CSCI 182 Fall 2017, Final Exam
Wednesday, 13 December 2017, 11:30 AM – 2:00 PM

Directions: Please read carefully and answer each problem on the test. You may use **the Processing program**, **Processing reference**, **Arduino/Firmata references,** our CSCI 182 course webpage, your notes, and the textbook.

Fill in the blanks – 3 points each – 60 points total.

Write a line of Processing code to create an array of five integers and assign it to `A`. Be sure to include a declaration for `A`. If you do this the easy way, all the elements will be 0. Do it the easy way!

_____

Write a line of Processing to set the 5'th element of a character array `B` to `'a'`.

_____

Write a line of Processing to set the last element of a `float` array `C` to `6.022e+23`. You may assume that `C` has at least one element.

_____

Suppose `D` is an array of 1000 integers. Fill in the two blanks to set the elements of the array to the integers from 0 to 999. That means that `D[182]` should be `182`.

```
for (_____; _____; _____) {

    _____ ;
}
```

Suppose `H` is a `float` number that represents a price, for example, 14.95. Fill in the following blanks to set `dollars` to the dollar part of the price, in this case 14, and to set `cents` to the cent part of the price, in this case 95. The `cents` is may be a little harder than the `dollars`.

```
int dollars = _____ ;

int cents = _____ ;
```

Assign an integer `J` a random number between 90 and 100, inclusive.

```
int J = _____ ;
```

Write an appropriate header for the following one-line function, with a parameter `n`, in the blank line:

```
_____ {
   return (int)sqrt(n) ;
}
```

Write a statement from *either* the Arduino library *or* the Processing Firmata library to make pin 5 of an Arduino be an output pin.

_____

Write a statement from *either* the Arduino library *or* the Processing Firmata library to set output pin 5 of an Arduino to `HIGH`.

_____

Name the *only* analog circuit element that we used in the Arduino labs. Hint: Remember the `analogRead()`?

_____

What is the value of `O` after the following expression is executed?

```
float O = 17/5 ;
```

_____

Fill in the following blanks so that the variable `P` will be equal to the number of times the character `'p'` has been pressed while a Processing program is running.

```
int P = 0 ;
void keyPressed() {

    if (_____________________________________) {

        _____________________________________ ;

    }
}
```

Fill in the blanks to create a two-dimensional array `R` of integers of size 8 by 8. All the integers should be zero. (That's the easy case.) Think about the Othello assignment!

```
int[][] R = _____________________________ ;

for (int i=0; _________________; ++i) {

    R[i] = _____________________________ ;
}
```