# Workshop 11 Lab 1

In this activity, we are going to implement Bresenham’s line algorithm in P5.js.

Implement the 4 cases of Bresenham’s line algorithm.

Gradient

1. between 0 to 1
2. between 0 and -1
3. more than 1
4. less than 1

Print out all the pixel values between Point 1 and Point 2

Test the code with the following test data.

|  |  |  |
| --- | --- | --- |
| Point 1 | Point 2 | gradient |
| (1,0) | (6,2) | 0.4 (between 0 to 1) |
| (1,3) | (6,0) | -0.6 (between 0 and -1) |
| (1,0) | (3,5) | 2.5 (more than 1) |
| (1,5) | (3,0) | -2.5 (less than 1) |

Point the 4 cases on this graph.

Case 1:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  | X |
| 1 |  |  |  |  |  |  |  |
| 0 |  | X |  |  |  |  |  |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

Case 2:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
| 3 |  | X |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |
| 1 |  |  |  |  |  |  |  |
| 0 |  |  |  |  |  |  | X |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

Case 3:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 |  |  |  |  |  |  |  |
| 5 |  |  |  | X |  |  |  |
| 4 |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |
| 1 |  |  |  |  |  |  |  |
| 0 |  | X |  |  |  |  |  |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

Case 4:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 6 |  |  |  |  |  |  |  |
| 5 |  | X |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |
| 1 |  |  |  |  |  |  |  |
| 0 |  |  |  | X |  |  |  |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 |