**Midterm Project: Modeling, Texturing, Lighting, and Python Scripting in a Game Scene + Midterm Business Plan Review**

**Objective:**

Create a complete game scene (models, textures, lighting, shaders) **and enhance your workflow or scene functionality through Python scripting**. Reflect on your progress by reviewing and updating your Game Business Plan. This project prepares you for the final stages of game development, ensuring technical and business aspects are aligned.

**Part 1: Complete Game Scene (Technical + Scripting)**

Design and build a cohesive game environment scene with assets from previous assignments or new ones, **and use Python scripting to automate, enhance, or add interactivity to your scene**.

**Requirements:**

* **3D Models:** Use existing or create new models.
* **Textures:** Apply UV maps and PBR or stylized materials.
* **Lighting & Shaders:** Employ advanced lighting (dynamic lights, HDRI, reflections) and shaders to set the mood.
* **Python Scripting:**
* **Automate repetitive tasks like batch applying materials or generating procedural geometry.**
* **Create scripts to manipulate objects (e.g., procedural placement, animation scripts, batch renaming).**
* **Implement simple interactivity or logic inside Blender (e.g., toggling visibility, controlling lighting setups).**
* **Use scripting to export scene data or integrate with game engines.**

**Suggested Python scripting tasks:**

* Write a script to procedurally generate or place environmental assets (trees, props) within the scene.
* Script automated lighting adjustments to switch between different moods (day/night).
* Automate texture assignments or create custom shaders via scripting.
* Develop a small animation sequence with a Python-driven rig or camera movement.
* Export asset lists or scene metadata in a format usable for game development pipelines.

**Deliverables:**

* Completed game scene in Blender with models, textures, lighting, and scripted enhancements.
* Python script files (.py) used in the project.
* Scene file (.blend) including all assets and embedded or linked scripts.
* 5 rendered images from various angles and lighting setups.
* Brief documentation explaining your Python scripts’ purpose and usage.

**Part 2: Midterm Business Plan Review (Document)**

Update your Game Business Plan reflecting new insights gained through scene creation and scripting.

* **Game Development Progress:**
* **Reflect on how scripting improved your workflow or added features. Discuss concept changes.**
* **Target Audience & Marketing Strategy:**
* **Consider new gameplay or visual features enabled by scripting.**
* **Monetization & Development Costs:**
* **Estimate additional costs related to scripting tools, plugins, or team needs.**
* **Next Steps:**
* **Plan milestones including scripting expansions, testing, and final asset integration.**

**Evaluation Criteria:**

* Quality of 3D modeling, texturing, lighting, and shader work.
* Creativity and polish of the scene.
* Effectiveness and creativity of Python scripting to enhance or automate scene elements.
* Depth, clarity, and realism of the business plan review.
* Integration of technical and business reflections.

**Sources for further reading and best practices on Python scripting in Blender:**

* Blender Python API Documentation: [https://docs.blender.org/api/current/](https://ultra.content.blackboardcdn.com/ultra/uiv3900.118.0-rel.24_cb2f84e)
* **Blender Scripting Tutorials (Blender Guru):** [https://www.blenderguru.com/tutorials/intro-to-blender-python-scripting](https://ultra.content.blackboardcdn.com/ultra/uiv3900.118.0-rel.24_cb2f84e)
* **Procedural Generation with Python in Blender:** [https://cgcookie.com/course/procedural-generation-with-python](https://ultra.content.blackboardcdn.com/ultra/uiv3900.118.0-rel.24_cb2f84e)