CIS5013 PORT1

POSTER

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3D Model Rendering

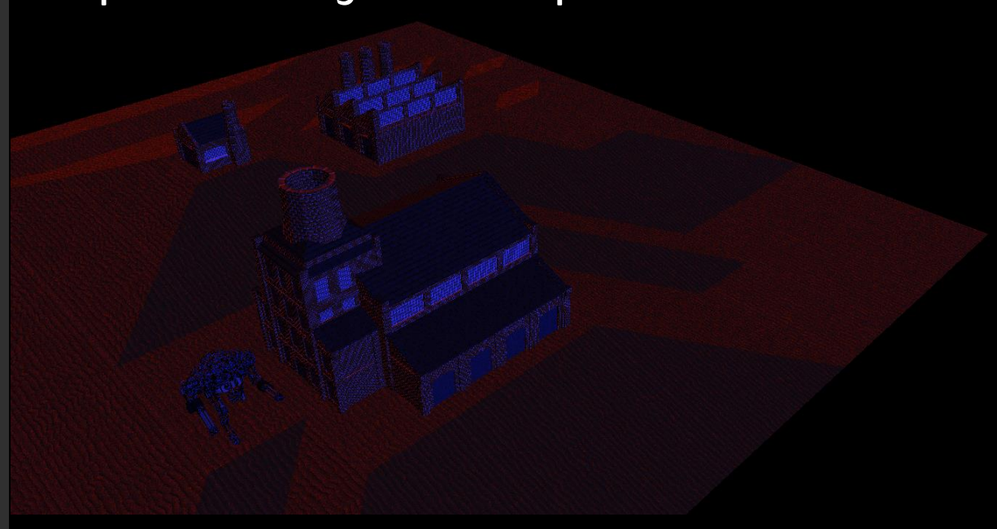
The 3D models were exported as wavefront OBJ files. VBOs and VAOs where used for efficient rendering. Below you can see the three tiers of building that will be in the game and one of the robot characters all on top of the sand terrain. As many of the models contain multiple meshes, a multimesh function was created to avoid code repetition, this function takes the file locations are returns the vector containing pointers to the AIMeshes of each sub-mesh.

Texture Mapping

Diffuse maps were used to give the objects in the game the correct colours, these images were stored as bitmap BMP files. For models with multiple meshes, the textures are loaded first, then added to each sub-mesh

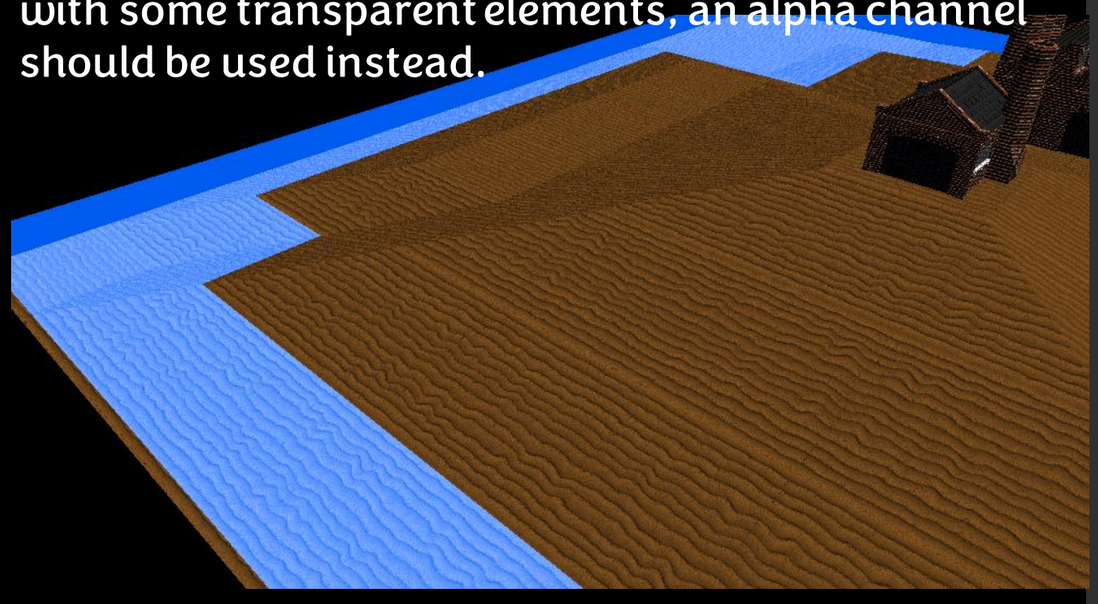
Lighting

To create this effect, first the scene is rendered with the blue directional light from the right, then the GL_BLEND function is enabled, and the scene is rendered again but this time with a red directional light from the left. The light positions are represented by coloured points.



Transparency

The GL_BLEND function was used to create this simple transparent water effect. The blend function adds the colour vector output of the fragment shader to the colour vector stored in the colour buffer, multiplying each by a certain factor. The factor used here was one for the source and destination as this achieved the desired effect. To customise the transparency and create textures with some transparent elements, an alpha channel should be used instead.



Game Camera

The view of the player is represented by an arcball camera. Arcball cameras make objects closer to the camera appear larger, so as the camera moves through the scene, a more realistic 3D effect is achieved than with methods like isometric cameras. The camera is situated above, looking down at an angle on the world.

Interaction

The player can traverse through the scene by moving and zooming the camera. The WASD keys are used to move up, left, down and right respectively. The scroll wheel on the mouse is used to zoom in or out. The camera cannot be rotated as this was not a feature in Populus II and it allows the optimisation of removing the geometry on the back of models.