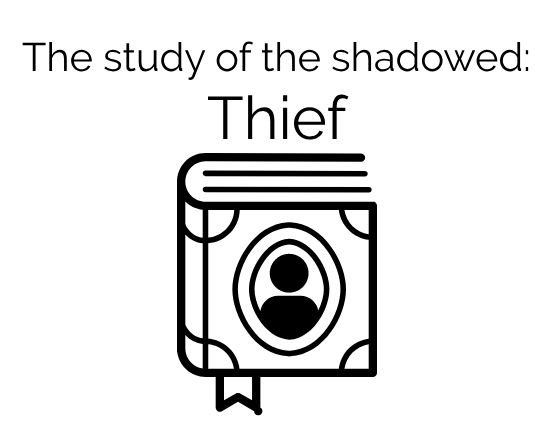
**Senior Project Object Model**



Void Pointer Studios

**Submitted By:**

*Carl Lowther*

carl.lowther@gmail.com

**Submitted To:**

*Calvin Caldwell*

11/1/2018

Version 1

# Signatory Page

Document accepted by:

Calvin Caldwell

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Signature Date

Document submitted by:

Carl Lowther

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Signature Date

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# Revision History

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Date | Author | Company | Comments |
| 1 | 11/1/18 | Carl Lowther | Void Pointer Studios | First Draft |

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# Class Diagrams

## Executive

Executive%20Class%20Diagrams.pdf

## Detailed

Detailed%20Class%20Diagrams.pdf

# Class Specifications

|  |
| --- |
| Class Information |
| Class Name: Enemy Damager Abstract Type: Persistence: No |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 060 | Knocking Out Enemies | 01 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| bool HitEnemy() | PlayerInterAction HandleInput | Returns true if an enemy was hit |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| N\A |  |  |  |  |  |

|  |  |
| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
|  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: PlayerInteraction Abstract Type: No Persistence: No |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 052 | Opening Doors | 01 |
| 054 | Picking Locks | 01 |
| 056 | Pick Safes | 01 |
| 062 | Putting Out Light Sources | 01 |
| 064 | Using Switches | 01 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void Update() | Game is running | Calls HandlePlayerInput |
| Void HandlePlayerInput() | In the update loop | Calls InRangeOfLoot, InRangeOfEnemy, and InRangeOfInteractable |
| Void InRangeOfLoot | Called from HandlePlayerInput | Updates Items In Range and returns true if items were found |
| Void InRangeOfEnemy | Called from HandlePlayerInput | Updates Enemies In Range and returns true if enemies were found |
| Void InRangeOfInteractable | Called from HandlePlayerInput | Returns true if Intractable object is found |

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| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| ItemsInRange | Item[] | Y | Instance | Private | Items in range of the player |
| EnemiesIn Range | Enemy[] | Y | Instance | Private | Enemies in range of the player |

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| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: PlayerInventory Abstract Type: No Persistence: No |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 050 | Player Inventory | 01,02 |
| 058 | Stealing Objects | 01 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void PickUpItem() | Called from PlayerInteraction’s HandlePlayers Input | Item is moved from the world to the player’s inventory |
| Bool UseItem() | Called from PlayerInteraction’s HandlePlayers Input | Tries to use the currentItem on what ever the player is looking at |
| Void DropItem() | Called from PlayerInteraction’s HandlePlayers Input | Drops the current item from the players inventory and places it in the world |
| Void ChangeCurrentItem() | Called from PlayerInteraction’s HandlePlayers Input | Changes the current Item to what ever is passed in |

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| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

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| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| Items | Item[] | Y | Instance | Public | An array of items in the players inventory |
| CurrentItem | Int | N | Instance | Public | The current index into the array of items |

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| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: ShadowDetection Abstract Type: No Persistence: No |

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| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 065 | Enemy AI | N\A |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void Update() | Game Is Runnnig | Calls DetectShadows |
| Void Reset() | Game Starts Running | Finds all the lights in the level |
| Float DectectShadows() | Called From Update | Detects how much the player is in shadow |

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| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| Lights | Lights[] | Y | Instance | Public | All lights in the level |
| ShadowPercentage | Float | N | Instance | Public | how much the player is in shadow |

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| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

