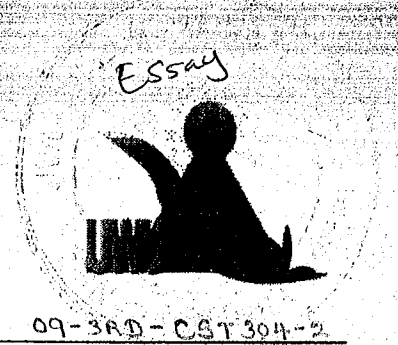


Uva Wellassa University, Sri Lanka
End Semester Examination – June 2009
CST304-2 Computer Graphics



Time: Two (02) hour

Total 05 Questions

Answer four (04) questions only

Question 01 compulsory

Question 1.

- (a) What is computer Graphics? And how it is different from Image processing? (04 marks)
- (b) What is multimedia? Briefly explain. (04 marks)
- (c) Define a "pixel". Explain the difference between the bitmap and the pixmap. (04 marks)
- (d) What are the differences between Vector graphics and Raster graphics? (04 marks)
- (e) What is meant by "RGB" color model? (04 marks)
- (f) What is color depth? Explain why we do not need more than 24 bit color depth for displaying graphics on a PC monitor. (04 marks)
- (g) What are the two types of image compression? Briefly explain. (04 marks)
- (h) Give an explanation on "GIF" image file format. (04 marks)
- (i) What is meant by "noise" in an image? (04 marks)
- (j) List three image smoothing techniques. (04 marks)

Question 2.

- (a) List specifications of a modern graphic workstation. (02 marks)
- (b) Give a brief description about graphic adaptors. (04 marks)
- (c) A 3D model is viewed by a digital camera through a "window" and the image thus captured is needed to be displayed on a "viewport" of a Graphical User Interface. Explain how it is being done. (04 marks)
- (d) What is fire-wire? Compare and contrast fire-wire with USB 2.0. (05 marks)
- (e) "Flat panel displays are better than CRT displays" This is a quote appeared in a newspaper. Write your opinion about the above quote within a technological framework. (05 marks)

Question 3.

- (a) What is "Rendering"? Briefly explain. (02 marks)
- (b) Rendering can be done efficiently if the polygons are broken in to triangles. Comment on the above statement. (03 marks)
- (c) What is Rendering pipeline? Explain. (04 marks)
- (d) Rendering can be done using two ways, Hardware or Software. Explain the difference between Hardware rendering and Software rendering. (05 marks)
- (e) Raytracing is a high quality rendering method. Explain how Raytracing provides a solution to global illumination problem. (06 marks)

Question 4.

- (a) What are the three basic transformations in 2D graphics? (02 marks)
- (b) State the matrix representation of above three transformations. (03 marks)
- (c) Find the matrix representation for rotation around an arbitrary point in 2D geometric transformation. (05 marks)
- (d) Find the transformation matrix for rotation in 3D graphics. (05 marks)
- (e) Find the matrix representation for Shearing transformation. (05 marks)

Question 5.

Write short notes about the following topics. Use diagrams where appropriate.

- (a) OpenGL Architecture. (05 marks)
- (b) The Cohen-Sutherland Line Clipping Algorithm. (05 marks)
- (c) Perspective projection. (05 marks)
- (d) Deployment of Quadtrees. (05 marks)