## LESSON_9 While Loops

### OBJECTIVES

Students will be able to:

- Understand the structure and the syntax of a while loop
- Practice reading and analyzing while loops of various conditions

### STANDARDS

- 7-8.CT.7, 7-8.CT.8, 7-8.CT.9

### WARM-UP: CODE PREDICTION

**Code A**

```
i = 0
while (i < 5):
    print (i)
    i = i+1
```

**Code B**

```
for i in range(5):
    print (i)
```

1. Predict the output for code A and Code B.
2. Click on repl.it to test your prediction

### LESSON DEVELOPMENT (WHOLE GROUP)

**FOR Loops** run a **certain number** of times, as defined in the range()

```
for i in range(5):
    print (i)
```

**WHILE Loops** *can* run an **infinite number** of times, so long as their condition is TRUE!

```
i = 0
while (i < 5):
    print (i)
    i = i+1
```

**As you see, the output of both examples is the same (0 1 2 3 4)**

### LET'S DO MORE PREDICTIONS OF VARIOUS WHILE LOOP CONDITIONS

### CODE PREDICTION_WHILE LOOPS & COUNTER (WORK IN PAIRS)

Predict the output. Then, click on this visualization tool to test your prediction and answer the check-in questions.

```
count = 0
while count < 5:
    print("The count is:", count)
    count = count + 1
print("Good bye!")
```

## check For Understanding Questions (Work in pairs)

What is the condition of the while loop?

How many iterations does the while loop take before the exit?

What is the value of the count at the first iteration?

What is the value of the count at the last iteration?

Create a trace table to show all phases of iterations

## check For Understanding

**CODE PREDICTION (WORK IN PAIRS)**

**Case#1: Condition Never True!**

**CODE** **OUTCOME????**

```
count = 6
while count < 5:
    print("hi!")
    count = count + 1
print("Good bye!")
```

**Case#2 Condition Always True!**

```
count = 6
while count > 5:
    print("hi!")
    count = count + 1
print("Good bye!")
```

Congratulations, you've crashed your browser!

!

**WRAP_ UP**

The syntax for a WHILE loop is simpler than a FOR loop:

**while condition is true:**

**repeat this code** In other words, it will repeat the indented code as long as the condition or boolean is true (it checks at the beginning of each loop)

**HOMEWORK/Formative Assessment**

Write a while loop that produces the following output:

1

2

4

8