Angry Birds Game: Object-Oriented Structure

# Bird

## Variables

|  |  |  |  |
| --- | --- | --- | --- |
| variableName | data type | explanation | justification |
| hasBeenLaunched | Boolean | Tracks if the bird has already been launched. | Ensures birds can’t be launched multiple times. |
| hasCollided | Boolean | Indicates whether the bird has hit an object. | Used to trigger effects or scoring when contact is made. |

## Methods

|  |  |  |
| --- | --- | --- |
| methodName | function | justification |
| LaunchBird() | Handles bird launching mechanics. | Central to gameplay—the action of firing birds is the game’s core feature. |

# GameManager

## Variables

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| --- | --- | --- | --- |
| variableName | data type | explanation | justification |
| maxNumberOfShots | Integer | Maximum allowed bird launches per level. | Prevents infinite retries, encourages puzzle-solving efficiency. |
| numOfPigs | Integer | Number of pigs currently in the level. | Used to check win condition. |
| numOfBirds | Integer | Number of birds available for the player. | Displays and controls bird availability. |

## Methods

|  |  |  |
| --- | --- | --- |
| methodName | function | justification |
| hasEnoughShots() | Checks if the player has remaining shots. | Prevents unnecessary gameplay if no birds are left. |
| restartGame() | Resets the current level. | Essential for retrying failed levels. |
| winGame() | Triggers end-of-level win condition and feedback. | Provides player reward and feedback for completing level. |

# SlingShot

## Variables

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| --- | --- | --- | --- |
| variableName | data type | explanation | justification |
| shotDirection | Vector2 | Direction in which the slingshot is pulled. | Determines the launch angle and trajectory. |
| shotForce | Float | Force applied to the bird when released. | Controls the bird’s launch strength. |
| isBirdOnSlingshot | Boolean | Whether a bird is currently placed on the sling. | Prevents unintended input or launches. |
| hasBeenClicked | Boolean | Indicates if the slingshot is being held/clicked. | Helps determine when to launch. |

## Methods

|  |  |  |
| --- | --- | --- |
| methodName | function | justification |
| SpawnAngryBird() | Spawns a new bird onto the slingshot. | Enables successive shots without manual placement. |
| AnimateSlingshot() | Visually animates the stretch and release. | Improves feedback and immersion for the player. |
| PositionBird() | Correctly places bird on the slingshot. | Ensures consistency in spawn position and alignment. |

# Pig

## Variables

|  |  |  |  |
| --- | --- | --- | --- |
| variableName | data type | explanation | justification |
| maxHealth | Integer | Total health the pig starts with. | Allows varying difficulty and pig resilience. |
| currentHealth | Integer | Current health remaining for the pig. | Used to determine when pig should be destroyed. |

## Methods

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| --- | --- | --- |
| methodName | function | justification |
| Pop() | Handles pig destruction upon 0 health. | Core to win condition and visual/gameplay feedback. |