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| --- | --- | --- | --- |
| General Comments | | | |
| **Author** | | **Date** | **Comments** |
|  | |  |  |
| Class Information | | | |
| Class Name: PlayerMovement Abstract Type: No Persistence: No | | | |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 045 | Player Looking | 01 |
| 046 | Player Movement | 01 |
| 047 | Player Crouching | 01 |
| 048 | Player Jumping | 01 |
| 049 | Climbing Objects | 01,02,03 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void Update() | Level is running | Calls MovePlayer and checks if the player is grounded |
| Void MovePlayer() | Called fromUpdate | Moves the player |
| Void Crouch() | Called from PlayerIneraction’s HandlePlayerInput | Makes the player Crouch |
| Void Jump() | Called from PlayerIneraction’s HandlePlayerInput | If the Player is grounded it makes the player Jump |

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| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| WalkSpeed | Float | N | Instance | Public | The walk Speed for the player |
| RunSpeed | Float | N | Instance | Public | The Run Speed for the player |
| CrouchSpeed | Float | N | Instance | Public | The Crouch Speed for the player |
| CrouchHeight | Float | N | Instance | Public | How low to crouch the player |
| CurrentSpeed | Float | N | Instance | Private | The Current Speed for the player |
| JumpHeight | Float | N | Instance | Public | How High to make the player jump |
| IsGrounded | Bool | N | Instance | Private | Is the player on the ground |

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| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |

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| --- |
| Object Information |
| Object Name: Player Abstract Type: No Persistence: No |

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| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| N\A |  |  |

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| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

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| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

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| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| Shadow Detection | Class |  |  |  |  |
| Player Interaction | Class |  |  |  |  |
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| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
| Carl Lowther | 11/1/2018 | Player is not a class, But an object that holds classes |

|  |
| --- |
| Class Information |
| Class Name: Main Menu Abstract Type: No Persistence: No |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 005 | Play First Level | 02 |
| 006 | Main Menu Interaction | 02 |
| 010 | Main Menu Settings | 01 |
| 011 | Quit Game | 01 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void StartGame() | Game has launched | The fist level is started |
| Void OpenSettings() | Game has launched | Opens the settings Page |
| Void QuitGame() | Game has launched | Quits the game |

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| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

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| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| UI | GameObject[] | Y | Instance | Public | A list of UI elements |

|  |  |
| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: SettingsMenu Abstract Type: No Persistence: No |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 015 | (Adds) Setting Menu | 02 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| ChangeSetting(Setting, float) | Settings has been changed | Changed setting |

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| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| UI | GameObject[] | Y | Instance | Public | A list of UI elements |

|  |  |
| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: In-Game menu Abstract Type: Persistence: |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 020 | In-Game Menu | 02 |
| 022 | Resume Game | 01, 02 |
| 024 | Open Setting Menu | 01 |
| 026 | Quit Level | 01,02,03,04 |
| 028 | Quit Game from Level | 01 |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void ResumeGame() | In the InGame menu | Closes the menu and un pauses the game |
| Void OpenSetting() | In the InGame menu | Opens Settings menu |
| Void QuitLevel() | In the InGame menu | Quit the level back to the main menu |
| Void QuitGame() | In the InGame menu | Quit the game |

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| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| UI | GameObject[] | Y | Instance | Public | A list of UI elements |

|  |  |
| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |

|  |
| --- |
| Class Information |
| Class Name: AfterLevelScreen Abstract Type: No Persistence: No |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 037 | Go to Next Level |  |
| 039 | Quit to MainMenu |  |

|  |  |  |
| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| String[] ReadFromDataBase() | At After Level Screen | Gives the data to the UI elements |
| Bool WriteToDataBase (string) | At After Level Screen | Writes to the database, Returns false if couldn’t write to database |
| Void StartNextLevel() | At After Level Screen | Grabs the next level from the level manager and starts it |
| Void QuitToMainMenu | At After Level Screen | Quit back to the main menu |

|  |  |  |
| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
|  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| UI | GameObject[] | Y | Instance | Public | A list of UI elements |

|  |  |
| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

|  |  |  |
| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |

|  |
| --- |
| Object Information |
| Object Name: Level Abstract Type: No Persistence: Yes |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 080 | Level | N\A |

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| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

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| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| Level manager | Class |  |  |  |  |
| Player | Class |  |  |  |  |
| Enemy | Class |  |  |  |  |

|  |  |
| --- | --- |
| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

|  |  |  |
| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 1 | \* | 5 |  |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
| Carl Lowther | 11/1/18 | Level is not a class but a Unity object to hold data for the level, models, textures, Enemies, loot, the player. |

|  |
| --- |
| Class Information |
| Class Name: Enemy Abstract Type: No Persistence: No |

|  |  |  |
| --- | --- | --- |
| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 065 | Enemy AI | N\A |

