



THE RAVEN
Edgar Allen Poe

Once upon a midnight dreary, while I pondered, weak and weary,
Over many a quaint and curious volume of forgotten lore,
While I nodded, nearly napping, suddenly there came a tapping,
As of some one gently rapping, rapping at my chamber door.
"T is some visiter," I muttered, "tapping at my chamber door--
Only this, and nothing more."

...

And the Raven, never flitting, still is sitting, still is sitting
On the pallid bust of Pallas just above my chamber door;
And his eyes have all the seeming of a demon's that is dreaming,
And the lamplight o'er him streaming throws his shadow on the floor;
And my soul from out that shadow that lies floating on the floor
Shall be lifted--nevermore!

Above, we reproduced for you, the first and last verses of *The Raven*, a poem by American poet Edgar Allen Poe. Poe was a prolific writer, poet, and also had a keen interest in cryptography (e.g. his story, *The Gold Bug*). Poe lived in Boston, Philadelphia, and Baltimore during his life. The NFL football team, Baltimore Ravens, is named in honor of Edgar Allen Poe as is their mascot, Poe.

In today's lab we will do a "digital reading" of *The Raven*. That is, instead of us, our program will read the poem, and it will then visualize a key aspect of the poem: Occurrences of the word, "nevermore", in the poem. In our visualization, we will draw vertical lines/blocks, one for each line of the poem. Each line will appear in grey. We will separate verses by white lines/blocks. Any line in which the word, "nevermore" appears, we will draw it as a purple line/block.

Start With A Basic Sketch: To begin, create the following sketch:

```
void setup() {  
  // set up sketch  
  size(600, 300);  
  noLoop();  
} // setup()  
  
void draw() {  
  background(217, 209, 252);  
  // Draw the Title...  
  fill(0);  
  textSize(20);  
  text("The Raven", 25, 25);  
  textSize(14);  
  text("Edgar Allen Poe", 25, 43);  
  textSize(8);  
  text("Created by YOUR NAME, November 2016", 25, height-10);  
} // draw()
```

Save the sketch (call it, TheRaven). Run it, it will show a mostly blank screen with the title and other information in it.

Get the poem “data” and read it in the sketch: Next, Create a **Data** folder in the sketch folder. So that we can process the poem by Edgar Allen Poe, you need to get the text of the poem and store it in a file in the Data folder. Go to The Poetry Foundation’s website (www.poetryfoundation.org) and search for “The Raven”. When you get to the poem’s page, cut and paste the poem in a Notepad document. Save the file in the Data folder of your sketch. Name the file: **TheRaven.txt**

Define the two variables show below outside **setup()** at the top of your sketch program:

```
String[] lines; // To store the lines of the poem
String inFile = "TheRaven.txt";
```

And, enter the following lines to the **setup()** function:

```
// Read the poem file
lines = loadStrings(inFile);
println("Read " + lines.length + " lines.");
```

Run the sketch. If successful, you see should the number of lines in the file printed in the Console Window.

Detect relevant lines in poem: Now that we have each line of the poem in the **lines[]** array, we can write some logic to detect the relevant lines in the poem (those containing the word “nevermore”). To do this, we will convert each line to lowercase (using **toLowerCase()**), and then use the **indexOf()** function on strings to see if a line has the word, “nevermore”, in it. For now, if we find it, we will print the word in the Console Window. If we do not find the word, we will print “>”, and for an empty line, we will print an empty line. That is, the output in the console window might look something like this:

```
>
>
>
>
>
nevermore

>
>
>
>
>
nevermore
```

Each verse has five lines (without the word “nevermore”) and then the last line contains “nevermore”. The commands shown below implement this idea:

```

// Process poem
for (int i=0; i < lines.length; i++) {
  String l = lines[i].toLowerCase();
  String word = "nevermore";
  if (l.length() > 0) { // this is not an empty line
    if (l.indexOf(word) >= 0) { // this line has the word
      println("nevermore");
    }
    else { // this line doesn't...
      println(">");
    }
  }
  else { // this line is a blank line, end/start of verse
    println();
  }
}

```

Add this to your **draw()** method and run the sketch. You should get output like the one shown above in the console window.

Visualize the poem in sketch: Each line in the poem will be depicted by a vertical rectangle (say of width, **wd**). Define the following variables in your sketch (above the **setup()** function):

```

// Sketch variables
int wd;          // width of each block
float x0;        // leftmost block (starting point)
float y1, y2;    // the top and bottom y-coordinates of each block

```

Next, add the following initializations to **setup()**:

```

// initialize sketch variables
wd = 4;          // width of each block is 4 pixels
y1 = 50;         // the top y-coordinate of block
y2 = height-25; // the bottom y-coordinate of block
x0 = 25;         // leftmost block's x-coordinate

```

Modify the **draw()** function to contain drawing commands to draw grey/blank/purple blocks (see underlined):

```

// Process poem
for (int i=0; i < lines.length; i++) {
  String l = lines[i].toLowerCase();
  String word = "nevermore";
  if (l.length() > 0) { // this is not an empty line
    if (l.indexOf(word) >= 0) { // this line has the word
      noStroke();
      fill(48, 5, 247); // purple
      int x1 = x0 + l * wd;
      rect(x1, y1, wd, y2-y1); // the block
      println("nevermore");
    }
    else { // this line doesn't...
      noStroke();
      fill(170, 164, 196); // grey
      int x1 = x0 + l * wd;
      rect(x1, y1, wd, y2-y1); // the block
      println(">");
    }
    else { // this line is a blank line, end/start of verse
      noStroke();
      noFill(); // blank
      rect(x0+i*wd, y1, wd, y2-y1);
      println();
    }
  }
}

```

Run your sketch to see the outcome.

Look at the code we added above. Can you see several lines are repeated in each if-statement? Can you rearrange so that there are no repeated lines?

We hope you enjoyed this digital reading of a classic poem.

