HW1 Full Assignment (Written)

STUDENT NAME

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Q1 Mystery Algorithm
2 Points

Trace the following two algorithms with a=5 and b=14. Describe in one sentence what is happening to a and b.

```
Algorithm X:
1. temp = a
2. a = b
3. b = temp
```

```
Algorithm Y:
1. a = a + b
2. b = a - b
3. a = a - b
```

Enter your answer here

Submit

Q2 Another Mystery
2 Points

Trace the following algorithm. What are the first three things that are output. Describe in one sentence what the algorithm is outputting.

```
1. n=1000
2. i=1
3. If i<=n, do the following:
   a. Output i
   b. i = i+1
```

```
       c. Go to 3.
   4. If i>n, return
```

Output #1

```
Enter your answer here
```

Output #2

```
Enter your answer here
```

Output #3

```
Enter your answer here
```

Describe the algorithm:

```
Enter your answer here
```

Submit

Q3 Trace the Algorithm
2 Points

Trace the algorithm for n = 17. How many times does line 2 get evaluated? Evaluated means it could be true or false. (write the number only)

```
1. Input a positive integer n.
2. If n != 1, do the following:
   a. If n is even, divide n by 2.
      If n is odd, multiply n by 3 and then add 1.
   b. Output n
   c. Go to 2.
3. If n=1: Finish
```

```
Enter your answer here
```

Submit

Q4 Bytecode

4 Points

Recall the bytecode from class

```
LOAD_CONST          1 (5)
STORE_FAST          0 (x)
LOAD_CONST          2 (7)
STORE_FAST          1 (y)
LOAD_FAST           0 (x)
LOAD_FAST           1 (y)
BINARY_ADD
STORE_FAST          2 (z)
```

corresponding to the code:

```
x = 5
y = 7
z = x+y
```

If I wanted to add an additional line to multiply y*z:

```
x = y*z
```

What lines of bytecode would be added?

☐   LOAD_FAST   0 (x)

☐   LOAD_FAST   1 (y)

☐   LOAD_FAST   2 (z)

☐   BINARY_ADD

☐   BINARY_MULTIPLY

☐   STORE_FAST   0 (x)

☐   STORE_FAST   1 (y)

☐   STORE_FAST   2 (z)

Q4 Bytecode

Submit

Q5 Python Syntax
2 Points

Which of the following lines of code does the Interpreter say has an error?

☐ `print("Hello World"`

☐ `p r i n t ( "Hello World" )`

☐ `print('Hello Wrold'    )`

☐ `print(Hello World)`

Write the correct line of code to print 'Hello World' below:

```
Enter your answer here
```

Submit

Q6 More Syntax
3 Points

Which of the following correctly assigns a value to a variable?

☐ `a = 10 < 15`

☐ `b = false`

☐ `c == 111`

☐ `d - 1 = 99`

For each line that is wrong, write the correct line of code below.

```
Enter your answer here
```

Submit

Q7 Print
1 Point

```
x = 5 + 10
print("x")
```

What does the code print?

Enter your answer here

Write the code to print the value of x?

Enter your answer here

Submit

Q8 Trace the Program
2 Points

What is the output of the following code?

```
age = 21
print(age + 5)
print(age % 4)
# print(age * 3)
```

Enter your answer here

Submit

Q9 True and False
2 Points

A python file is a text file.

○ True

○ False

Why or Why not?

```
Enter your answer here
```

Consider the following code for the next 3 questions:

```
1. n=1000
2. i=1
3. If i>n, do the following:
   a. Output i
   b. i = i+1
   c. Go to 3.
4. If i<=n, return
```

True or False, 3a will be executed.

○ True

○ False

True or False, the Interpreter will give an error because 3a will not be run.

○ True

○ False

Why or Why not?

```
Enter your answer here
```

Submit

Q10 Binary and Decimal
2 Points

Convert the following. Truncate (do not include) any 0's to the left of the first 1.

What is 19 in binary?

Enter your answer here

What is 29 in binary

Enter your answer here

What is 1011 in decimal?

Enter your answer here

What is 1010101 in decimal?

Enter your answer here

Submit

Q11 Print or Error
3 Points

Copy and paste the following code into python files and run them.
Paste the output or the error message in the box.

Q11.1 Function 1
0.5 Points

```python
def f(x):
        x + 42

print(f(5))
```

Paste the output or the error message in the box.

Enter your answer here

Submit

Q11.2 Function 2
0.5 Points

```python
def times3(x):
        print(x*3)
        return x*3

print(3 + times3(2))
```

Paste the output or the error message in the box.

Enter your answer here

Submit

Q11.3 Function 3
0.5 Points

```python
def three(x):
        return x*"3"

print(3 + three(2))
```

Paste the output or the error message in the box.

Enter your answer here

Submit

Q11.4 Function 4

0.5 Points

```python
def f(x):
        return x+1

def g(y):
        return 10*f(y+1)

print(g(2))
```

Paste the output or the error message in the box.

Enter your answer here

Submit

Q11.5 Function 5
0.5 Points

```python
def multiply(x,y):
        print('A')
        return x*y*2
        print('B')

print(multiply(2,5))
```

Paste the output or the error message in the box.

Enter your answer here

Submit

Q11.6 Function 6
0.5 Points

```python
def divide(x,y):
        print("The answer is "+(30/5))

divide(30,5)
```

Paste the output or the error message in the box.

Enter your answer here

Submit

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