# General Setup

For the game to run smoothly, certain standards will need to be adhered to in levels.

* **Object positioning**: although it’s a 2D game, every object will still occupy a position in 3D space. This must be used carefully to ensure that everything renders correctly and collides properly. **To this end, all objects should start a Z position of 10.** From here, objects can be moved by moderate increments- preferably in steps of 1.
* **Layering**: Unity “layers” will be used to improve collision logic in the game. Layers in Unity are simply a way of specifying how objects collide with each other, for example, having a layer “A” and a layer “B”, you can choose whether or not objects in layer A collide with those in B. **In Partners in Crime, Player Characters and NPCs will occupy the “Characters” layer, and all static objects (e.g. level geometry, crates etc) will occupy the “Scenery” layer.** This will be used in the game code for certain key features such as Line-of-sight detection.

# Robot Player

The Robot Player prefab should be placed in every scene (even for testing) as it has a camera object that will automatically follow it.

It contains a RobotController component that can be used to control its movement:

* **Speed:** Used to set the main horizontal movement speed.
* **Jump Strength:** How much force the robot has when it jumps. Increase to allow it to jump higher
* **Gravity Factor:** This accelerates how gravity gets applied to the robot, but not his maximum fall speed. Increasing this should make the robot feel heavier
* **Ladder Map:** A handle to the tilemap used to indicate ladders in the game (more detail in the Ladders section)

# Ai Player

Contains component Ai Controller. Set ‘Occupied Gadget’ to first device that ai player will possess (the robot player). Check ‘Debug Controls’ to enable using the mouse to jump the ai around instead of a controller.  
Any object that the ai can possess must have a component that implements the interface GadgetControllerInterface.

To interact with gadgets, the player can either use the ‘B’ button on the controller (or the space bar) or can send a direction command with the right analogue stick (or wsad) to gadgets that support it.

# Door

Ai player may open and close the door with the action button. Door will move upwards two tile blocks when opened. The door will close after a small amount of time if it is not currently possessed by the ai and the robot player is not underneath it.

# Trapdoor

A horizontal door.

# Security Camera

Ai player may temporarily disable the camera by pressing the action button. It also implement the FieldOfView component (see guards). The camera will turn back on after a small amount of time if not currently possessed by the AI player.

The securityCamera component has three variables, startRotation, endRotation and rotationSpeed. StartRotation and endRotation define the angles at which the camera will pan between and will override the rotation variable in FieldOfView. RotationSpeed defines how fast the camera pans between these two angles.

The security camera prefab has three components, a parent security camera object and two child objects, camera and base. The top component should not be rotated and should have a z rotation value of 0. The base may be moved and rotated so that it's sprite appears to be positioned upon the wall. The camera object will have its rotation dictated by the values entered in the security camera component. The end of the security camera should be placed on the end of the arm of the base sprite.

# Guards

Guards can be placed from the Robot Guard prefab. The important components for the Guard are the GuardController and FieldOfView.

The GuardController currently has the following properties:

* **Patrol Path:** If no PatrolPath (details later) is specified, the Guard will simply walk back and forth until he reaches a wall or ledge.
* **Walk Speed:** self-explanatory. Default value is 5.
* **Shot Delay:** Used to determine reaction times for guards, e.g. once a guard ‘shoot’s the player he will only be able to shoot again in X seconds. Default is 2.

The FieldOfView component has the following properties:

* **Field Of View** (ok, maybe I should have named this property better): the angular width of the line of sight, e.g. an arc of 90 degrees
* **Range:** How far their line of sight extends
* **Material:** This is used purely for drawing the field of view, if unsure just use the Material in Art Assets -> Materials -> Colours
* **Starting Rotation:** Use to set the initial direction (in degrees), especially useful for cameras

There is also a component called DelayedReactionLogic, which is used to set how quickly the guard will ‘detect’ the player when he is in sight. It has the following properties:

* **Suspicious Threshold:** How long the player must be in the guard’s sight before he gets suspicious. Default is 0.2 seconds.
* **Aggression Threshold:** Same as Suspicious, except once Aggressive the guard will begin to attack. Default is 0.8 seconds.

# Patrol Paths

Guards must be assigned Patrol Paths to follow (otherwise they will just stand around). These are fairly simple (if not a little tedious currently) to set up.

To create a Patrol Path, first drop a Patrol Path prefab into the level. Its position isn’t especially relevant, but best to place it roughly where your path will be lying- and make sure it is correctly placed on the Z-axis (at 10 on the Z-axis, preferably). Then, to create waypoints on the path, select the Patrol Path object and click “Add Waypoint” to add as many waypoints as you think you need. Then, position each of the waypoints as you see fit- take note of the sequence of waypoints, such that the order is what you expect.

Note that each Patrol Path Waypoint has a component that allows you to change its position in the sequence of waypoints. However, changing one does not change others, so if you’re updating or removing waypoints, remember to make sure that a proper sequence is conserved, else you may get errors (but you should also get console messages that tell you what you’ve done wrong). Editing the positioning for each waypoint is likely to be tedious if done at length, but for now there is no time to implement a more user-friendly positioning system.

Once a Patrol Path has been set up, just remember to assign it to any Guards you want to follow it!

# Guard Spawner

This object will spawn a new guard at the location of the spawner a number of specified times when triggered by an alarm. It will spawn a copy of an object in the guard prefab parameter. This should be set to a prefab of a guard object, new prefabs should be created for guards with unique patrol paths etc. The guard will be spawned 'number' amount of times at a regular interval. If ‘spawn once’ is set to true, the guard spawner can only be triggered once over the course of the level, if not, it can be triggered multiple times by other object triggers.

# Alarm trigger

When touched, the alarm trigger object will trigger the alarm, causing all guard spawners to spawn guards.

# Ladders

Ladders are created by setting up a tilemap especially for all ladders in the level. This tilemap (e.g. ‘LadderMap’) should be set up to use the ‘Ladder Sprites’ sprite collection. Once this is done, the Robot Controller needs to be given a handle to this tilemap so he knows which tilemap to check for ladders.

Once this is done, any tile painted in the ladder tilemap will be able to be used as a ladder by the Robot.

# Moving Platform

The moving platform can be raised and lowered by the ai or moved left and right using the second thumbstick when possessed and can carry the robot upon it. The MovingPlatform component has two values Rise number of blocks and fall number of blocks. These two values indicate the maximum number of world tiles the platform can rise or fall relative to its current position. The same applies to moving left and right.

# Turret

The turret can be controlled by the ai, moved with the right thumbstick and shot by pressing ‘B’. A couple of shots from a turret will destroy a guard. The turret won’t automatically attack the robot player but will if it is triggered by another object, such as a camera. If the turret is triggered, it will aim and continue to shoot at the player until it is no longer triggered.

Like the security camera, it is made up of three objects. A parent object used just for positioning, a base object that simply contains the sprite of the base that can be moved and rotated to stick to the wall and the gun object that contains the actual turret scripts.

# Object Triggers

All objects that the AI can control can trigger other objects when activated (camera sees player, door is opened, platform is moved, turret is shooting). Each object will have a list of trigger objects that will be activated when the trigger object is activated. For example, if a reference to a turret object is placed in a security cameras trigger list, when the security camera sees the player, the turret will start shooting. Or if a door is placed in the list it will open when the security camera sees the player.

Guard spawners can also be triggered, causing them to spawn guards as if an alarm went off.

# Box Trigger

Simply an invisible box that contains a list of trigger objects that will be activated when the player passes through it, not 100% working at the moment have some collision issues to sort out but it should work okay if it’s not placed near any guards.