

FIT3169 – Immersive Environments

WEEK 1 GUIDE

ENVIRONMENT GREYBOXING

After gathering your reference images, the next step of environment creation is to “greybox” your level. Greyboxing not only establishes what assets you need and how important they are, but also solves the dilemma of what to work on next and where to focus your energy.

This guide will cover:

- ▶ Intro to Greyboxing
- ▶ Level design tips

Greyboxing Overview

Greyboxing is the process of prototyping a game level using simple geometric shapes and placeholder geometry. Also referred to as a *white-box* or *block-out*, this initial phase of environment creation is concerned with **establishing the layout, scale, and composition of your environment** before detailed assets are created.

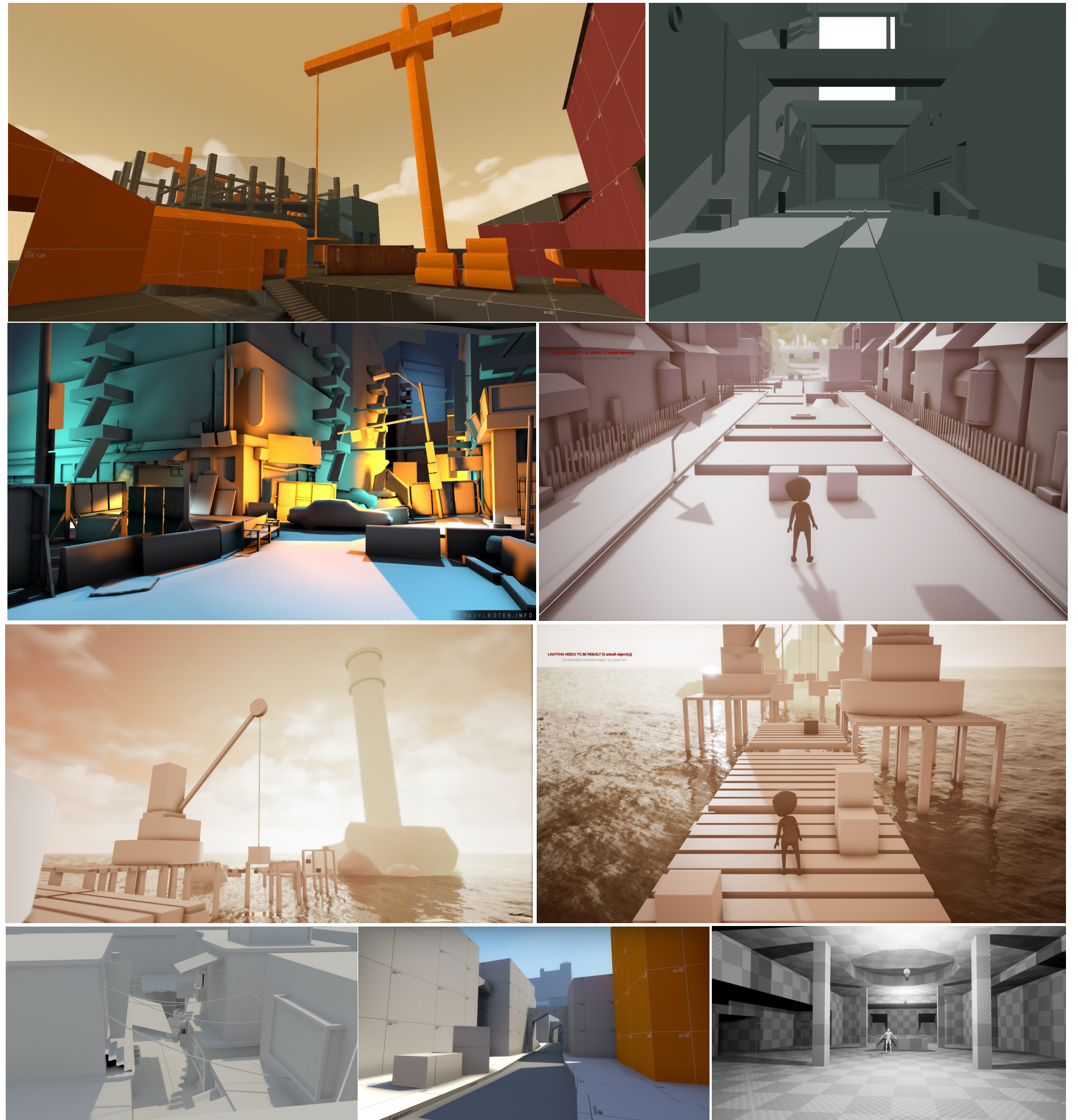
This is the time to experiment freely with layout; simple geometry devoid of textures allows for rapid prototyping and fast iteration. Once complete, the greybox becomes the skeleton for the actual level, **serving as the stencil which guides the placement and scale of your final detailed geometry** (greybox geometry should not be used in the final level).

How much detail should we include in a greybox level? Consider the orange crane on the right: this block-out conveys enough information to suggest what the object is and also its proportions without any unnecessary elements.

Scale and proportion should be at the forefront of the level designer's mind during grey-boxing. Be sure to consider the size of each object relative to every other object (and crucially the player). Mistakes made at this stage will be felt in the final level.

Greyboxed environments should be constantly tested in a game engine to ensure they are navigable and engaging from the ground-level. This is the time to configure your first-person camera to ensure its size and speed suits your environment. Initial lighting prototypes can also be trialled without distraction.

