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***CS6401 Computer Graphics Assignment***

**CG Assignment no. 1 & 2 (Combined)**

**Soft copy of Assignment Submission deadline: 29th April. 2021 Max. Marks: 20**

**Instructions:**

1. Question No. 1, 2, 3, 4 (2 Marks each) and Question No. 5, 6, 7, 8 (3 Marks each).
2. Attempt all the following questions and write answers (hand written or typed by keyboard) in your own language.
3. Don’t prefer copy and paste option, use above instruction (try to write plagiarism free answer).
4. Send the assignment within given time limit. Soft copy should be in scanned PDF format.
5. Write procedure for the scan conversion of conic sections if it is represented in parabolic path and hyperbolic curve.
6. Explain detailed algorithm for the Nicholl-Lee-Nicholl approach to line clipping for any input pair of line endpoints.
7. A triangle is defined by 3 vertices A (0, 2, 1), B (2, 3, 0), C (1, 2, 1). Find the final co-ordinates after it is rotated by 45 degree around a line joining the points (1, 1, 1) and (0, 0, 0).
8. A cube is defined by 8 vertices A (0,0,0), B (2,0,0), C (2,2,0), D (0,2,0), E (0,0,2), F (2,0,2), G (2,2,2), and H (0,2,2). Find the final coordinates after it is rotated by 45 degree around a line joining the points (2,0,0), and (0,2,2).
9. Explain different types of parallel projections with its normalized transformation matrix representations. Also explain the perspective projection equations in special cases if the projection reference point could be limited to positions along the ***zview*** axis.
10. What do you mean by Bézier Spline Curves? Explain with equations, properties and design techniques using Bézier curves.
11. Define visible surface detection. Also explain different classification methods used for visible surface detection algorithms.
12. Are we using GPU model in our normal PCs? What are the benefits for using an external GPU models/cards as heterogeneous system? Also explain the GPU pipeline using CUDA architecture by suitable diagram.

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