Into The Night optimization document Nils Meijer 466301

* An important thing to note: my game is not meant to run on a standalone Oculus Quest. Always stay connected to a VR-capable PC.
* Tests must always be performed in a build of the game, *not* in the editor. The editor is most often not suitable for performance analysis. Use the standalone unity profiler to monitor performance.
* LOD groups will not be tested, as the environment asset pack I used has these implemented already.
* I am not using HDRP, the mentioned asset pack threw shader errors when I tried upgrading its materials. Still have to try URP. It’s fine if either doesn’t work, the purpose is to learn VR development, making a beautiful game is the 2nd priority in this case.

Testing setup/steps:

1. Test case ID
2. Test description
3. Assumptions and pre-conditions
4. Test data (what are the variables I’m going to test?)
5. Steps to be executed
6. Expected result
7. Actual result and post-conditions
8. Pass/fail (implement or not implement this specific optimization?)

**Researched optimization techniques:**

Occlusion culling

“The process which prevents Unity from performing rendering calculations for GameObjects that are completely hidden from view (occluded) by other GameObject.” (Unity, 2021)

Object pooling

“Object pooling is where you pre-instantiate all the objects you’ll need at any specific moment before gameplay – for instance, during a loading screen. Instead of creating new objects and destroying old ones during gameplay, your game reuses objects from a “pool”. (Placzek, 2016)

Async scene-loading

“Load Scene Async loads the scene in the background and is spread over multiple frames. In general, it is recommended to use the Async method since it is much more efficient spreading the loading over several frames instead of one, it works perfectly in a Player Build, however in the editor itself it might stutter and freeze because the Editor does not support background operations very well.” (Coppens, 2021)

Baked lighting vs real-time lighting vs mixed lighting

# Bibliography

Coppens, G. (2021, 9 19). *Loading Scenes In Unity*. Retrieved from medium.com: https://medium.com/geekculture/loading-scenes-in-unity-98e446756497

Placzek, M. (2016, 11 23). *Object Pooling in Unity*. Retrieved from raywenderlich.com: https://www.raywenderlich.com/847-object-pooling-in-unity

Unity. (2021). *Occlusion Culling*. Retrieved from docs.unity3d.com: https://docs.unity3d.com/Manual/OcclusionCulling.html