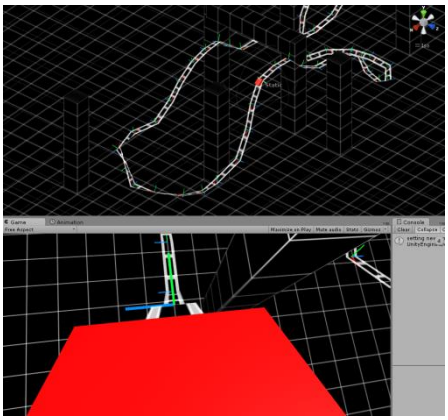
# Track Roller Coaster Rail Editor



## 1. GENERAL INFORMATION

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|---|---|
| **DATE OF DOCUMENT** | 07/04/2016 |
| **NAME OF THE PROJECT** | Track Roller Coaster Rail Editor |
| **AUTHOR** | Michael Soler |
| **UNITY VERSION** | 5.3.4.F1 PERSONAL |
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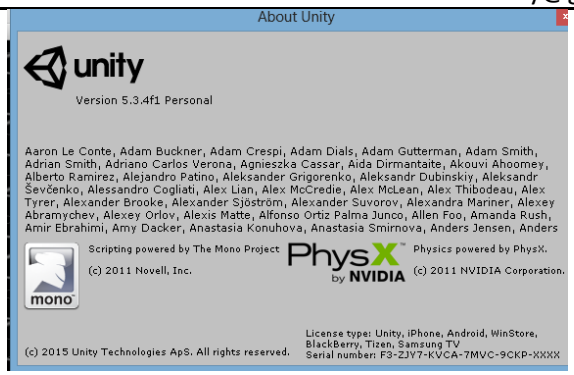


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## 2. IMPORTING INFORMATION

**This package works independently. You do now need any other packages.**

## 3. PROJECT DESCRIPTION

This is a roller coaster generation package for with very low geometry (each rail is composed of 2 triangles) designed for VR applications or 3rd view of complex amusement parks. The player will follow a path completely customizable by the user, which is generated using visual markers. The player's movement is completely realistic, because physics are implemented manually considering potential and kinetic energy (energy conservation principle). This means that no collider are used, which computational cost is reduced. The package contains the following assets:

- The scripts that control the movement of the player.

- The script that generate the roller coaster path using the markers.

- Marker prefab models.

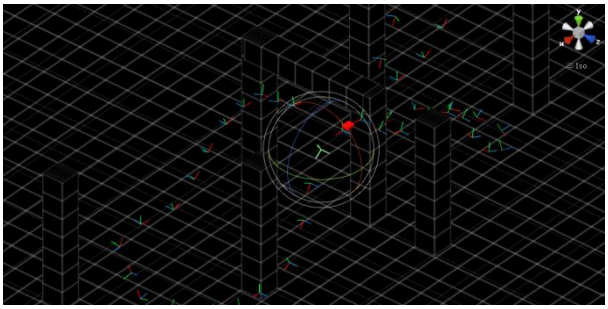
- Futuristic environment and skybox (to aid the player orient in the VR world).

- Rail and other object textures.

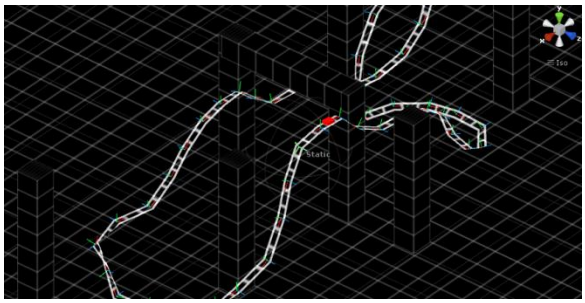
No colliders are used, which means that app runs very fast and movement is quite realistic. Bezier curves will be implemented soon to obtain better movement!

The program works as follows:

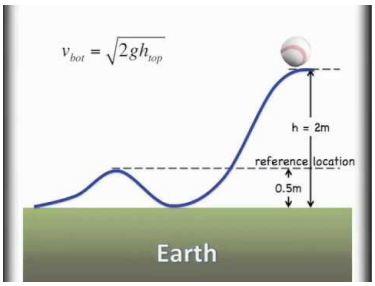
Geometry used to create the rails



Final roller coaster after building line renderers.



The player's speed is obtained using the energy conservation principle:




## 4. LAYERS, TAGS AND COLLIDERS

**1.LAYERS**

All objects are placed in the main layer.

**2.TAGS:**

No tags are needed

**3.COLLIDERS**

-No colliders are used, as movement is controlled by script.

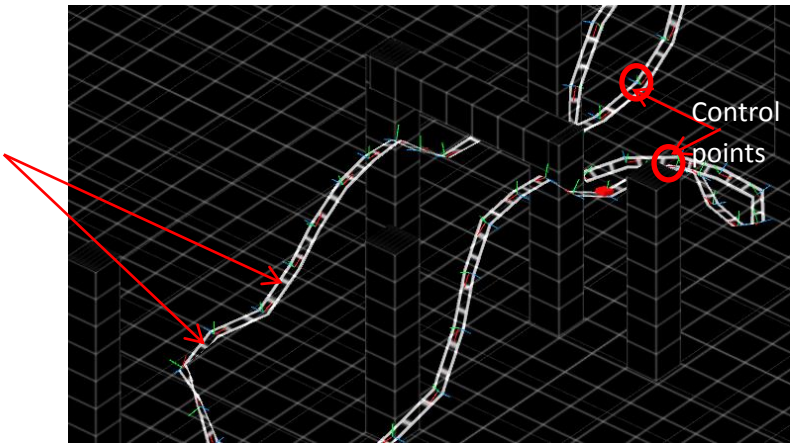
# 5. SCRIPTING INFORMATION

We explain each script with some detail in the following table:

- **RollerCoasterPlane.cs:**

It is the main script of this package. It is used to generate the path and it simulates the movement of the player.

Planes with 2 triangles




| IMPORTANT VARIABLES |
| --- |
| **public Transform seatObject;** → the object where the player is sitting.<br>**public int indexCurrent=0,indexNext=1;** → these variables are used to access the marker indices.<br>**public float speedFactor=0.1f;** → it is used to change the speed of the seat.<br>**public Transform[] railPoints;** → this is the array of all the control points.<br>**public float maxHeight=27;** → it is used to check which is the maximum height of the ride (where speed is almost zero).<br>**public bool hidepoints=false;** → if set to true, hides the markers.<br>**public bool showPath=true;** → if set to true, shows the path .<br>**public Material matLin;** → this is the material used to select the material of the line renderers. |
| IMPORTANT FUNCTIONS |
| **void drawGeometry ()**→ it is used to generate the path of the roller coaster.<br>**FixedUpdate ()** → in this function, the movement of the player is created by looping between the "railPoints" array of positions. |