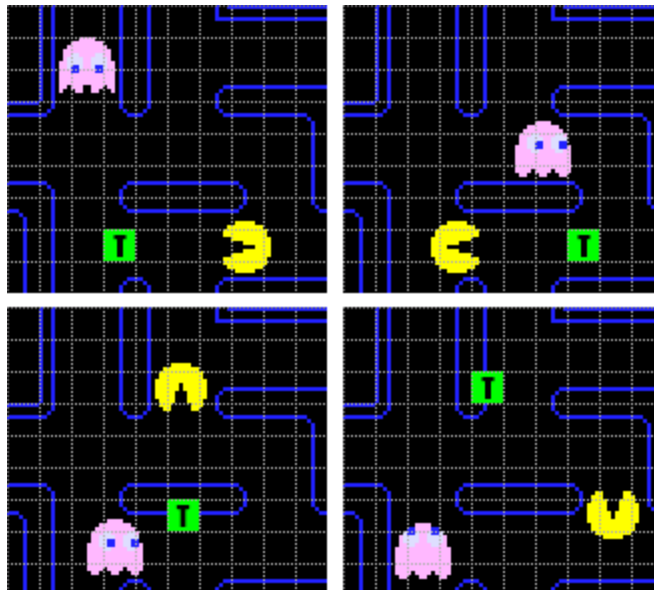
If the player is playing in fog mode then the board will be covered in fog making it difficult to see the board. Pellets will be lit underneath so you can see where to go, but Ghosts will not be visible until they are close to PuckMan who will be the one, clearly visible asset.

Ghost:

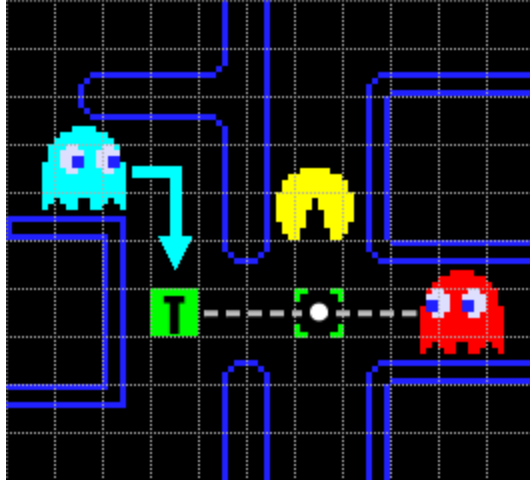
Blinky: Most simple and direct, using PuckMan's current tile as his target.



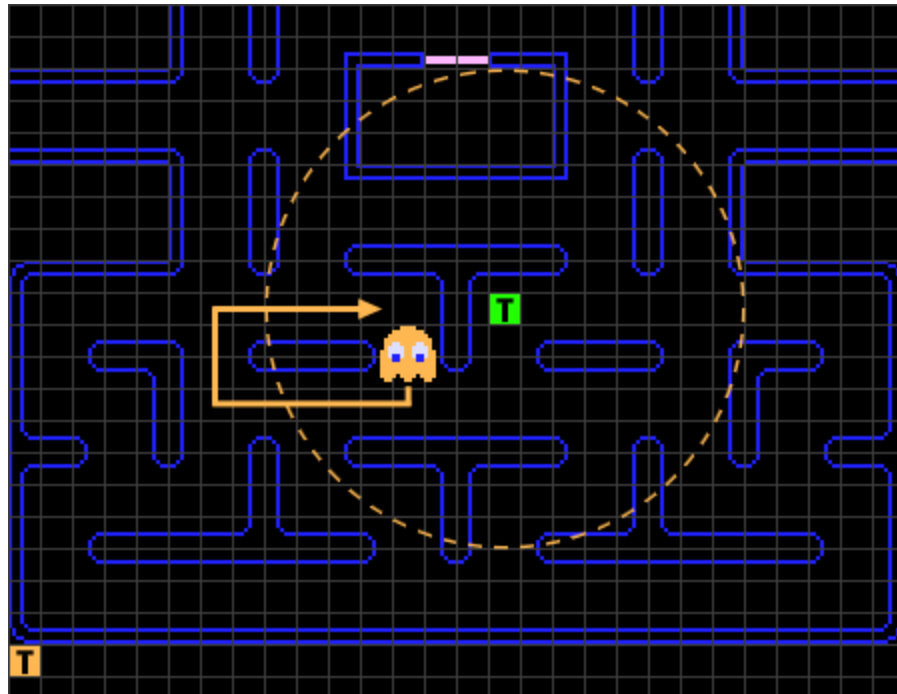
Pinky: If PuckMan is moving left, Pinky's target tile will be four game tiles to the left of PuckMan's current tile. If PuckMan is moving right, Pinky's tile will be four tiles to the right. If PuckMan is moving down, Pinky's target is four tiles below. Finally, if PuckMan is moving up, Pinky's target tile will be four tiles up and four tiles to the left.



