Object Placement
Toolkit

USER MANUAL

Introduction

Object Placement Toolkit is a procedural object placement tool that simplifies runtime placement of objects using a set of procedures.
The Object Placement Toolkit uses Mesh based Object Placement and Objects can be created and recycled during runtime without any memory overload by using Object Pooling Techniques.
Object Placement Toolkit has variety of applications. It can be used as a tool to create props and scenes for an Infinite Runner game, for a procedurally generated city with random props, for game where the props need to be random or need to be randomly placed around an area or volume of mesh guided by a set of procedures, etc.

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1. ADDING A NEW TRACK OBSTACLE MESH

In the Hierarchy window click create, Infinite Runner Tool, Track Obstacle Mesh to Add new Track Obstacle Mesh.
The Track Obstacle Script uses a Plane mesh by default you can change this to any mesh you want in the mesh GameObject field.

Note
Do not change the Scale values of the GameObject to which the Track Obstacle script is attached as it is always reseted to 1. You can change the scaling of the mesh GameObject and child it the Track Obstacle GameObject. Always make sure the mesh is as the center of the Track Obstacle GameObject to avoid relative positioning problems.
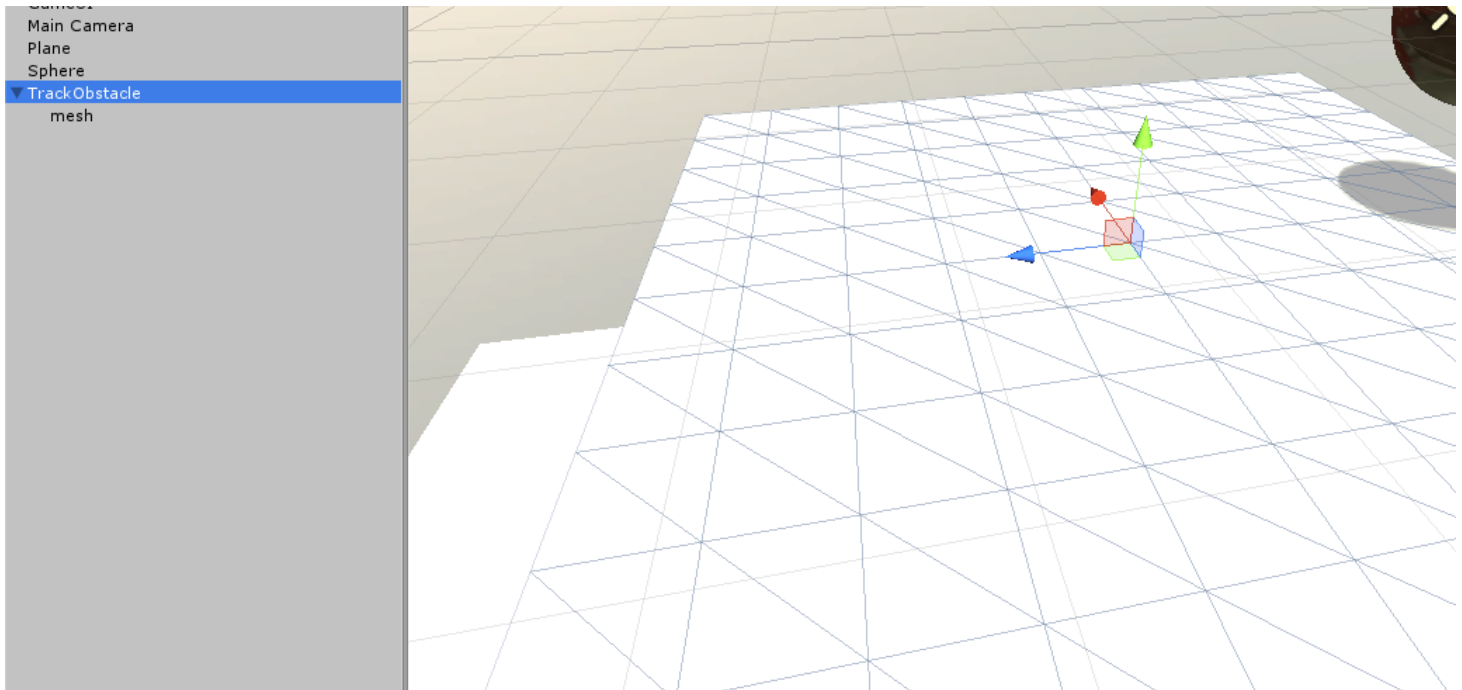
2. Introduction to Object Pooling

What is it after ALL?

