



UMIC Recruitment -2020

Project 5: Hail Umicana!

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Overview

Its year 7500 BC. This is a time when humans possessed magical powers.

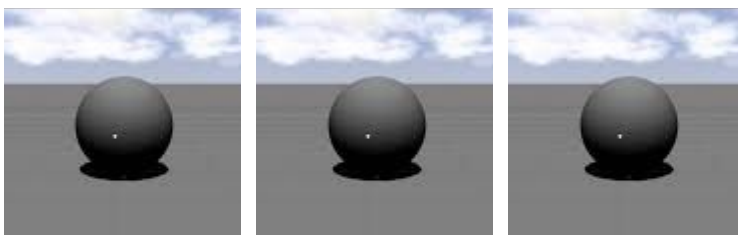
(Imagine the plot of ClashOfClans / Dota 2 / Witcher 3)

Our Kingdom is **UMICANA**. And we come to know that our neighbouring kingdoms:

PUKISTAN, **NUNNIGA**, and **BULLICHYA** are conspiring against us, and planning something very evil. There is no other way but to destroy them. Each of these kingdoms has different magical powers. Hence they require different “mystic ammo” to destroy them.

You are the defence chief, and you know that you have the weapons to destroy the three enemy headquarters. You go to your weapon inventory and find the mystic ammo. But there's a problem: the three ammo look exactly identical. They have **labels of the enemy names** beside them, but it is in some ancient language which you don't understand.

Moreover, only two **consecutive** characters per label are visible, the rest is fully eroded. Also, these two characters are **partially eroded** and are engraved on an **uneven, rough surface**.

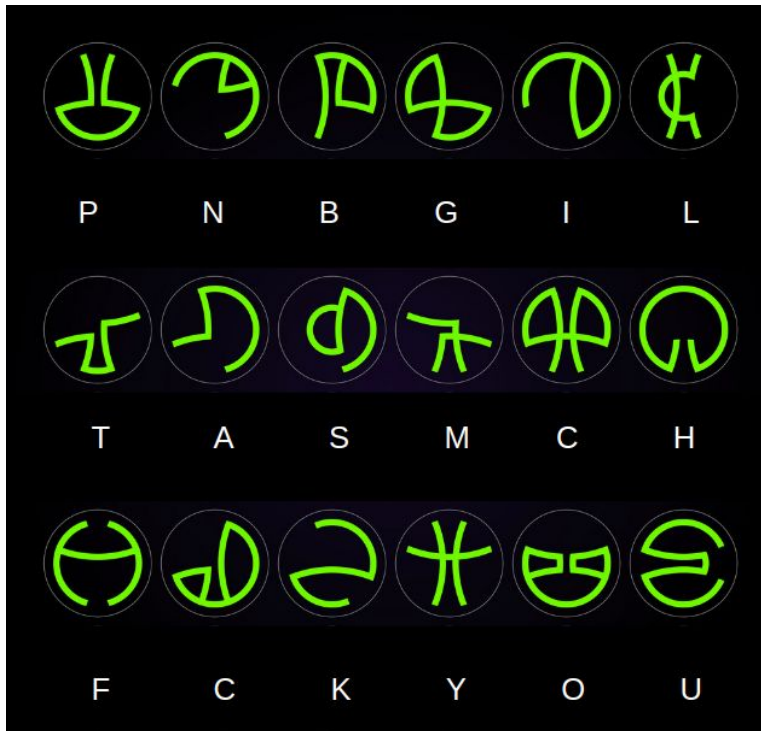


(-<These are just for example)

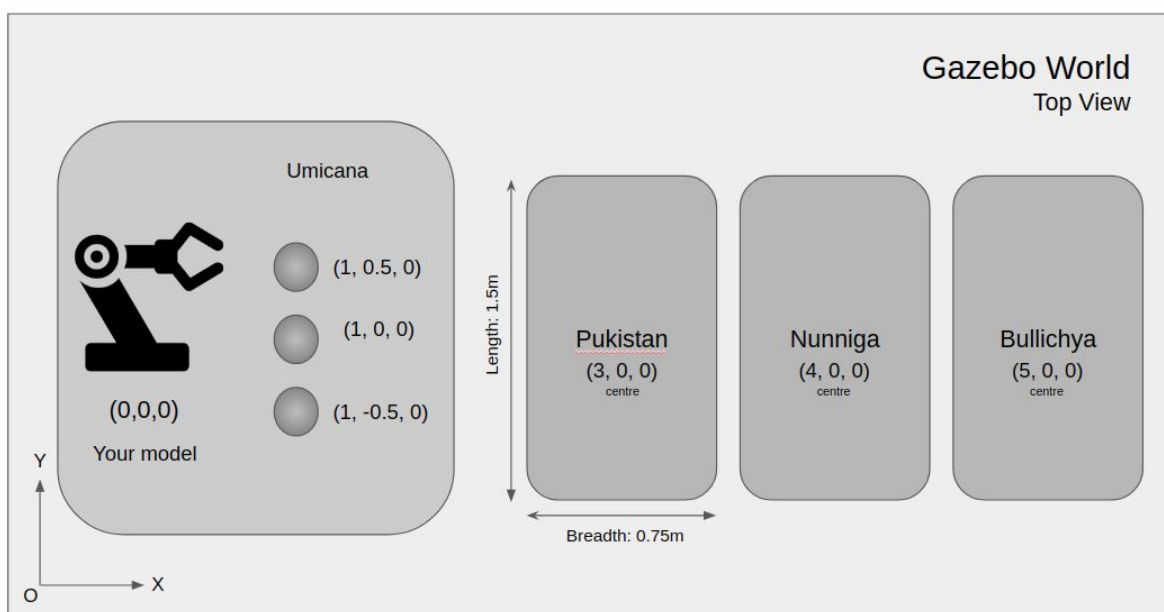
Another sad thing that the launcher of this ammo is destroyed. You need to create your own throwing mechanism for this purpose. Luckily you find out the dictionary for these characters. You need to recognise both the characters and match it with the enemy's name. For example, if the characters you recognise are **U** and **K**, then that ammo will be used to destroy **PUKISTAN**.



This is how the dictionary looks like:



Requirements:





You have been given the coordinates three rectangles(kingdoms) and also their dimensions. You also know the locations of the three spheres. And the position of your throwing mechanism (**not necessarily a robotic arm**) is known. But characters near the spheres are unknown and need to be identified. And you need to match the consecutive letters with the names of the enemies and this will determine which sphere will be thrown in which region. A high-resolution pic of the dictionary can be provided on demand for training purposes.

The environment and the objects **will be provided** in a gazebo world file. You just have to design a working model of the throwing mechanism, import it in the gazebo and complete the mission. It's alright if the sphere bounces and rests somewhere else, but the first bounce should fall in the desired rectangle.

The radius of the sphere is **10 cm**

Mass of the sphere is **1 kg**

All the best! Hail UMICANA!