Inky: He needs PuckMan's current tile/orientation and Blinky's current tile to calculate his final target. To determine Inky's target, we must first establish an intermediate offset two tiles in front of PuckMan in the direction he is moving (represented by the tile bracketed in green below). Now imagine drawing a vector from the center of the red ghost's current tile to the center of the offset tile, then double the vector length by extending it out just as far again beyond the offset tile. The tile this new, extended vector points to is Inky's actual target as shown above.



Clyde: During chase mode, Clyde's targeting logic changes based on his proximity to PuckMan (represented by the green target tile above). He first calculates the Euclidean distance between his tile and PuckMan's tile. If the distance between them is eight tiles or more, Clyde targets PuckMan directly just as Blinky does. If the distance between them is less than eight tiles, however, Clyde switches his target to the tile he normally uses during scatter mode and heads for his corner until he gets far enough away to start targeting PuckMan again. In the picture, Clyde is stuck in an endless loop (as long as PuckMan stays where he is) thanks to this scheme.



Ghosts are a coloured sphere with a diameter of 1.5 meters.
Center is 0.75 meters above the floor.
Tracks and pursues PuckMan.

Ghosts Speed:

In First level Ghost speed is 0.75 meters per second.
In Second to Fourth level speed is 0.85 meters per second.
In Fifth to Twentieth level speed is 0.95 meters per second.
Levels Twenty-one plus speed is 0.95 meters per second.

Ghosts Frightened Speed:

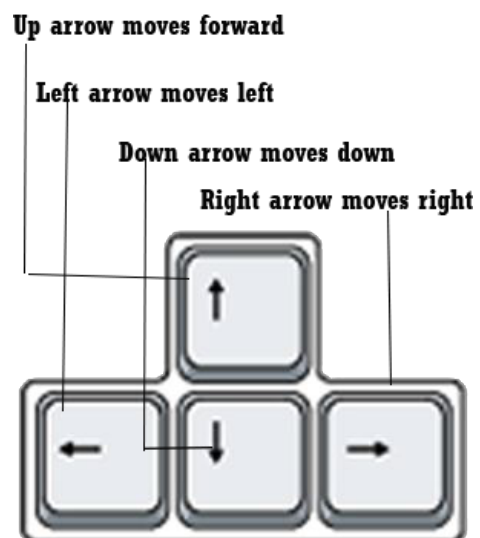
(Direction changes to the opposite it was traveling)
In First level Ghost speed is 0.5 meters per second.
In Second to Fourth level speed is 0.55 meters per second.
In Fifth to Twentieth level speed is 0.6 meters per second.
Levels Twenty-one plus speed is 0.6 meters per second.

