2008 Paper 6 Question 5

Computer Graphics and Image Processing

(a) Assume that you have an algorithm that can fill 3D triangles with a constant colour. Explain what additional information and additions to the algorithm are required to Gouraud shade the triangles. [6 marks]

(b) Given the algorithm in (a), explain what additional information and additions to the algorithm are required to texture map the triangles using bilinear interpolation, including an explanation of how the bilinear interpolation is done. [6 marks]

(c) Explain the advantages and disadvantages of using nearest-neighbour interpolation compared with bilinear interpolation. [3 marks]

(d) Explain why a MIPmap would be useful for texture mapping and how one could be incorporated into the algorithm from (b). [5 marks]