Abstract **MenuScene** StartMenuScene, SettingsScene, InstructionsScene	
- Has GameManager - Handles mouse input - Handles controller input - Moves mouse with the controller	GameManager

Abstract **GameScene** SinglePlayerGameScene, TwoPlayerGameScene	
- Has GameManager - Has home button - Knows if game is paused - Has paused icon - Handles home button click - Handles pause button click - Displays home button, pause icon, & FPS	- GameManager - StartMenuScene - MenuButton

Abstract GameScene **SinglePlayerGameScene** Level1, Level2, Level3, Level4, Level5, Level6, Level7, Level8, Level9, Level10	
- Has player controlled tank - Has enemy tanks - Has a maze - Knows if the player won - Knows when to switch scenes - Knows the number of kills in the current round - Handles the end of a game - Displays the current game statistics - Handles enemy tank movement - Handles bullet movement - Handles player controls for player tank movement	- GameManager - SinglePlayerModel - TankFactory - Maze - Tank - PlayerTank - EnemyTank

TwoPlayerGameScene	GameScene
• Has 2 player tanks • Has maze • Knows when to switch scenes • Knows which tanks are alive • Handles user input to move tanks • Updates position of bullets • Knows winner	• Maze • Tank • PlayerTank • StartMenuScene

Abstract **Tank** PlayerTank, EnemyTank	
• Knows its dimensions • Knows its current angle and position • Knows its speed & angular speed • Knows if it is currently shooting • Knows the maximum number of bullets it can shoot • Knows its previous location • Knows if it is currently alive • Knows if it is intersecting another object • Knows how to move in all 4 directions • Knows how to shoot • Knows how to die	• Bullet

PlayerTank	Tank
• Knows position • Knows maximum number of bullets • Knows speed • Knows dimensions	• Bullet

Abstract	Tank
EnemyTank	SimpleStaticEnemy, MovingEnemy

• Knows dimensions	• Tank
• Knows its speeds	• Bullet
• Knows the maximum number of bullets it can shoot	
• Has a desired angle to shoot	
• Knows its current angle	
• Finds the location of the player	
• Determines if path is clear to shoot the player	
• Decides which direction to rotate	
• Aims at the player	
• Shoots the player	

GameManager

• Has current scene	• Renderable
• Has a settings controller	• TankFactory
• Has a tank factory	• SettingsController
• Has video game controller manager	• ControllerManager
• Has single player game model	• SinglePlayerModel
• Has robot to move mouse	• Robot
• Sets the current scene	
• Resets the game	

Bullet

• Has coordinates	• Tank
• Has speed	• Maze
• Has max number of bounces	
• Knows if currently being shot	
• Determines its current state	
• Determines if it has collided with a wall	
• Determines if it has collided with a tank	
• Updates it current position	

Shield

• Has dimensions • Has coordinates • Has activated symbol • Knows if player has activated it • Knows if power up is still available • Knows how long it is activated for	• PlayerTank • SinglePlayerGameScene

Maze

• Has dimensions • Has walls • Has wall material • Determines if an object is intersecting with it	• HardcodedMazes • Wall • GameScene

Wall

• Has dimensions • Has coordinates • Has wall material	• Maze

TankFactory

• Has a settings controller • Creates new tanks • Initializes new tank graphics	• SettingsController • GameScene

Hardcoded Mazes

• Has 2D array of mazes	• Maze

Interface
Drawable

• Draws objects to the screen	• Tank • Bullet • Maze

Abstract
Intersectable

• Determines if an object has intersected with another object	• Tank • Bullet • Maze

Interface
Renderable

• Updates the current display • Renders the display	• GameScene • MenuScene

SettingsModel

• Has a difficulty level • Has a display size level • Sets the difficulty level • Sets the display size	• SettingsController • DifficultyLevel • DisplaySize

SettingsController

- Has a SettingsModel
- Has an AppGameContainer
- Sets the model's difficulty level
- Sets the model's display size
- Changes the appGameContainer's display size
- Toggles the FPS display on/off

DifficultyLevel

• Has max number of enemy bullets • Has enemy speed • Has enemy angular speed	• SettingsModel • SettingsController

DisplaySize

• Has a window height • Has a window width	• SettingsModel • SettingsController

MenuScene

SettingsScene

• Has home button • Has difficulty buttons • Has display size buttons • Has FPS toggle switch • Has previous scene (StartMenuScene) • Has SettingsController • Displays all buttons • Updates the display based on selected buttons	• MenuButton • StartMenuScene • SettingsController • Renderable

MenuButton

• Has image for the button • Has container for the button • Knows if it contains a coordinate	• GameScene • SettingsScene • InstructionsScene

MenuScene

StartMenuScene

• Has game mode buttons • Has settings button • Has instructions button • Has image • Knows button dimensions • Has position to move the mouse off screen • Determines an action once a button is selected • Moves the mouse off of the game screen • Determines location where to move mouse	• TheGame • GameManager • Level1 • TwoPlayerGameScene • SettingsScene • InstructionsScene

MenuScene

InstructionsScene

• Has home button • Has a previous scene (StartMenuScene) • Goes back to the start menu	• MenuButton • StartMenuScene • Renderable • TheGame

Utilities

• Converts degrees to radians • Converts radians to degrees	• EnemyTank