VR engine performance comparison.

Create identical scenes in both Unity VR and Unreal VR and compare how well the applications perform (using FPS as the main measure of performance) when rendering high amounts of identical models.  
**Independent variables:** count of objects in scene, engine used

**Dependent variables:** fps, CPU usage, GPU usage

**Controlled variables:** triangle count on mesh, texture on mesh, programs running the background, hardware used; Headset: Oculus Quest 2, system: intel core i7, 12th gen, NVidia GeForce RTX3070ti, DDR4 32 GH ram (I don’t remember the speed)

# Justification

One of the goals of VR is to allow the user to fully immerse themselves in the application used. However, using a VR headset is known to cause discomfort and motion sickness – dizziness, nausea, headaches etc. 60+ fps is preferable in any game, traditional games with frame rates as low as 30 fps are still considered playable, while according to researched conducted by Chen Zhang, it seems that low framerates drastically increase the likelihood of experiencing discomfort in VR. Any frame rate below 60 fps is much less comfortable, with frame rates below 50 fps being especially bad.

This is why I intend to investigate which game engine is preferable for VR in different scenarios. While this research is solely focused on amount of objects and triangles in the scene, this topic could be further investigated on

Sources:

1. Zhang, Chen. "Investigation on motion sickness in virtual reality environment from the perspective of user experience." *2020 IEEE 3rd International Conference on Information Systems and Computer Aided Education (ICISCAE)*. IEEE, 2020.