CS/SE 3GC3 - Computer Graphics Final Project

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Project Description

A cooking game that takes place in a 3-D simulating kitchen, where the player selects a recipe and must interact with ingredient objects and tool objects and follow the instructions given to create the dish.

Keyboard Commands

- q - quit
- up arrow - move camera to look up
- down arrow - move camera to look down
- left arrow - move camera to look left
- right arrow - move camerat to look right
- left-click to select an ingredient or tool
  - The selected object moves along with the mouse until left-click again to deselect.
- right click on knife to cut the ingredient objects
  - Move the knife over the ingredient and right-click on knife to cut the ingredient into small pieces.

Features from Prototype

The appropriate obj files for the ingredients/tools/textures were obtained from several sources (that are cited in the readme file), and edited as appropriate for our needs.

Summed Up:

- Basic room with floors, walls, lighting
- Basic meshes for each food object and tool object, and kitchen counter
- .ppm file parser (modification of parser taken from tutorial)
- Loading object meshes into the room

New Features

Key Features (Advanced Graphics Features)

- Lighting [5%]
- Textures [10%]
  - On objects, wall, floor
- Ray Casting [10%]
  - To select tool/ingredient objects in screen
- Non-geometric primitives(bitmaps, pixel maps) [10%]
  - Pixel map for choosing a recipe, and End screen
  - Interaction handlers on the pixel map
  - Timer text on the top left corner (Bitmap String)
- Own idea [5%]
  - .obj file parser: extracts data (mesh, texture, normals, faces) into c++ vectors and renders it out in opengl

Other Relevant Features

Some of the features that were implemented in the final implementation include the application of textures on the objects. Depending on which recipe is chosen by the user, the appropriate instructions for the recipe and only the necessary ingredients for that object are loaded in. The recipe instructions are loaded in a separate window. Once a recipe is chosen, a timer is displayed in the window indicating remaining time for that recipe. The scoring system is based on the amount of time left when the user completes the recipe. In order to perform actions on the ingredients, we implemented ray casting to detect collision between the mouse position (left click) and objects in the screen. If there is an intersection, then the selected object will increase in size (to indicate that it was selected) and can be moved to a new position (by moving the mouse to a new position) and deselected (using left-click). A tool can be selected and used on a ingredient, by right-clicking (when selected) over a ingredient. The appropriate mesh (cut version of ingrediant, or cooked version of ingredient) will appear. When the correct combinations of ingredients are put together, the game will end.

Summed up:

- Basic Camera rotation
- Movement of 3D objects on 2D plane
- Timer
- Recipe/Control instructions in new window
- Start screen
- End screen
- Use of both orthographic and perspective projection
- Ray casting

Recipe Details

- Curry
  - Objects: Potato, Tomato, Onion, Knife, Pot
  - Use knife on Potato (whole)
  - Use Potato (cut) on Pot

  - Use knife on Tomato (whole)
  - Use Tomato (cut) on Pot
  - Use knife on Onion (whole)
  - Use Onion (cut) on Pot
  - Curry Complete
- Fruit Salad
  - Objects: Mango, Orange, Banana, Knife
  - Use Knife on Mango (whole)
  - Use Mango (cut) on Bowl
  - Use Knife on Orange (whole)
  - Use Orange (cut) on Bowl
  - Use Knife on Banana (whole)
  - Use Banana (cut) on Bowl
  - Fruit Salad Complete
- Steak
  - Objects: Steak, Pan
  - Use Steak on Pan
  - Wait 10 Seconds
  - Steak Complete