



Sessional 1 Examination – Semester Spring 2021

Course Title:	Computer Graphics				Course Code:	CSD304	Credit Hours:	3(2,1)
Course Instructor/s:	Aamer Mehmood				Programme Name:	BS Computer Sciences		
Semester:	5 th	Batch:	SP17-BCS	Section:	A,B,C	Date:		
Time Allowed:	1 Hour				Maximum Marks:		15	
Student's Name:					Reg. No.	CIIT/SDP-SP()-BCS- /LHR		
<u>Important Instructions / Guidelines:</u>								
<ul style="list-style-type: none">• Use proper indentation, comments, naming conventions and self-explanatory names if you want to secure better marks.								

Question 1: Find the intersection point and clip the line using Figure (1). (5 marks)

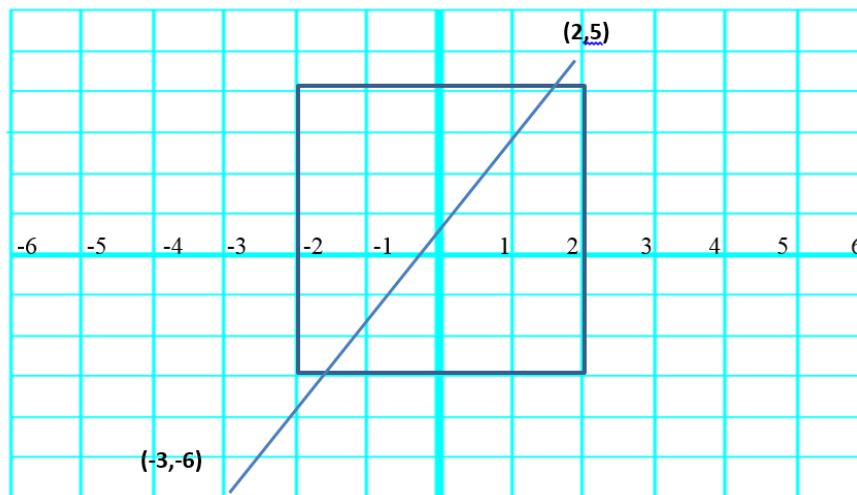


Figure 1.

Question 2: Draw the line between (1,1) and (7,9) using Bresenham's line drawing algorithm. (5 marks)

Question 3: Suppose RGB raster system is to be designed using on 8 inch X 10 inch screen with a resolution of 100 pixels per inch in each direction. If we want to store 6 bits per pixel in the frame buffer, how much storage (in bytes) do we need for frame buffer? (5 marks)

Solutions

Question 1 Answer: Slope (m) of the line is $5+6/2+3$
 $=11/5$

So using equation of the line,

$$x=x_0+1/m(y-y_0)$$

$$=-3+5/11(3+6)$$

$$=-3-15/11$$

$$=-12/11$$

So the first intersection point is $I_1 (12/11,3)$

For second intersection point, using the same line equation,

$$x=x_0+1/m(y-y_0)$$

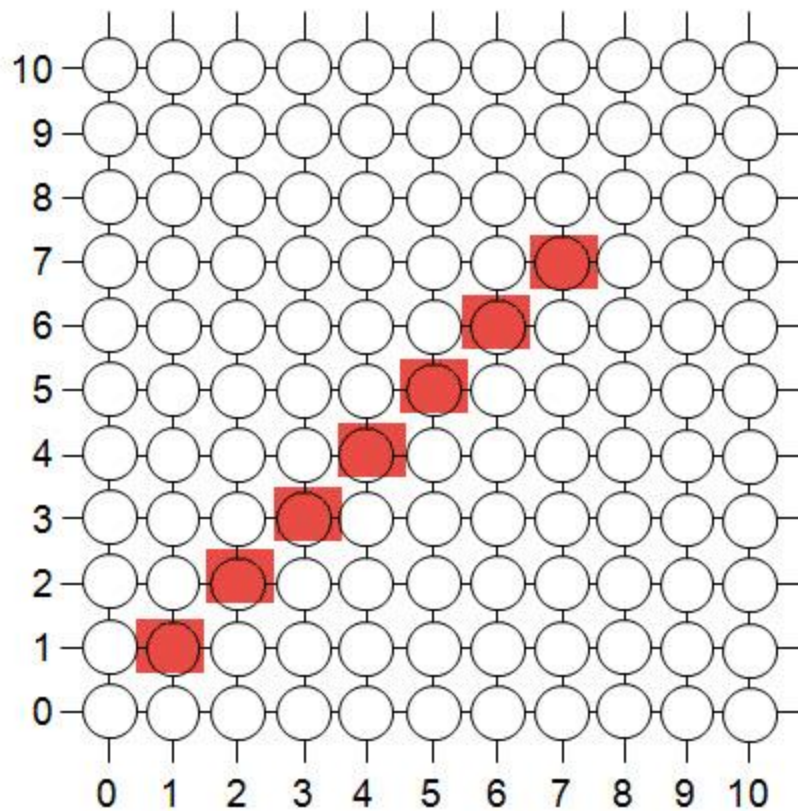
$$=-3+5/11(4+6)$$

$$=-3-15/11$$

Question 2: Draw the line between (1,1) and (7,9) using Bresenham's line drawing algorithm. (5 marks)

Answer: $\Delta(y) = 9-1 = 8$ so $2 * \Delta(y) = 16$
 $\Delta(x) = 7-1 = 6$ so $2 * \Delta(x) = 12$

k	P_k	X_{k+1}, Y_{k+1}
0	10	2,2
1	14	3,3
2	18	4,4
3	22	5,5
4	26	6,6
5	30	7,7
6	34	8,8



Question 3: Suppose RGB raster system is to be designed using on 8-inch X 10-inch screen with a resolution of 100 pixels per inch in each direction. If we want to store 6 bits per pixel in the frame buffer, how much storage (in bytes) do we need for frame buffer? (5 marks)

Answer: Here, resolution = 8-inch X 10 inch

First, we convert it in pixel then

Now resolution = 8 X 100 by 10 X 100 pixel = 800 X 1000 pixel

1 pixel can store 6 bits

So, frame buffer size required = 800 X 100 X 6 bits

= 800 X 100 X 6/8 Bytes

= 6 x 10⁵ bytes.