

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)

The screenshot shows the PyCharm IDE with a project named 'pythonProject'. The file explorer on the left shows a directory structure with files like 'AssignmentW7.py', 'aW8.py', 'functions.py', 'List participation activity.py', 'namefunction.py', 'pa6b.py', and 'stringdata.py'. The main editor window displays the code for 'namefunction.py'.

```

1 #program for average score
2 #get three test scores
3 score1 = int(input("Enter your first test score: "))
4 score2 = int(input("Enter your second test score: "))
5 score3 = int(input("Enter your third test score: "))
6
7 #average scores
8 average = (score1 + score2 + score3)/3
9
10 #display average
11 print("Your average score is ", average)
12 if average >= 95:
13     print("Congratulations!")
14

```

The Run window at the bottom shows the execution of the program:

```

C:\Users\indyn\PycharmProjects\pythonProject\venv\Scripts\python.exe C:\Users\indyn\PycharmProjects\pythonProject\namefunction.py
Enter your first test score: 95
Enter your second test score: 100
Enter your third test score: 98
Your average score is 97.66666666666667
Congratulations!

```

- 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.

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```

1 #number of hours worked
2 hours = int(input("How many hours did you work this pay period? "))
3 #hourly pay rate
4 rate = int(input("What is your hourly pay rate? "))
5 #overtime
6 while hours > 40:
7     ot = hours - 40
8     otp = rate*1.5
9     gross_pay = (40*rate) + (ot*otp)
10    print("Your gross pay is $", gross_pay)
11    break
12 #pay
13 while hours <= 40:
14    gross_pay = hours*rate
15    print("Your gross pay is $", gross_pay)
16    break
17

```

The Run window at the bottom shows the execution of the program:

```

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

```

- Extra Credit: Draw the flowchart for the script

