

Answers

1) High-speed rendering

Level of Detail (LOD) System: Implement a LOD system that automatically switches between different versions of the 3D model based on the distance from the camera. A lower-poly model can be used for distant objects, while closer objects can utilize higher-poly models. This technique reduces the number of polygons rendered, improving performance without sacrificing visual quality.

Occlusion Culling: Implement an occlusion culling system to determine which objects or parts of objects are not visible to the camera and can be excluded from the rendering process. This optimization reduces the rendering workload by skipping unnecessary calculations and rendering hidden geometry.

We can also implement advanced shader techniques for better processing time.

Instead of rendering everything at once, we can also have the system render only in the FOV of the camera. Batch rendering may also be done ie, like objects can be rendered at the start and never be bothered again.

2)See through the world

Typical inversion may be a reason for causing this. The normal for the plane will be towards the outside in most of the faces of the mesh where the face should be shown so while editing in modeling software, due to some computational errors, plane faces may get flipped(I had this issue in Blender once and noticed this after importing my car model to unity T_T). this may also be due to overlapping texture planes and the camera's inability to realize which plane is farther away and which planes should be rendered. The clipping distance becomes a problem in these cases.

3)Coyote time

Coyote Time name is derived from the famous cartoon character Wile E. Coyote, who is often depicted running off cliffs before falling, seemingly defying gravity for a moment is an interesting game mechanic that improves the fluidity of the game mechanics. This mechanic enables the player, mostly in platformers, to jump even after leaving the ground. This allows the player to experience an extra frame where the character is not grounded, and like willie, the coyote defies gravity. This mechanic also makes it more forgiving for the players who miss the jump by a few milliseconds. This added grace time is also a blessing for speedrunners who like to exploit any game mechanic that grants them an extra leg up. From a developers point of view we need to consider a lot of things. If not done perfectly it may drag the experience down. We as a game developer need to calculate the input buffer time for the keypress and also enable animations for the characters at the exact moment of actions. game physics also need to kick in at a precise moment.

4)Celeste

Celeste, as described in the GMTK video, is the most exciting platformer that rewards the player with enough adrenaline to return to it. It has a fluidic movement mechanic applied to the character that enables players to control the charter to wherever they want precisely. The running mechanics have been tweaked so that it just feels nice to play with. The acceleration curves used for the character ensure that the character is not so heavy to move, skating on thin ice, or too much stiff like a robot. It makes Madelin, the character feel human. Similar tweaks have been applied to jump mechanics. Most of these values were experiment-driven and

intuitive, as the developers say. With players given control over all movement mechanics like the dash climb and jumps with the only constraints being the stamina counter and dash cooldowns, the entire game becomes a problem-solving one focusing on resource management. The animations included also have a nice bounce to it that makes it humane. Coyote time has been implemented and apart from this mechanic, there are also small code features that make it a bit forgiving for players. It helps vastly for speedrunners as there are mechanic combos to be used for enhanced mobility for those who have muscle memory. Many of these tricks intended for pro players are also introduced as small-level portions for those who dare. Overall the developers stress that the player should never feel bored being in the game. While developing always make the player want to just be in the moment and not stress on the game-end goals and all.