



Panther VS Paws



Rules

- Game is played on a 3x3 grid.
- 2 player game.
- The game is played in turns, with the turn order being the same each round (first player goes, then the second).
- The game continues until one of the following conditions is met:
 - A player wins if they place 3 of their game pieces three in-a-row in a horizontal, vertical or diagonal pattern.
 - If all board spaces have been used, but neither player has the appropriate pattern the game ends in a tie.

Board

- BoardSpace (array, size of 9)
 - Array order (for indexing)
 - Check patterns for wins
 - Horizontal
 - Top (0, 1, 2)
 - Middle (3, 4, 5)
 - Bottom (6, 7, 8)
 - Vertical
 - Left (0, 3, 6)
 - Middle (1, 4, 7)
 - Right (2, 5, 8)
 - Diagonal
 - LeftStart (0, 4, 8)
 - RightStart (2, 4, 6)

0	1	2
3	4	5
6	7	8

represents the BoardSpace array index

Turns

The game has two players. Each player takes a turn sequentially. Player 1 goes first, then player two until the game ends. Each turn a player places a game piece on one of the 9 grid areas that is not already occupied by another space.

Win Cases

The following patterns will trigger a win for either player if their pieces are in any of the following patterns after their turn is finished.

*** No player can win until the 5th total piece has been placed ***

Horizontal

x	x	x

x	x	x

x	x	x

Vertical

x		
x		
x		

	x	
	x	
	x	

		x
		x
		x

Diagonal

x		
	x	
		x

		x
	x	
x		

Programming

GameManager

Namespaces:

```
using System.Collections;  
using System.Collections.Generic;  
using UnityEngine;  
//For accessing UI components  
using UnityEngine.UI;
```

Variables:

```
//0 for setup, 1 for user, 2 for AI  
public int player = 0;  
//Game is over on the 9th turn if there's no winner...  
public int totalTurnCount = 0;  
//Setup board spaces as an array  
public BoardSpace[] boardSpaces;  
//Bool for control game over  
public bool gameOver = false;  
//Text object for displaying results  
public Text gameText = null;  
//Play again button  
public Button playAgainBtn;
```

Methods:

- **void Start ()** // Use this for initialization
- **void StartGame()** //Initial variables to setup gameplay
- **public void RestartGame()** //Just a simple public method for a restart feature.
- **public void SetBoardSpace(BoardSpace thisSpace)** //Use by the "Board Spaces" buttons to set ownership
- **void ChangeTurn()** //Switches the turn and increments the turn count
- **void WinCheck()** //Check for a winner using all patterns...
- **void CheckPattern(int space1, int space2, int space3)** //Check a specific pattern for matches
- **void SetTurnText()** //Set the game text to whose turn it is
- **void ResultWinner(int winningPlayerInt)** //Set text to winning player's int
- **void ResultTie ()** //Set text to "tie"
- **void GameEnd()** //Set gameOver and turn on playAgainBtn

BoardSpace

Namespaces:

```
using System.Collections;
```

```
using System.Collections.Generic;  
using UnityEngine;  
//For accessing UI components  
using UnityEngine.UI;
```

Variables:



```
public int playerOwner = 0; //Who owns the space?  
public int gridSpot = 0; //Location in our grid order  
public Image ownerImage; //Reference to the child image of the button  
public Sprite panther; //Player 1 image  
public Sprite paw; //Player 2 image
```

Methods:

- **public void SetOwner(int owner)** //Sets the owner and applies an panther/paw image to the button
- **public void ResetOwner()** //Resets all values to default (un-owned)

Resources

Download the images for the “Panther” and “Paws”:

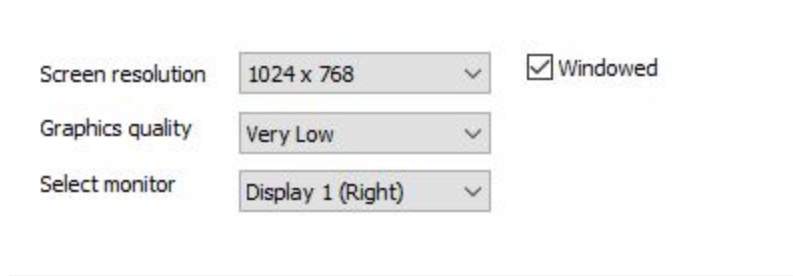
	https://drive.google.com/file/d/1AWk3NmTWZuqfUNWDrJ68k4et2eeueeju/view?usp=sharing
	https://drive.google.com/file/d/1C6u0Aezf3y3CYqpWCdpDPNGiqXhnIFVF/view?usp=sharing

Download the example project:

https://drive.google.com/open?id=16tGZcfP_IKN4Y3qTwKVnmueZRfb2qajU

To run:

- 1) Unzip the folder.
- 2) Run the “PvP.exe”



The screenshot shows a settings window with three dropdown menus and a checkbox. The first dropdown is labeled 'Screen resolution' and is set to '1024 x 768'. The second dropdown is labeled 'Graphics quality' and is set to 'Very Low'. The third dropdown is labeled 'Select monitor' and is set to 'Display 1 (Right)'. To the right of these dropdowns is a checkbox labeled 'Windowed' which is checked.

- 3) Choose “1024x768” for screen resolution and check the “Windowed mode” box.
- 4) Play using the rules provided above.