



# Unreal Engine - Interactive Puzzles

## Student Guide

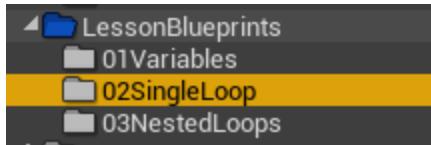
### Welcome!

Interactive Programming Puzzles are a fun, interactive way to learn how to code and work with Unreal Engine.

### Puzzles

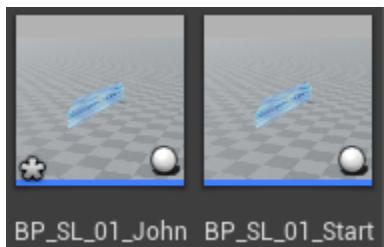
When you access a Puzzle, you will see a video demonstration of the result. Your task is to open the starter code and arrange/connect the nodes to achieve the same output. After you solve the puzzle, you'll be presented with four possible solutions to choose from. Your task is now to select the correct solution.

The code you'll be working with is in the **InteractivePuzzle\_Content/LessonBlueprints** folder. Each topic has a sub-folder. For example, if you're looking for SingleLoop puzzles, they'll be in the **02SingleLoop** folder:



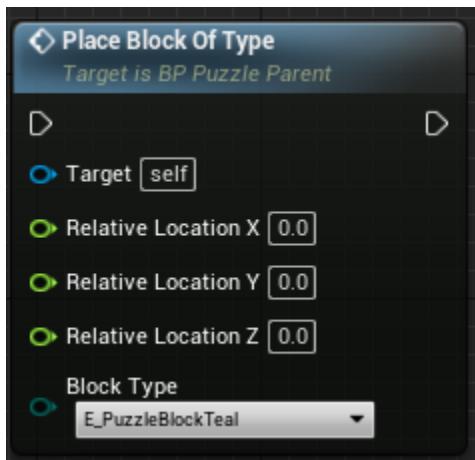
## Make a copy

To get started, make a copy of the starter code blueprint. For example, if you're going to work on problem 01, copy BP\_SL\_01\_Start. To do this, select the blueprint and press **Ctrl+W** on your keyboard. Rename the blueprint BP\_SL\_01\_YOURNAME (where YOURNAME is your actual name). Example, your name is John, and you are copying problem 01, you'll end up with two blueprints, the starter and the one with your name:

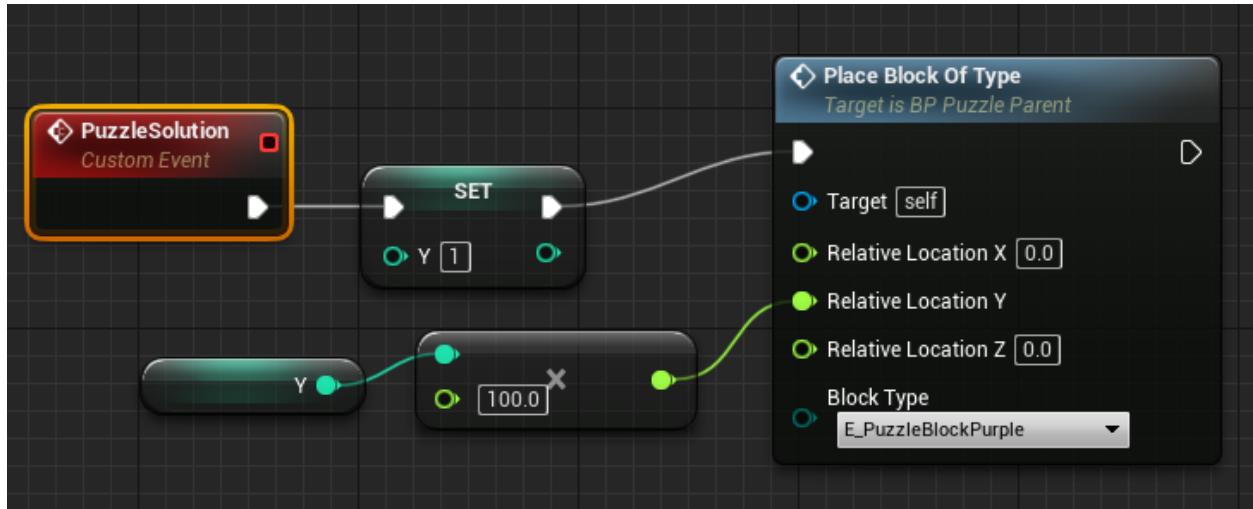


View the video example for the problem you're working on, then open the copy of the code you made and attempt to re-create the example. The PlaceBlockOfType function requires 4 parameters:

- X:float - the X location of the new block
- Y:float - the Y location of the new block
- Z:float - the Z location of the new block
- BlockType:Enum - the type of block to place



Example - to place a purple block at 0, 100, 0, you might write code like this:



Place an instance of your solution code in the level, press “Play” and walk up to the lever and right-click to run your code. Observe the output.





## Blocks

Most of the puzzles use **Blocks**. The blocks are 1m cubes (100 Unreal units) and feature various materials. The included blocks are enumerated in the Enum type “E\_BlockTypes”. Here are the values:

E_RedBlock
E_GreenBlock
E_BlueBlock
E_GrassBlock
E_StoneBlock
E_PuzzleBlockPurple
E_PuzzleBlockGold
E_PuzzleBlockTeal
E_PuzzleBlockGreen

## PlaceBlockOfType

To place a block, use the **PlaceBlockOfType** function. This function accepts two parameters;

1. RelativeLocation:Vector - this is the X/Y/Z location of the block relative to the point of origin of the puzzle.

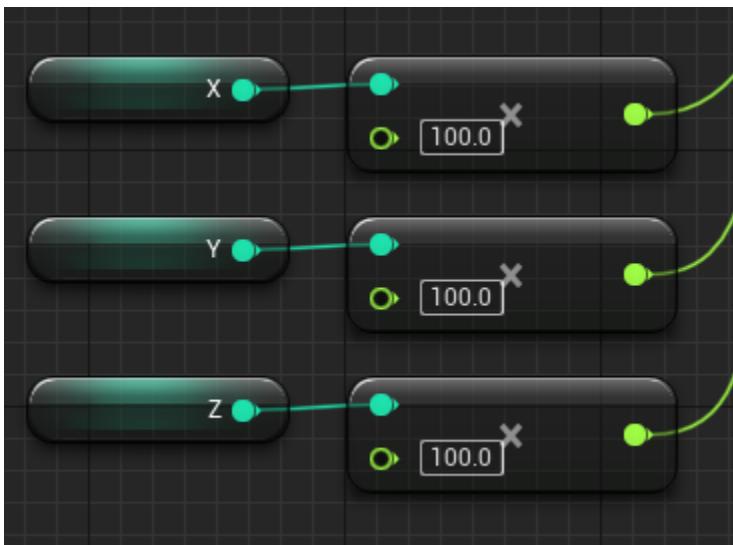
2. BlockType:E\_BlockTypes - this is the type of block (see above) to place down.

The locations are given in Unreal Units. Each block is 100 units cubed. The locations are specified as an X/Y/Z location, relative to the point-of-origin of the puzzle.

In the example below, the purple block is -100 units in the X and 200 units in the Y away from the grass block.



When you provide locations in your code, you'll probably want to use whole numbers and multiply the locations by 100 to place them correctly. For example, this code uses 3 variables and multiplies them by 100 to calculate grid values to place the blocks:



# Editing history

V0.01 2021--6-28 - Initial Release