Bloomberg STARTUP

Week 6 Take-Home Exercises

1) **The following code computes the sum of all numbers from 1-100. Change it into a function that takes in an integer, max, and returns the sum from 1 to max:**

```
number = 1
sum = 0
while number <= 100:
sum = sum + number
number = number + 1

def sum_of_all_numbers(max):
    #your logic here
    return sum
```

2) **Change the function in the first problem to return the sum of all numbers from 1 to max squared: sum_of_all_numbers_squared(4) should return 30, because 1^2 + 2^2 + 3^2 + 4^2 = 1 + 4 + 9 + 16 = 30**

3) **Read the following code. Use the functions provided to fill in the logic for run_race, a function that should take an integer, length, and do the following:**

a. **Start both the hare and the tortoise at 0**

b. **Print who is in the lead**

c. **Move the hare and the tortoise forward by rolling a dice**

d. **Repeat steps b and c until one has won by having a position greater than the length.**

e. **Print the winner of the race.**

```
import random

def roll_dice():
  roll = random.randint(1,6)
  return roll

def move_forward(current_position):
  steps_to_take = roll_dice()
  new_position = current_position + steps_to_take
  return new_position

def report_on_the_race(hare, tortoise):
    print("The hare is at", hare)
    print("The tortoise is at", tortoise)
    if hare < tortoise:
      print("The tortoise is in the lead!")
    elif hare > tortoise:
      print("The hare is in the lead!")
    else:
      print("It's a tie!")

def announce_winner(hare, tortoise):
    if hare < tortoise:
      print("The tortoise has won the race!")
    elif hare > tortoise:
      print("The hare was won the race!")
    else:
      print("It's a tie!")

def run_race(length):
    # your code here
```