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## Homework 1

### Question 1:

I have everything already (1 Raspberry Pi 4 Model B - 2 GB RAM, 1 16GB Card with NOOBS, 1 Micro HDMI to HDMI Cable, and 1 Raspberry Pi Camera Board v2 - 8 Megapixels).

### Question 2: (Emailed to the course TA 3 pictures of the targets and their .kml files)

Target 1: Outdoor bench. The target is located at the front of South Campus Commons 2, which is on the south side of the building.



Target 2: Outdoor table. The target is located at the back of South Campus Commons 6, which is east side of the building.



Target 3: Outdoor HVAC System. The target is located at the back of Susquehanna Hall, which is the west side of the building



### Question 3:

Code:

```
#Problem 3
#Declared two list for the dices and a variable called count
dice1 = []
dice2 = []
count = 0
#Generate random numbers between 1 and 6 10000 times
for i in range(10000):
    dice1.append(random.randint(1, 6))
    dice2.append(random.randint(1, 6))
    if dice1[i] == dice2[i]:
        count += 1
print("Percentage of rolls that are doubles:", count/10000*100)
```

Output:

```
[ENME435] dustinpham@Dustins-MacBook-Pro HW % python HW1.py
Percentage of rolls that are doubles: 16.73
```

#### Question 4

Code:

```
#Problem 4
#Ask the user to input a number for w,x,y,z
w = float(input("Enter a number for w:"))
x = float(input("Enter a number for x:"))
y = float(input("Enter a number for y:"))
z = float(input("Enter a number for z:"))

#Compare the w to x and y to z, then swap the smallest number of the two
if w < x and y < z:
    hold = w
    w = y
    y = hold
elif w < x and y > z:
    hold = w
    w = z
    z = hold
elif w > x and y > z:
    hold = x
    x = z
    z = hold
else:
    hold = x
    x = y
    y = hold
print("w:",w, "x:",x, "y:",y, "z:",z)
```

Output:

```
Enter a number for w:5
Enter a number for x:3
Enter a number for y:7
Enter a number for z:10
w: 5.0 x: 7.0 y: 3.0 z: 10.0
```

#### Question 5:

Code:

```
#Problem 5
#Decalare one empty list and two value list
num = []
ans = [0,0]
#Ask the user to enter 10 numbers
print("Enter 10 numbers:")
for i in range(10):
    num.append(float(input()))
#Sort the list then store the 2 smallest into the two value list
num.sort()
ans[0] = num[0]
for i in range(10):
    if ans[0]<num[i]:
        ans[1]=num[i]
        break
print("Two smallest numbers:",ans)
```

Output:

Enter 10 numbers:

1

3

7

1

2

8

9

4

7

10

Two smallest numbers: [1.0, 2.0]

**Question 6:**

Code:

```
#Problem 6  
#Enter a number of letter A  
n = int(input("Enter a number:"))  
for i in range(n):  
    print("A", end = " ")  
print()
```

Output:

```
Enter a number:5  
A A A A A
```

**Question 7:**

Code:

```
#Problem 7  
#Print a series of 10 random 0 and 1 all on the same line  
#Repeat this for or a total of 50 lines  
#each with one more random value (1 or 0) than the previous line  
for i in range(50):  
    for i in range(10+i):  
        print(random.randint(0, 1), end="")  
    print()
```

Output:

[1111110100  
00000101000  
000111101100  
0000110001011  
11000111001110  
111111011111100  
[1101110110111000  
0110111110001101  
011001100010001000  
0001011001001111000  
00100100001111001011  
01000111110001100000  
100011110110101001000  
0010111000110010011111  
001110110111101011010010  
1101000100100010000111110  
01010111111010011011101110  
011011111001110101100010110  
010100101111010101011111001  
[01000110001110010101110010010  
01000011000101001001011011010  
010000111001000111101101001111  
[110111100001001010011001011011  
001110010100010111011000110011100  
0111101001010011001110001100010001  
01101100110100101001100111001110  
111001100100101101010000100001010000  
0101101000011100010110000110101101011  
10100101000111110011001011111101001000  
000101100011111101010110110010011011110  
0100100100011101100011110100001101010011  
1000111011100000000101010010000000101000  
00111001100000101110100010000011010000001  
01000111101010010110100110001110010001101  
11111100010001010100111101010111110  
100011011010000101100100001011010001101000100  
111001110001110101011110100001101001000101111  
01111111010001011011011100110100111010111001010  
010011000011111100111101001000011010111010000100  
0010111110100111101100101111101101010000001001100  
1011010110100111101001111011111100001011010111010  
00011010100001001100000111111000111000001010110110  
1000001011111001011111000001111110110101010011110010  
01111101011110111110001011110110001000110111011001  
0000100011110000001001010000011000001110000110010011000  
1011101010010011111011011100010000111011010010111000  
100100110101011100110101111100111101010010101111011111  
100111100011001001010011001001011111010111110111111011111  
00010111010011010101100101011111100100100001000111110110  
0100101001011110101101110101101100010011011001010111

**Question 8:**

Code:

```
#Problem 8
#Declare 2 variables and 1 list
q = 0
t = []
c = 0
#Stop asking the user to enter a number when 5 is entered
#Keep count of how many numbers were entered
while q != 5:
    q = int(input("Enter a number between 1 and 10:"))
    t.append(q)
    c += 1
print("The total numbers that was entered:", c)
#If the user entered any numbers less than 3, print yes
a = False
for i in range(len(t)):
    if t[i] < 3:
        a = True
if a == 1:
    print("User entered any numbers less than 3: yes")
else:
    print("User entered any numbers less than 3: no")
```

Output:

```
Enter a number between 1 and 10:2
Enter a number between 1 and 10:1
Enter a number between 1 and 10:7
Enter a number between 1 and 10:9
Enter a number between 1 and 10:3
Enter a number between 1 and 10:5
The total numbers that was entered: 6
User entered any numbers less than 3: yes
```