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| --- | --- | --- |
| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

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| --- | --- | --- |
| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

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| --- | --- | --- |
| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| N\A |  |  |

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| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| Items | Item[] | Y | Instance | Public | A list of items that is on a particular enemy |

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| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
| 0 | \* | 6 |  |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
| Carl Lowther | 11/1/18 | A class object to hold the Enemy AI |

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| Class Information |
| Class Name: EnemeyMovement Abstract Type: No Persistence: No |

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| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 065 | Enemy AI | N\A |

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| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void Update() | Level is running | Calls Move() |
| Void Move(vector3) | Called by Update | Moves the enemy to the closet possible location near the pasted in Vector 3 |

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| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| WalkSpeed | Float | N | Instance | Public | The walk speed for the enemy |
| RunSpeed | Float | N | Instance | Public | The run speed for the enemy |

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| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
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| General Comments | | |
| **Author** | **Date** | **Comments** |
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| Class Information |
| Class Name: EnemyInteraction Abstract Type: No Persistence: No |

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| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 065 | Enemy AI | N\A |

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| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void Update() | While the Level is running | Calls InRangeOfInteractable |
| Bool InRangeOfInteractable() | Called by Update | Checks to see if any intractable object are near by, returns false if non are found |
| Bool UseInteractable() | Called AI Brain | If there is a near by object, the enemy will use the object |

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| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| N\A |  |  |  |  |  |

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| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
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| General Comments | | |
| **Author** | **Date** | **Comments** |
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| Class Information |
| Class Name: AI Brain Abstract Type: No Persistence: No |

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| Trace-ability Information | | |
| **Use Case ID** | **Use Case Name** | **Steps** |
| 065 | Enemy AI | N\A |

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| Public Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
| Void Update() | While the level is running | Calls InRangeOfPlayer, MoveToPostion, TeamatesInRange, AlertTeamates, ResetAlertState, PredictPlayerMovement |
| Vector3 PredictPlayerMovement() | Called By Update | Tries to predict where the player will go. |
| Bool InRangeOfPlayer() | Called By Update | Calls CanSeePlayer, CanHearPlayer |
| Bool CanSeePlayer() | Called By InRangeOfPlayer | Updates LastKnowPlayerPos, LastKnowPlayerVelocety, and IsAlerted |
| Bool CanHearPlayer() | Called By InRangeOfPlayer | Updates LastKnowPlayerPos, LastKnowPlayerVelocety, and IsAlerted |
| Bool MoveToPostion() | Called By Update | Calls Enemy movement |
| Enemy[] TeamatesInRange() | Called By Update | Returns any teammates in range |
| Void AlertTeamates() | Called By Update | Alerts any teammates in range |
| Void ResetAlertState () | Called By Update | Resets HasBeenAlerted, AlertTimeOut,  TimeBeforeCanBeAlerted |

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| Protected Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| Private Methods | | |
| **Signature** | **Preconditions** | **Post Conditions** |
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| Attributes | | | | | |
| **Name** | **Type** | **Object(Y/N)** | **Instance/Static** | **Visibility** | **Description** |
| WayPoints | Vector3[] | N | Instance | public | A list of way points for the enemy to follow |
| LastKnowPlayerPos | Vector3 | N | Instance | private | The last know position of the player |
| LastKnowPlayerVelocity | Vector3 | N | Instance | private | The last know Velocity of the player |
| IsAlerted | bool | N | Instance | private | Is this enemy alerted |
| HasBeenAlerted | bool | N | Instance | private | Has this enemy been alerted by another enemy |
| AlertTimeOut | float | N | Instance | public | Time tell the alert wears off |
| TimeBeforeCanBeAlerted | float | N | Instance | public | Time before this enemy can be alerted |

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| Concurrency | |
| **Threading Issue** | **Description** |
| N\A |  |

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| --- | --- | --- |
| Major Exceptions | | |
| **Name** | **Trigger** | **Action** |
| N\A |  |  |

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| --- | --- | --- | --- |
| Instance Information | | | |
| **Minimum** | **Maximum** | **Mean** | **Fixed** |
|  |  |  | 1 |

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| --- | --- | --- |
| General Comments | | |
| **Author** | **Date** | **Comments** |
|  |  |  |