

Points-Back Packet

15-104 Fall 2015

Due by the end of your Oct. 6th lab

Name _____

AndrewID _____

Section _____

Instructions

In order to receive some points back on Lab Exam 1, you must complete this whole packet. You should try solving everything by hand first. Then you can use the internet, p5.js, or the console to fill in what you don't know. You can talk about it with your friends, but don't give away answers. As a last resort, ask an instructor or TA. Each of the questions is divided into sections focusing on different concepts in the course.

The truth is revealed

In this section, you need to evaluate some conditional expressions. All you need to write is whether the expression is true or false.

1. `4 * 4 == 16` _____
2. `4 * 4 == "16"` _____
3. `"4 * 4" == "16"` _____
4. `"hello" != "hello"` _____
5. `"hello!".equals("hello!")` _____
6. `4 == true` _____
7. `(10 % 8 == 2) && (100 < 50 * 2 || 9 == 90)` _____
8. `true || false` _____
9. `true && !(false || !true)` _____
10. `!true && !false || !2 > 1 || false && !true` _____
11. `!(!(true || false) != (!true && false))` _____

Vocabulary

Write a short definition for each of these words/phrases in the context of this class. Also, make a note of when these things might be used in a program.

1. variable
2. declaration
3. initialization
4. assignment
5. global versus local scope
6. setup versus draw
7. function definition
8. parameters
9. return value
10. types
11. boolean, integer, float, string, character
12. arithmetic operators and logical operators
13. modulus
14. conditional
15. loop
16. iteration
17. index
18. array

What does this even do?

In this section, you are presented with several code fragments intended for placement within the `setup()` function. They all use `print` statements. Your job is to predict what gets printed to the console. *Ahem*, you shouldn't just type this into an editor, until you have tried it by hand first.

- ```
1. var x = 1034;
 while (x > 0) {
 if (x / 10 % 2 == 0) print(x);
 else print("nonsense");
 x /= 10;
 }
```
  
- ```
2. for (var num = 1; num < 4; num++) {
     print(num);
     for (var num2 = 3; num > 0; num--) {
       print(num2);
     }
   }
```

- ```
3. var arr = [0, 2, 4, 1, 3];
 for (var i = 0; i < arr.length; i++) {
 arr[i] = arr[(arr[i] + 3) % arr.length];
 print(arr[i]);
 }
```

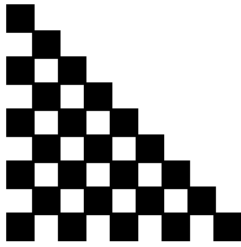
**Fill in the code.**

In this section, you are given a simple word problem and some starter code to solve the problem. All you need to do is fill in the blanks or right a few lines of code from scratch.

1. Write some code that draws circles in a column such that, every third circle is red, every circle before the third circle is pink (255, 100, 100), and every circle after the third circle is white. You can assume the number of circles is in a variable called 'numCircles', their radius is 'r', their x position is 'x', their starting y position is 'y', and the y-spacing between them is called 'ySpacing'.

```
for (_____; _____; _____) {
 if (_____) {
 _____;
 } else if (_____) {
 _____;
 } else {
 _____;
 }
 ellipse(_____, _____, _____, _____);
}
```

2. Write some code that draws the following image.



```
var startX = 5;
var startY = 5;
var sideLength = 10;
var numRows = 10;
var step = 2;
var rectX;
var rectY;
fill(0);
```

```
for (var row = _____; row _____; row _____) {
 for (var col = _____; col _____; col _____) {
 _____ = _____;
 _____ = _____;
 rect(_____, _____, _____, _____);
 }
}
```

3. Write a function called 'getDistance' that takes four numbers, 'x1', 'y1', 'x2' and 'y2', and returns the distance between those two points. Your solution should only be 3 lines of code. As a reminder, the distance formula looks like the following.

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

## Correct the code

In this section, you are given program code that may or may not compile, and there are glaring errors everywhere. Your job is to correct all the errors in the samples. Circle the parts that you think are bad and write a short explanation why they are bad in the space next to it. The first question actually highlights some things for you and gives an example explanation.

1. **Missing header**  
**Missing all comments**

```
var numRects= 10;
var startX = 5
```

```
function setup() {
 createCanvas(600, 600);
 noLoop();

}
```

```
var startY = 5;
var sideLength = 20;
var spacing = 2;
```

```
function draw() {

 for (var i = 0; i <10; i++)
 {
 if (i == 2) {
 fill(0);
 }else {
 fill(200); }
 rect(startX + i * (sideLength + spacing), startY, sideLength,
sideLength);
 }
}
```

```

2. /* Bob Joe
 * bJoeBoii
 * Section Z
 */

var a = 20; // this sets a variable a to 20
var e = 10; // this sets a variable e to 10
var yea;
var boi = width;

function setup() { // this is a setup function
 createCanvas(800, 600); // this is a canvas function
 var a = 30;
}

function draw() { // this is the draw function
 var day = day();
 fill(10, 20, 30); // this is a comment that doesn't
 // tell me what color I just used

 rect(400, 300, 100, 100);

 for (var i=0; i < day; i=i++) {
 ellipse(e, e, a, e);
 }

 if (width > width) {
 print("this is wrong but why" + day);
 }

 else {
 print("why would you put else all the way down here");
 }
}

```

```
3. //Why is
 //this not
 //a block comment

var left = "this is actually bad but why";
var left2 = 4;
var left3 = 5;
var left4 = 100;

function setup() {
 createCanvas(left4 + left4, 300);
}

function draw() {
 var x = 20;
 x += 20; // I wonder what the value of x is at this point?

 for (int i=0; i<width; i+=0) {
 print("Why is my browser frozen?");
 }

 if (i = 2) print("wtf is happening");
}
```