India Henry
CYSE250 - Assignment Week 10
2 April 2024

1. **What is the difference between a while loop and a for loop in Python?**
   A while loop is an example of iteration that is executed until a given condition is satisfied; also called indefinite loops because they continue until a condition is False. A for loop is an example of iteration that easily supports definite iteration; it usually iterates over a sequence: list, tuple, or strings.
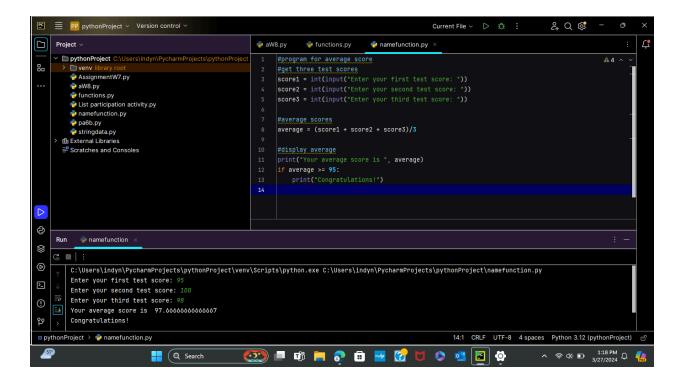2. **What does "while True" mean in Python?**
   While true is an instance used in a while loop with a function in a program continues to happen until the instance is no longer true.
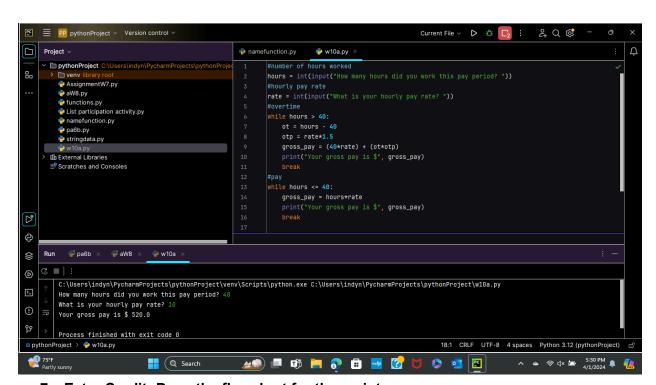3. **What is the significance of flowchart in Programming?**
   Flowcharts are used in programming to map out what will happen during instances of iteration. It starts with the loop, checks the condition or goes through with the iteration until the loop is complete or declared false.
4. **Define the following terms:**
   a. **Iteration variable:** A variable that changes each time the loop is called. This often goes through a sequence of numbers.
   b. **Finite loop:** A loop may have an iteration variable that tells the program how many times to loop or when to stop.
   c. **Infinite loop:** A loop that may have no iteration variable that tells the loop how many times to occur; this can occur in while loops, so sometimes break statements are necessary to keep the program from crashing.
   d. **Iteration or pass:** The repetition of a process to ensure a sequence of events happen.
5. **Write a program to calculate the average test score for a student (Program should congratulate student with an average higher than 95)**

6. **Chris owns an auto repair business and has several employees. If any employee works over 40 hours a week, he pays them 1.5 times their regular hourly pay rates for all hours over 40. Write a program in python to design a simple payroll program that calculates an employee's gross pay, including any overtime wages.**


```python
#number of hours worked
hours = int(input("How many hours did you work this pay period? "))
#hourly pay rate
rate = int(input("What is your hourly pay rate? "))
#overtime
while hours > 40:
    ot = hours - 40
    otp = rate*1.5
    gross_pay = (40*rate) + (ot*otp)
    print("Your gross pay is $", gross_pay)
    break
#pay
while hours <= 40:
    gross_pay = hours*rate
    print("Your gross pay is $", gross_pay)
    break
```

```
C:\Users\indyn\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\indyn\PycharmProjects\pythonProject\w10a.py
How many hours did you work this pay period? 48
What is your hourly pay rate? 10
Your gross pay is $ 520.0

Process finished with exit code 0
```

7. **Extra Credit: Draw the flowchart for the script**

```
                    ┌─────────────┐
                    │  Gender ?   │
                    └─────────────┘
      'female'      /      │       \      'male'
                  /        │         \
   ┌──────────────┐    else │      ┌──────────────┐
   │ "your cat is │        │       │ "your cat is │
   │   female"    │        ▼       │    male"     │
   └──────────────┘  ┌──────────┐  └──────────────┘
                     │ "Invalid │
                     │  Input"  │
                     └──────────┘
```