TECHNICAL UNIVERSITY OF MOMBASA

INSTITUTE OF COMPUTING AND INFORMATICS

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:

BSCS/SEP/2022/J-FT

CCS 4305: COMPUTER PROGRAMMING

END OF SEMESTER EXAMINATION

SERIES: AUGUST2022

TIME: 2HOURS

DATE: 14Dec2022

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attemptquestion ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

QUESTION ONE

a. Define each of the following terms as used in Computer Graphics (5 marks)

   i. Bitmap Fonts

   ii. Depth Buffer

   iii. Texture

   iv. computer Graphics

   v. OpenGL

b. Give an account on how computer graphics has improved the Education & Training sector with appropriate example (6 marks)

c. Differentiate between Image Processing and Computer Graphics giving appropriate in each case. (4 marks)

d. Various devices are available for data input on graphics workstations. Name at least 6 devices. . (3 marks)

e. Discuss at least 8 areas where Computer graphics is applied citing appropriate examples (4 marks)

f. Discuss the problems associated with the digital differential analyzer line drawing algorithm (5 marks)

g. Citing the major features describe what is a presentations graphics software (3 marks)

QUESTION TWO

A. Write a procedure for implementing DDA algorithm and hence write a program for drawing a line based on DDA line algorithm (Use a suitable language) (8 marks)

B. Illustrate your understanding of the following terms as used in Computer Graphics and give a brief description of each (6 Marks)

i. Vertical Retrace.

ii. Horizontal Retrace.

C. Discuss computer monitor display resolution, showing how a user can be able to increase or decrease the resolution (6 Marks)

QUESTION THREE

A. Transmission is when the light photon can pass through the surface. Discuss two types of light transmission (6 Marks)

B. Discuss the history of computer graphics (8 Marks)

C. Using a suitable diagram briefly explain the various components and their functions in a CRT (6 marks)

QUESTION FOUR

A. Discuss the implications of pixelation in raster graphics when scaling images. What techniques can be employed to minimize this effect, and how do they compare to the scalability of vector graphics? (10 marks)

B. Evaluate the advantages and disadvantages of vector graphics in terms of file size and scalability. In what scenarios would vector graphics be preferred over raster graphics? **(10 marks)**

QUESTION FIVE

A. Outline the steps in the Bresenham's line drawing algorithm and write C++ implementation. (8marks)

B. Assuming that a certain full-color (24 bit per pixel) RGB raster system has a 512 by 512 frame buffer, how many distinct color choices (intensity levels) would be available? (6 marks)

C. Briefly explain with a suitable diagram a graphic display device and explain its components (6 marks)