Computer Programming 1A: Mr Kapptie

Unit: Methodology **Turn In List:** 1. Terms

"I will explore and implement the use of arrays in application development."

Arrays

Content Objectives: Students will create apps with the use of a powerful and innovative data type.

Starter Activity

Create an array of 100 integers and populate it with the numbers 0-100. Print the numbers to the console. Then change the code to fill the array with random numbers between 0-100.

Key Terms:

Syntax:initialize an array w/ values	
Syntax:initialize an array w/ "new"	

Assignment:

Complete the following problems with Arrays assuming the following int array. Hint use .length to help achieve results. See the following page for additional information:

```
int[] nums = {5,4,2,7,6,8,5,2,8,14};

Problem #1:
// Square each number ((i.e., multiply each by itself)
for (int i = 0; i < 10; i++)  {
  nums[i] = nums [i]* nums [i];
}

Problem #2:
// Add a random number between zero and 10 to each number.
_____________________________________
  _____ += int(________);
__

Problem #3:
// Add to each number the number that follows in the array. Skip the last
value in the array.
for (int i = 0; i < _____; i++)  {
  _____ += ______[____];
}

Problem #4:
// Calculate the sum of all the numbers.
```

```
_____ _________ = ____;
for (int i = 0; i < nums.length; i++) {
  _______ +=  _________;
}
```

Problem #5:

Write a program that implements a simple rollover. In other words, if the mouse is over a rectangle, the rectangle changes color.

```
int x = 50;
int y = 50;
int w = 100;
int h = 75;

void setup() {
  size(200,200);
}

void draw() {
  background(255);
  stroke(0);
  if (________ && ________ && ________ && ________) {
    _______
  } _______ {
    ________
  }
  rect(x,y,w,h);
}
```

Problem #6:

Write a Button class (problem #5 for a non-object-oriented button). The button class should register when a mouse is pressed over the button and change color. Create button objects of different sizes and locations using an array. Before writing the main program, sketch out the Button class. Assume the button is off when it first appears. Here is a code framework:

```
class Button  {
  // Button location and size
  float x;
  float y;
  float w;
  float h;
  // Is the button on or off?
  boolean on;

  // Constructor initializes all variables
```

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```
  Button(float tempX, float tempY, float tempW, float tempH)  {
    x  = tempX;
    y  = tempY;
    w  = tempW;
    h  = tempH;
    on = false;  // Button always starts as off
  }
```

Notes (Points of interest, mistakes, lessons learned, web resources, and thoughts):