Object pools (otherwise known as resource pools) are used to manage the object caching. A client with access to a Object pool can avoid creating a new Objects by simply asking the pool for one that has already been instantiated instead. Generally the pool will be a growing pool, i.e. the pool itself will create new objects if the pool is empty, or we can have a pool, which restricts the number of objects created.
This pattern is used widely in games for obvious things like game entities and visual effects, but also for less visible data structures such as currently playing sounds. Use Object Pool when:

- You need to frequently create and destroy objects.

- Objects are similar in size.

- Allocating objects on the heap is slow or could lead to memory fragmentation.
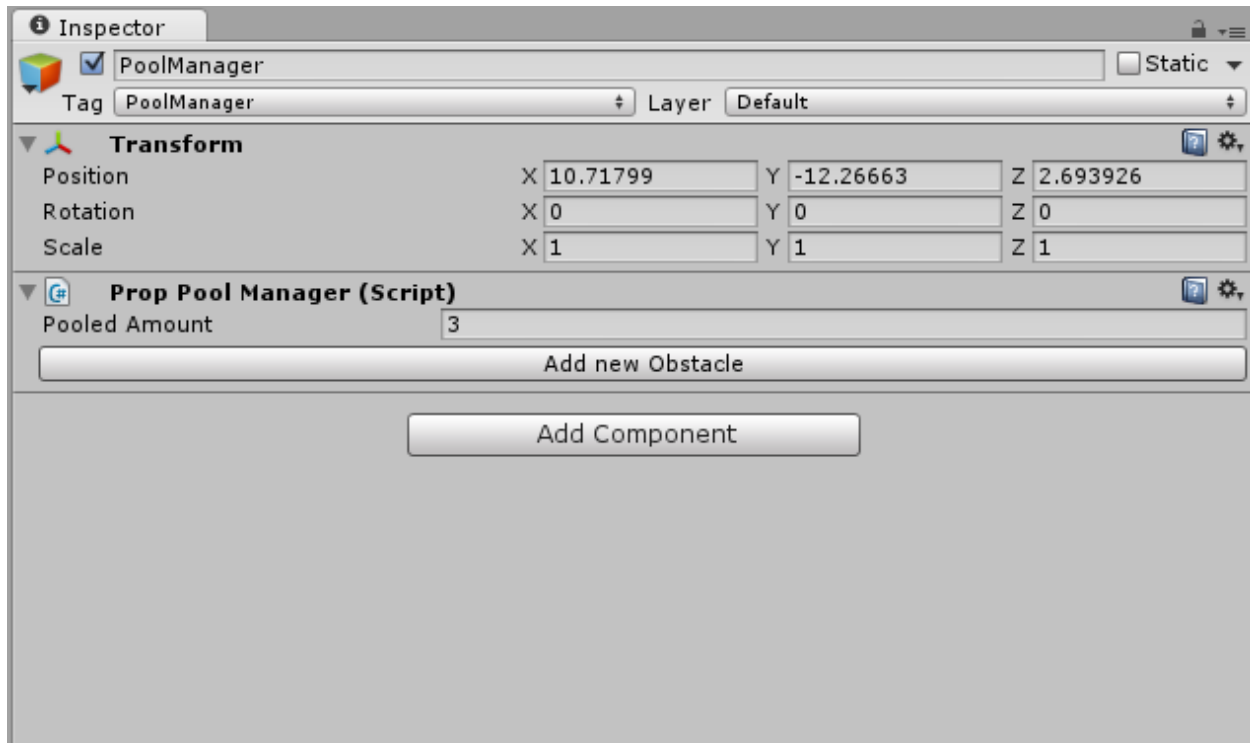
Object Poling gives huge performance in Infinite Runner games where scenes are created procedurally.
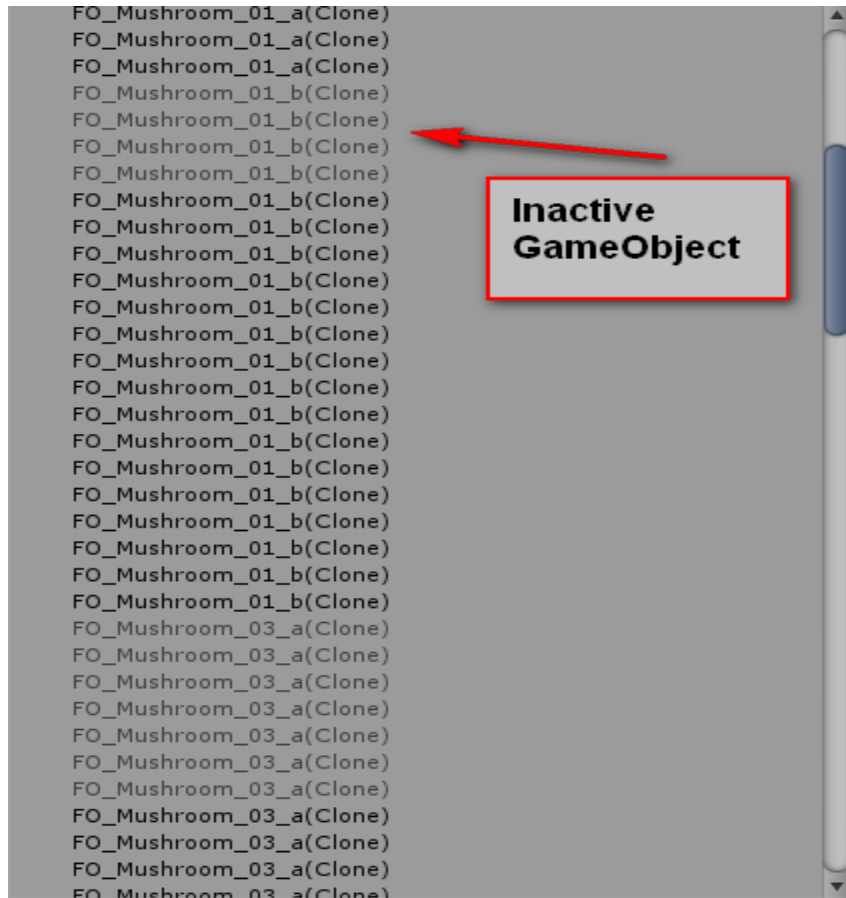
2.1 Using existing Pool Manager

