Department of Computer Science
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University of Massachusetts Lowell
COMP.4270/5460
Spring 2025

Programming Project [25 points]
Handed out on 02/27/2025
Due on 05/04/2025

3d Rendering

Use existing sample code supplied by the text book to implement the following 3-d rendering.

Support the following:

- Load a file containing vertices for the object (House, Teapot, etc)
  - project must demo at least 2 objects
- Render the object using the following methods—these should be available as a selection:
  - wireframe
  - phong shading
  - gouraud shading
  -
- Controls for color selection—each selection/change must be rendered interactively
  - object color selection
  - ambient light color selection
  - specular light color selection
  - diffuse light color selection
  - ambient material color selection
  - specular material color selection
  - diffuse material color selection
  - material shininess color selection
- Controls for position selection—each selection/change must be rendered interactively
  - light position
  - eye position
  - at direction
  - up direction
  - left position
  - right position
  - top position
  - bottom position

It should be possible to do following operations interactively using mouse—operation may be selected using either a text box or a drop down list:

- Translation
- Scaling
- Rotation

There should be a Help button which will launch an online documentation page (html, pdf) which will provide clear usage instructions for each use case.

You can use any open source API for certain aspects of the project but will need to document it with full information.

The following code from book can be used to implement:

- Ch 11 teapot.html
- Ch 4: trackball.html
- Ch 4: cube.html
- Ch 5: ortho.html
- Ch 6: wiresphere.html
- Ch 6: phong.html

You should demonstrate the project via a 3-4 minute video recording.

Extra Credit

- Add bump mapping
- Add reflection
- Add texture mapping
- etc

Deliverables

- Source files
- Sample Input/output
- 1-2 page report : Write about issues faced, lessons learned, any remaining bugs etc.

Deadline and Late Submissions

- The assignment is due on the date specified above at 11:59:59 PM
- Each day late will incur a penalty of 5% of the grade for the assignment; for example, if the assignment is 3 days late, the maximum grade will be 85 out of 100—15 will be subtracted from whatever grade is assigned.