Greyboxes can be crafted in conventional modelling tools like Maya (our approach in this unit), or even in game engines using [ProBuilder](#) in Unity, or BSP Brushes in Unreal. **The key is to move quickly - remember this is not final geometry, and can be hacked together with intersecting primitives.**



Level Design Tips

Greyboxing prevents endless cycles of aimlessly crafting assets without seeing the bigger picture of where they go and how important they are. For this reason, grey-boxing actually saves you time, and is a critical part of conceptual development. **You would be wise to grey-box all assignments this semester.**

The below design considerations - all of which are fundamental to assignment one - are best tackled during the greyboxing phase:

Encourage exploration:

Include a navigable area in your world which is not immediately visible from the player's starting location (perhaps there is a large object which occludes other areas). Force the player to walk and turn corners in order to see every area.

Block the horizon-line on all sides:

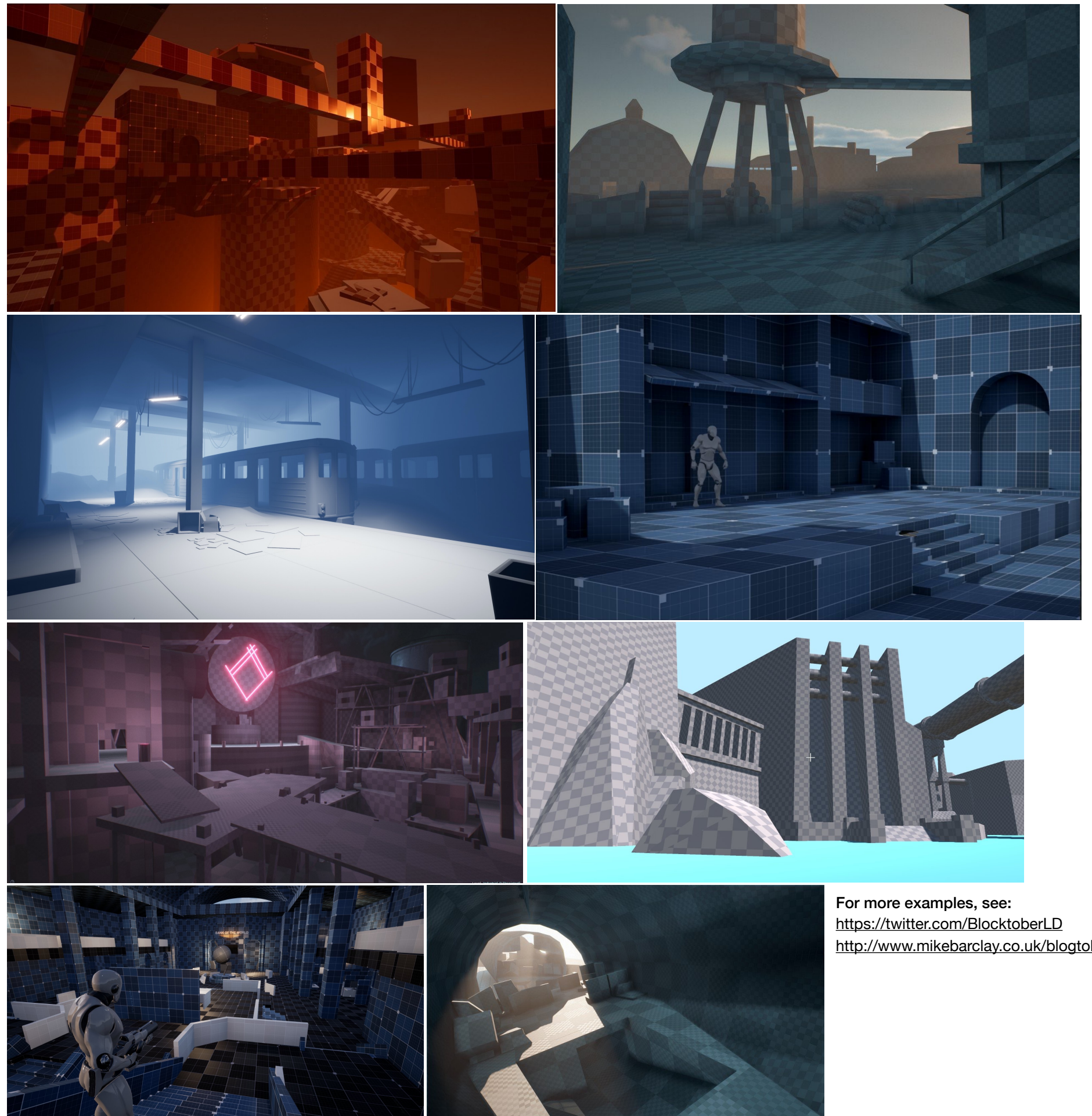
For your first assignment, we are populating an *enclosed* outdoor environment. While we have already enclosed the scene for you, you will still need to ensure the player can't climb high enough to see into the void of 3D space. Similarly, once your first-person camera is configured, ensure the player cannot escape the level. In assignments two and three, you'll be in charge of ensuring the world is enclosed.

Suggest the world continues beyond the navigable area:

While the player will be trapped inside a limited area, this doesn't mean the world ceases to exist outside that area. Trick the player into believing your world is larger than it actually is by duplicating objects far into the distance.

Consider verticality and the space above your level:

Imposing large forms can help to add interest to outdoor scenes. Consider what the player sees when they look up! The sky is rarely a feature in itself, but a backdrop to contrast other geometric elements.



For more examples, see:
<https://twitter.com/BlocktoberLD>
<http://www.mikebarclay.co.uk/blogtober/>