Go to Component, Infinite Runner Tool, Pool Manager to add a Pool Manger to an empty GameObject.
Tag the Game Object as PoolManager . There can be only one Pool Manager in a scene


You can now add your own Obstacles (Any GameObject) into the script using the simple GUI.
If you wish to use these Obstacles for a Track Obstacle Mesh check Use Other Pool Manager in the Track Obstacle Script.
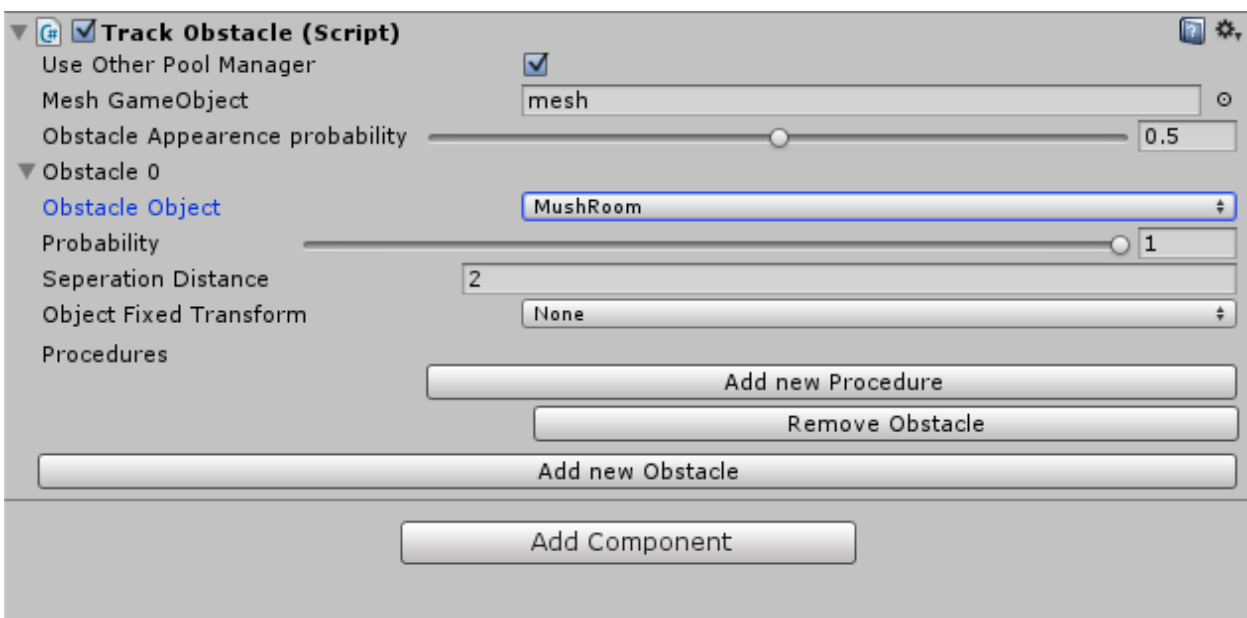
2.2 Without using Pool Manager

