

Exam 1 – Review Problems

Here are some problems to help you review various Python programming concepts for Exam 1.

Problem 1. What is the error in each of the following Python code snippets? And how would you fix it?

```
1 message = 'What's up?'
2 print(message)
```

```
1 x = 5
2 y = 10
3 z = x + y
4 print('The answer is ' + z + '.')
```

```
1 L = list(range(1, 10))
2 s = 0
3 for i in range(1, 10):
4     s = s + L[i]
5 print(s)
```

```
1 s = 0
2 for i in range(1, 21):
3     if i % 2 == 0
4         s = s + i
5 print(s)
```

```
1 n = 0
2 while n <= 21:
3     n += 1
4     if n % 4 == 1:
5         break
6 print(n)
```

Problem 2. Write proper Python scripts in order to compute

$$1^1 + 2^2 + 3^3 + 4^4 + \dots + 10^{10}$$

using:

- a. a for loop
- b. by summing a list you made with a list comprehension.

Problem 3. What is the output of the following Python scripts?

```
1 x = 1
2 while (x >= 0) and (x <= 19):
3     for i in range(2, 4):
4         x = i * x
5 print(x)
```

```
1 x = 1
2 while (x >= 0) and (x <= 19):
3     for i in range(2, 4):
4         x = i * x
5 print(x)
```

```
1 x = 1
2 while (x >= 0) and (x <= 19):
3     for i in range(2, 4):
4         x = i * x
5 print(x)
```

Problem 4. What happens if you run the following code? Describe in detail what exactly your computer does.

```
1 W = ['m', 'a', 't', 'h']
2 i = 0
3 while W[i] != 'a' or W[i] != 't':
4     i += 1
5     W.append(W[i])
6 print(W)
```

```
1 W = ['m', 'a', 't', 'h']
2 i = 0
3 while W[i] == 'a' or W[i] == 't':
4     i += 1
5     W.append(W[i])
6 print(W)
```

```
1 W = ['m', 'a', 't', 'h']
2 i = 0
3 while W[i] == 'm' or W[i] == 'a':
4     i += 1
5     W.append(W[i])
6 print(W)
```

Problem 5. Write Python scripts to do the following:

- a. Make a function that will input a list of numbers and output a list of its sum and average.
- b. Describe in detail how you would make this into a module and how you would use this function in a separate file (include where the files are located, what they are called etc.)

Problem 6. Suppose you ran the following Python scripts:

```
1 def truckprice (model, wd, color, accessories):
2     if model == 101:
3         price = 10000
4     elif model == 201:
5         price = 12000
6     if wd == 4:
7         price = price + 2000
8     if color == 'metallic purple':
9         price = price + 500
10    elif color == 'race stripe':
11        price = price + 700
12    for x in accessories:
13        price = price + 200
14    return price
```

What would result when you ran:

a. `truckprice(101, 4, 'red', ['heated seats', 'premium sound'])`

b. `truckprice(201, 2, 'race stripe', ['sun roof'])`

c. `truckprice(301, 4, 'blue', ['self drive', 'self wash'])`

Problem 7. List all the errors in the following function and fix them:

```
1 def fibsq(f0 == 1, f1)
2     F = [f0, f1]
3     sumsq = lambda x, y == x^2 + y^2
4     lastnumber = 0
5     while for lastnumber < 1000:
6         lastnumber = sumsq(F[-1], F[-2])
7         F.append(lastnumber)
8     return F
```

Once you fixed the errors, what do you get when you evaluate the following?

a. `fibsq(3)`

b. `fibsq(-2,4)`

Problem 8. Suppose you made the following dictionary:

```
1 D = {'Alice': 45, 'Bob': 22, 'Carl': 11, 'Diana': 57}
```

Fill in the following blanks to make a list of the names and sum the numbers.

```
1 L = []
2 for x in D.____():
3     L.append(x)
4
5 S = 0
6 for y in D.____():
7     S += y
```