Ghosts Frightened Time:

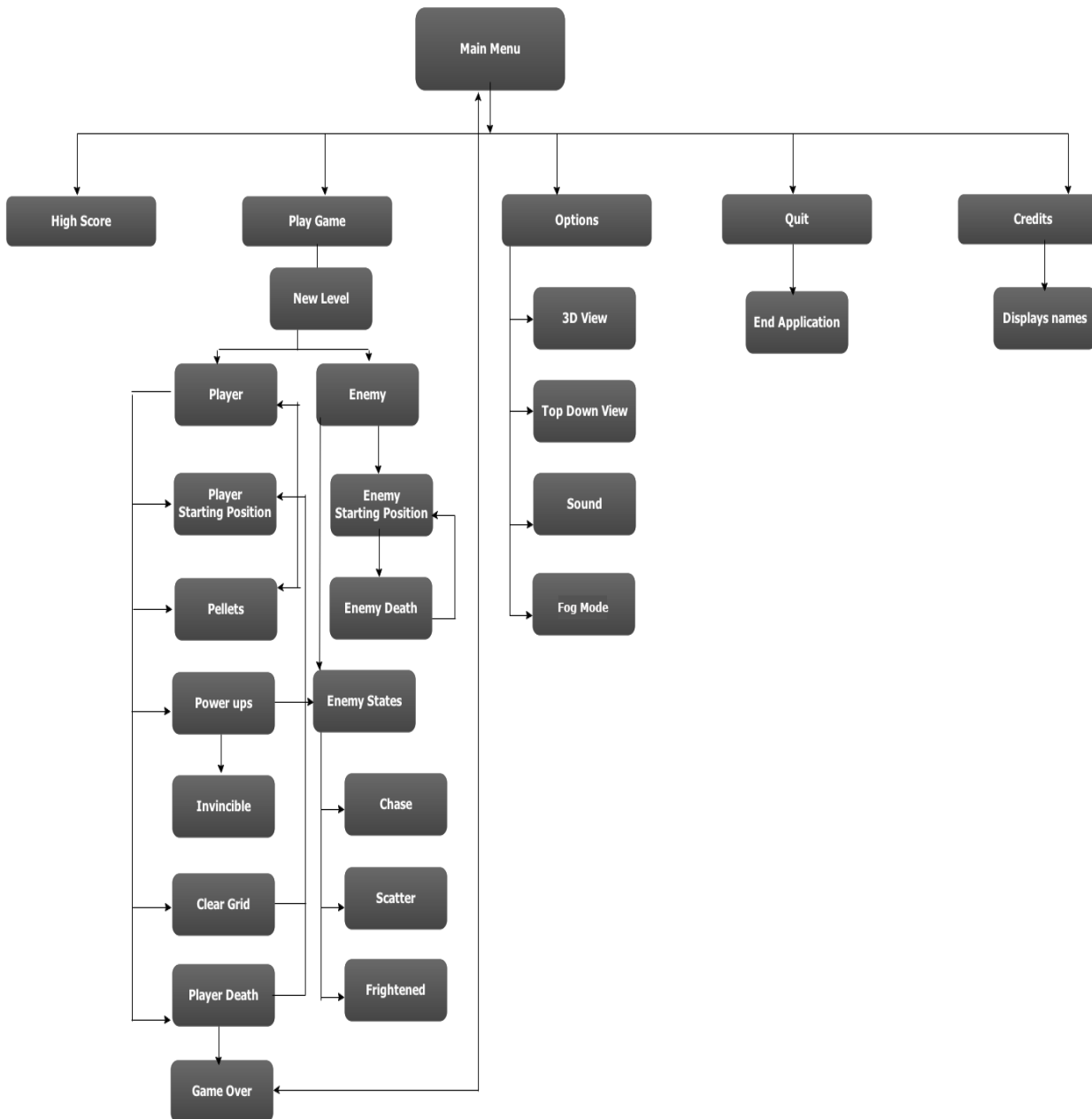
Level 1 = 6 seconds.
Level 2 = 5 seconds.
Level 3 = 4 seconds.
Level 4 = 3 seconds.
Level 5 = 2 seconds.
Level 6 = 5 seconds.
Level 7 and 8 = 2 seconds.
Level 9 = 1 second.
Level 10 = 5 seconds.
Level 11 = 2 seconds.
Level 12 and 13 = 1 second.
Level 14 = 3 seconds.
Level 15 plus = 1 second.

Interface Usage:

Keyboard:



Flow Chart:



References Used:

<http://home.comcast.net/~jpittman2/pacman/pacmandossier.html#LvlSpecs>