Uncheck Use other Pool Manager in the Track Obstacle Script. You will have to assign each obstacle GameObject manually to this Script.
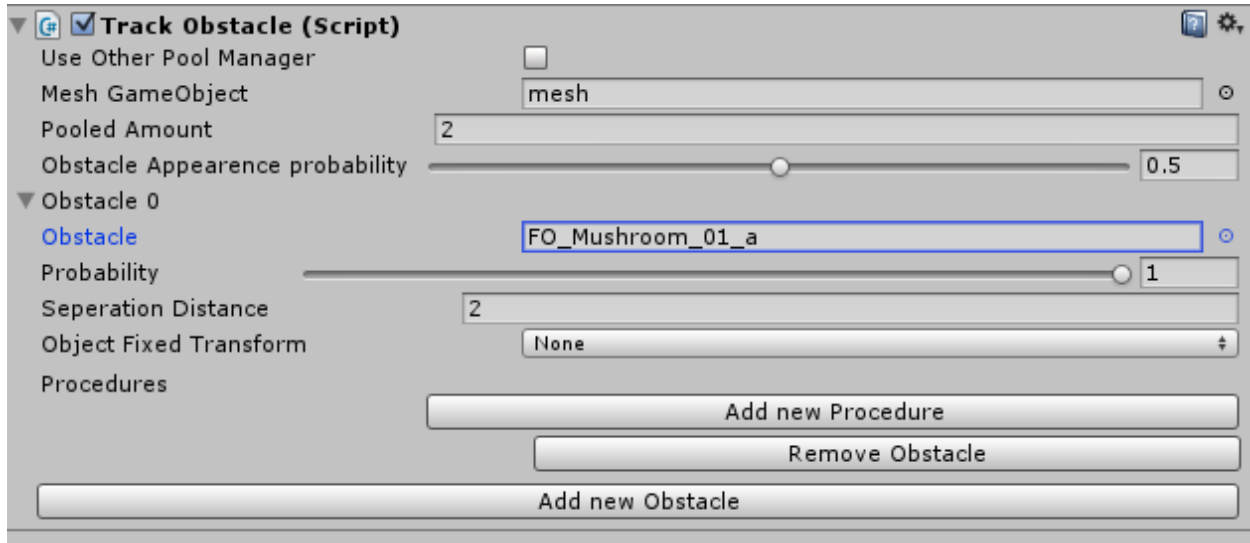
3. Procedures

Procedures are set of Rules that the Track Obstacle Script has to follow for placement of individual Obstacles.

Obstacle Appearance Probability – The Probability to create an Obstacle at a particular vertex. If set tone all the vertices of the mesh will be used for seeding.

3.1 Basic Procedures

Separation Distance – The Minimum Distance of separation from other Obstacles.
Object Fixed Transform – The local position of the Obstacle which will be reseted to zero. This is useful when you want to make your Obstacles appear in a straight line.

3.2 User Defined Procedures

New Procedures can be added using the add procedures button. The added procedures are executed serially.

Align with Mesh Normal – Align with the mesh normal at the point of creation (Works properly for spherical surfaces).
Rotate with Vector
Move with Vector (Degrees)
Rotate with Random Vector – Rotate with a Random Vector within a given Range.
Move with Random Vector – Move with a Random Vector within a given Range.
Look At Transform
Translate with Vector – Translate the Obstacle along the Global Transform Vectors of the Obstacle.
Translate with Random Vector – Translate the Obstacle along the Global Transform Vectors of the Obstacle Randomly within a given Range.
Rotate With Transform – Use Rotation of any Transform.

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