

Course Name: 3D Computer Graphics Semester: Fall 2024-2025	Project Team: 4 students. Grades: 7 marks.
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Project

- **Project Idea:** Develop the following two tasks:

Task (1):

Create a program that allows the user to draw shapes dynamically using mouse input.

Instructions:

1. Use `glutMouseFunc()` to capture mouse clicks and store the vertices in an array.
2. Implement a function to draw the shape once the user has clicked at least three points.
3. Allow users to finish the shape by pressing a specific key (e.g., 'Enter'), and then clear the screen for the next shape.
4. Include functionality to change the color of the shape based on a key press (e.g., 'R' for red, 'G' for green).

Task (2):

Implement a program that allows users to interactively apply translation, rotation, and scaling to a shape using keyboard input.

Instructions:

1. Initialize a shape (e.g., a square) in the center of the window.
 2. Use `glutKeyboardFunc()` to map keys for the following transformations:
 - 'W' for moving up, 'S' for moving down, 'A' for moving left, 'D' for moving right (translation).
 - 'R' to rotate clockwise, 'F' to rotate counterclockwise (rotation).
 - '+' to increase size and '-' to decrease size (scaling).
 3. Display the current transformation values on the screen (e.g., current position and angle).
- **Requirements:** It is required to develop the required tasks using OpenGL.
 - **Important Dates:** Table 1 illustrates the due dates for this project.

Table 1: Due Dates.

	Required Task	Details	Due Date
1	Project Team Members	Submit the names of the project team on the Moodle website.	Wednesday 13/11/2024 at 11:59 pm
2	Project Submission	Submit a ZIP file of the developed tasks on the Moodle website includes: <ol style="list-style-type: none"> 1. The two tasks source code. 2. The documentation for the two tasks that contains screenshots and descriptions of these tasks. 3. A video demonstrates how the two tasks work. 	Friday 20/12/2024 at 11:59 pm.
3	Project Discussion	Attend the project discussion according to the projects discussions schedule that will be submitted to you. Note: discussion attendance is mandatory to get a grade for the project.	From 21/12/2024 to 23/12/2024.