Summer 2001 -- Professor Futrelle
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PRINT your name clearly _____ Your ID no. _____

Question 1.

The following is a description of the Bresenham line-drawing algorithm. You are to use it to fill in a table of values, as described below.

1. Assume that you are given a line with initial coordinates x_0 = 1, y_0 = 2 and end coordinates x_{end} = 5 and y_{end} = 5.
   For this case then, `delX = 4` and `delY = 3`.

2. First, plot x_0 and y_0

3. Compute the initial decision parameter p_0 `= 2 * delY - delX`

4. At each x_k along the line, starting at k = 0, perform the following test:
   If p_k `< 0`, the next point to plot is `(`x_k `+ 1,` y_k`)` and
   p_{k+1} `= `p_k` + 2 * delY`
   Otherwise, the next point to plot is `(`x_k `+ 1,` y_k `+ 1)` and
   p_{k+1} `= `p_k` + 2 * delY - 2 * delX`

5. Repeat step 4 delX times.

Fill your values in the following table. (If you change your mind, no need to erase, you can construct another table.)

_____

k p_k (x_{k+1}, y_{k+1})
_____

_____

When you're done, draw a grid of pixels from x and y = 0 to x and y = 5 and shade in the pixels that your table shows are to be plotted. Does your line appear to be computed properly? (If not, try to correct your table.)

Question 2.

Describe how to compute the pixels to plot using the DDA algorithm applied to the line in Question 1. (You'll find it convenient to do your computations using values of the form 3 3/4, etc.)