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Prisoner Escape: The Game

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# Prisoner Escape: The Game

## Game Outline

The game's outline is that you, the player have just escaped prison, but the police are after you. Your aim is to escape them for as long as you can, because even if a single police unit touches you, you are dead or captured. This also detailed to the player in game on the splash screen.

On the code side of the game, it is managed by management systems. Each of these are classes in separate scripts.

A close-up of a text

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The following sections show my development of the game and understanding of my code.

## Development Timeline

The development was developed in the following stages:

|  |  |  |  |
| --- | --- | --- | --- |
| Stage 1 | Stage 2 | Stage 3 | Stage 4 |
| Player and obstacle display | * Spawning of obstacles * Management of obstacles and other items on screen | Various other game mechanics examples:   * Clock * High score * etc | UI:   * Screen objects and screen elements. |

## Game Mode

An enum of different game modes manages the operation of the game. This dictates what is currently being displayed in each frame in draw() method. Both the enum and switch method are shown below.

1. Game mode enum (Source: gameMode.pde ):

A screenshot of a computer

Description automatically generated

1. Switch controller (Source: main.pde ):

A screenshot of a computer program

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## Player

The player is controlled by Player\_Manager.pde. The original look of the player was a box fixed to the middle by an inbuilt grid system (see script).

A close-up of a white background

Description automatically generated

The player now appears as a prisoner (below), using the sprite animation system built for the project and rotating by 45 degrees, depending on the direction of movement.

A close up of a number

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The keyboard cluster controls player input:

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## Obstacles

There are several different obstacles or police units. Each has different behaviour each. Like the player first took on a basic form as squares. Now, it also take on a different appearance dependent on unit type with a range of animation states depend on direction and action. Spawning mechanic works from each kind having a probabity of spawning and random selection. The further progress made in the more different types will spawn.

Obstacles / police units:

* Police Officer
* Police Blockade
* Armed Police
* Combined Blockade and Armed Police
* K9 Unit
* Police Car

1. Original officer look

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1. Two different Officer looks.

A cartoon of a policeman

Description automatically generatedA cartoon of a policeman

Description automatically generated

## Management Systems

The game is built around three central management systems:

1. Player Managers (Player\_Manager.pde):
2. Obstacle Manager (Obstacle\_Manager.pde): Each obstacle has to extend the Obstacle superclass. This script then manages spawn mechanics and movement relevant to the screen so that all move in sync.
3. Collision Manager (Collison.pde): If the object is to be collidable, it must implement a collidable interface. This script managers collision checks between objects calling collide with functions so relevant actions can be performed.

Other Systems used, check scripts for functions and behaviour:

* Animation System: Sprite.pde and Animation.pde
* Screen System: Screen.pde and Screen Elements.pde
* Tracker System: Tracker.pde
* Difficulty : Difficulty.pde. Controls games difficulty as the game progresses.

# Art References

The references for art use are as follows:

* Prisoner: Self-made.
* Officer 1, 2 and Armed Police: <https://craftpix.net/freebies/2d-game-police-character-free-sprite-sheets/?srsltid=AfmBOorL6QD8p-ybpayggkLOU5O49tZ71TYtOWZ6sGA84rzHExJFGbm_>
* K9: <https://admurin.itch.io/top-down-mobs-dog>
* Police Car: <https://opengameart.org/content/top-down-pixel-police-car>
* Barbed Wire: <https://www.freepik.com/free-vector/metal-steel-barbed-spiral-wire-with-thorns-spikes_5723555.htm#fromView=keyword&page=1&position=0&uuid=f4db365c-d068-42d2-a610-34d72a70829f>

# Mark Scheme Pointers

|  |  |  |
| --- | --- | --- |
| **Base Mark** | **Coding concepts required** | **Where?** |
| 40% | **All** of the following to Pass (40%):   * Minimum 1 class (e.g. Obstacle, Player) * Keyboard arrow cluster | **Classes:** All Scripts  **Minimum of 1 Class:** Refer to 60% to 70% grade bound below for list of obstacle classes. In addition all scripts include the use of class.  **Keyboard Arrow Cluster:**  Input handled by player manager. Uses keyboard cluster |
| 40-50% | * Minimum 2 Classes (Player,Obstacle) * Obstacle collides with the Player * Working Boolean Collision *function* method(s) * Obstacle objects use PImage | **Collision:** Collision between object done through collidable interface and collidable manager. Boolean function found in Collision Manager Lines( - )  **Obstacle use of PImage:** Obstacle display a PImage through animation system consisting of scripts: Sprite and Animation. |
| 50-60% | * Obstacles have their own movement * An ArrayList (or array) of Obstacle objects * objects removed from memory (set to **null**, or removed from array/arrayList) | **Independent Obstacle Movement:** Each Obstacle have there own movement using the Move() of the obstacle super class. Default definition found in Obstacle script Lines ( - )  **Arraylist of obstacles:** In Obstacle\_Manager all Obstacles are stored in array list called, ‘obstacle\_OnScreen’ with ‘toAdd’ and ‘toRemove’ to manage safe addition and removal of obstacles from list. AddObstacle()and RemoveObstacle() |
| 60-70% | * 2nd Class (different type) of Obstacle * Class-inheritance * Player changes appearance dependent on arrow key | **Different Types of Obstacles:** The different obstacle types are listed below, each have there own class and script:   * Police Officer * Police Blockade * Armed Police * Combined Blockade and Armed Police * K9 Unit * Police Car   **Class Inheritance:** Class inheritance is exhibited in the following classes:   * All screen objects. 4 screens inherit Screen class. * The following inherit screenObject class:   + Obstacle   + Player   + Road * The following inherit Obstacle class:   + Police Officer   + Police Blockade   + Collision\_Block   + Armed Police   + Combined Blockade and Armed Police   + K9 Unit   + Police Car   + Projectile * The following inherit Screen:   + Splash Screen   + Start Screen   + Pause Screen   + Death Screen * The following inherit Screen Element:   + Text   + Button |
| 70-80% | * Animation sequences * File handling – high score(s) saved and read from file * polymorphism with array/arrayList | **Animations:**  Animations sequences are exhibited through the Animation and Sprite classes. Sprite controlling and holding animatiosn relevant to the object it is attached to.  **File handling:**  File handling is shown through the saving, loading and display of high score. See highScore.pde  **Poly Morphism:**  Poly morphism is exhibited through a number of different scripts. The main being through array list of obstacles in obstacle manager and screen objects in screen manager. |
| 80%+ | * Use of an Interface or abstract class | **Interfaces:** The following interfaces are used:   * Collidable in collision.pde   **Abstract Classes:** The following abstract classes are used:   * Screen. Check Screen.pde |