# 15-110 Check1 - Written Portion

**Name:**

**AndrewID:**

---

## #1 - Algorithms and Abstraction - 30pts

Write a plain-language algorithm (not code!) to instruct someone on how to write the word HELLO in English, in all capital letters. Your algorithm must be written at a **low** level of abstraction. Specifically, assume the person you are instructing does *not* know how to write English letters already and that your instructions will only be provided verbally (no pictures). You may assume the person *does* know how to draw straight lines and curves.

Assume you can redefine the starting knowledge of the person you're writing the algorithm for. What would you change so that you could provide an algorithm at a **high** level of abstraction?

## #2 - Running Code - 10pts

The following question is intended to make you feel more comfortable with running code and encountering errors. In each of the following examples, copy the line of code into the interpreter (next to **>>>**) and press Enter to run it. Then copy the output in the interpreter into the space below the code, and check a box below that to indicate whether the code ran successfully or raised an error.

```
5 / (4 - 2)
```

☐ Ran Successfully  ☐ Raised an Error

```
"Hello World
```

☐ Ran Successfully  ☐ Raised an Error

```
(8 + 3) < (5 * 2)
```

☐ Ran Successfully  ☐ Raised an Error

```
8 + "two"
```

☐ Ran Successfully  ☐ Raised an Error

## #3 - Basic Programming Syntax - 20pts

Assume that two variables (**x** and **y**) have been set equal to strings already. Write a single line of code that sets a variable **s** to a string that equals the value of **x**, then a space, then the value of **y**. So if **x** is equal to "A" and **y** is equal to "B", the string should be set to "A B".
**Make sure your code uses the variables x and y.**

Next, write a print command that outputs "The values are " and then the string **s**. For example, given the values stated above, the code should print "The values are A B".
**Make sure your code uses the variable s**.

Finally, write in the box below what the following code would print to the console.

```
age = 21
print(age + 5)
print(age / 3)
# print(age * 3)
```

## #4 - Binary Translation - 40pts

For each of the following problems, you must **show your work** to receive full credit. For example, to convert 0101 to decimal, you could show 0*8 + 1*4 + 0*2 + 1*1 = 4 + 1 = 5.

Convert 18 from decimal to binary.

| | |
|---|---|
| **Work:** | |
| **Answer:** | |

Convert 29 from decimal to binary.

| | |
|---|---|
| **Work:** | |
| **Answer:** | |

Convert 1011 from binary to decimal.

| | |
|---|---|
| **Work:** | |
| **Answer:** | |

Convert 1010101 from binary to decimal.

| | |
|---|---|
| **Work:** | |
| **Answer:** | |