QA
POWERING POTENTIAL
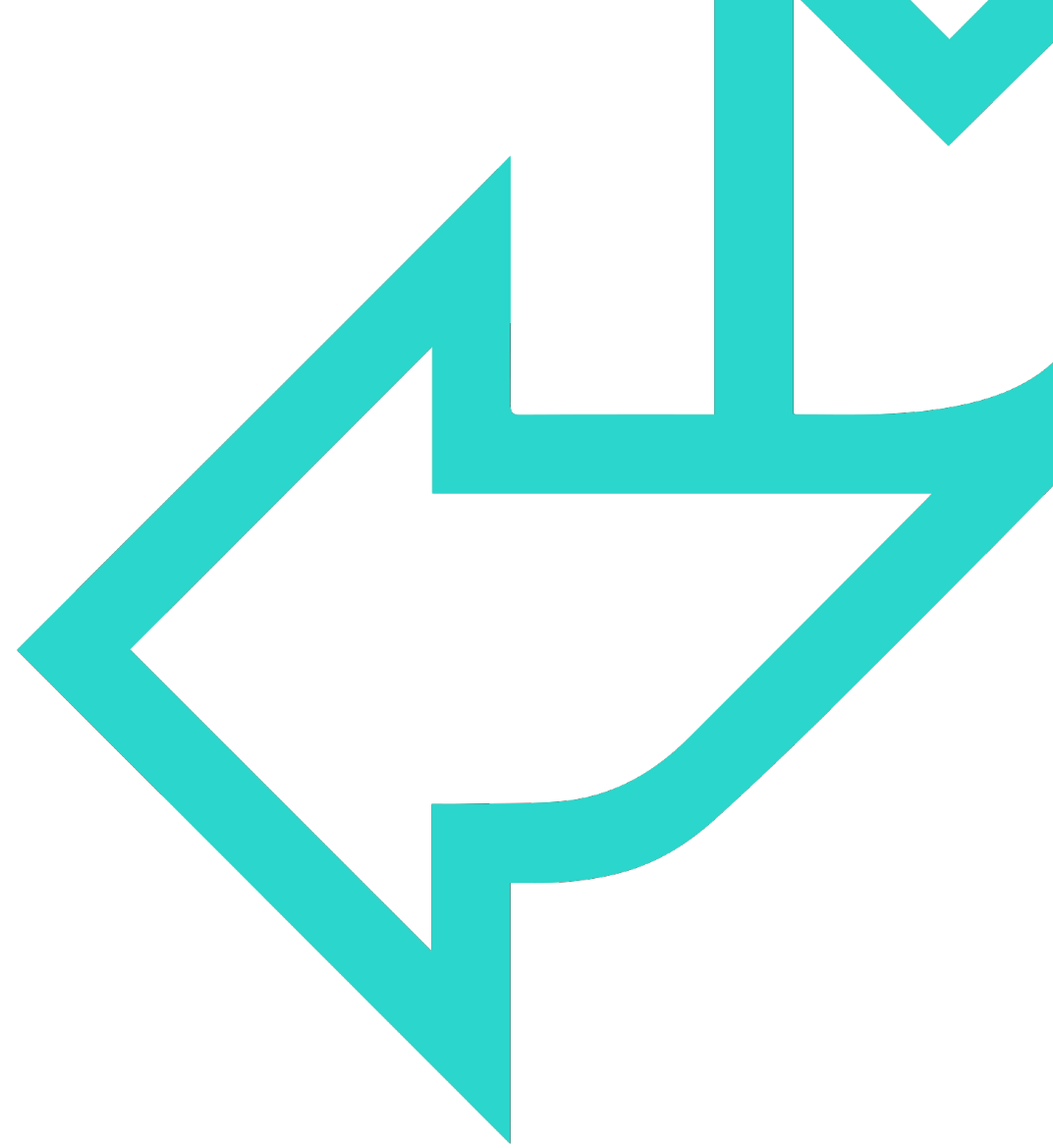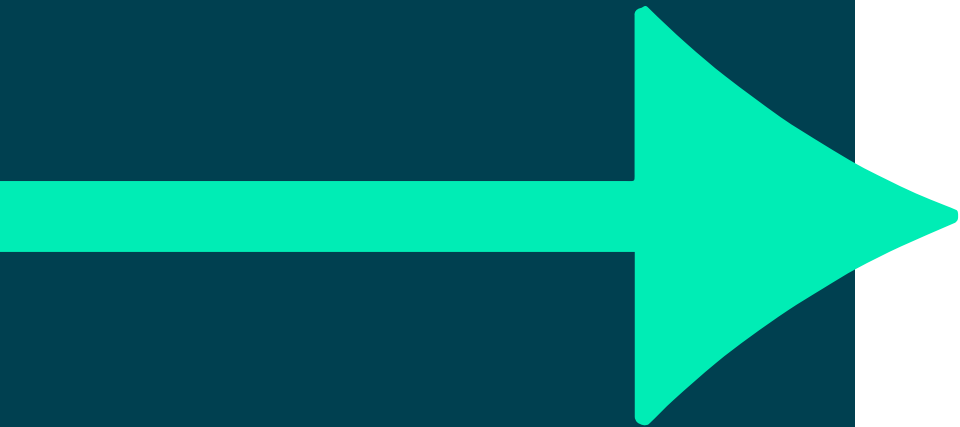
Control Flow - Iteration

LESSON OBJECTIVES

In this section, you will be introduced to:

- Use of iteration (loops) in Python.
- Use of the range function.

WHAT IS CONTROL FLOW?

Control flow manages the order in which tasks are carried out/completed.

- **Sequence**
  - Running code step by step, in order.
- **Selection**
  - Deciding which lines of code should run.
- **Iteration**
  - Doing the same thing many times, i.e., in a loop.

ITERATION USING WHILE LOOP

```
x = 1

while x < 5:
    print(x,"Hello World")
    x = x + 1
```

1 Hello World
2 Hello World
3 Hello World
4 Hello World
Press any key to continue . . .

What will happen if we omit the increment of x in the last row – "x = x + 1" ?

ANOTHER WHILE EXAMPLE

```
n = 1

While n <= 5:
    print('*'*n)
    n = n + 1

print('*' * n)

While n > 0:
    n = n - 1
    print('*'*n)
```

```
*
* *
* * *
* * * *
* * * * *
```

```
* * * * * *
```

```
* * * * *
* * * *
* * *
* *
*
```

What will n be after each while loop?

5

BREAK OUT!

Use the Break Statement to End Any Loop

```python
total = 0
answer = 'y'

while answer == 'y':
    total += int(input('Enter a number (1-10)'))

    if total >= 21:
        break

    answer = input('Get another number?')

print('Total is ',total)
```

ITERATION USING FOR LOOP

- In this section, you'll explore **for** loops in Python.

- First, let's have a look at the very useful **range** function.

THE RANGE FUNCTION

Generate a Sequence of Numbers

```
range(5)          0,1,2,3,4

range(1,5)        1,2,3,4

range(5,0,-1)     5,4,3,2,1
```

ITERATION USING FOR LOOPS

```python
for x in range(5):
    print(x, "Hello World")
```

range(5) means
All the numbers
from 0 to 4

```
0  Hello World
1  Hello World
2  Hello World
3  Hello World
4  Hello World
```

FOR LOOPS USING RANGE

```
for x in range(2,5):
    print(x, "Hello World")
```
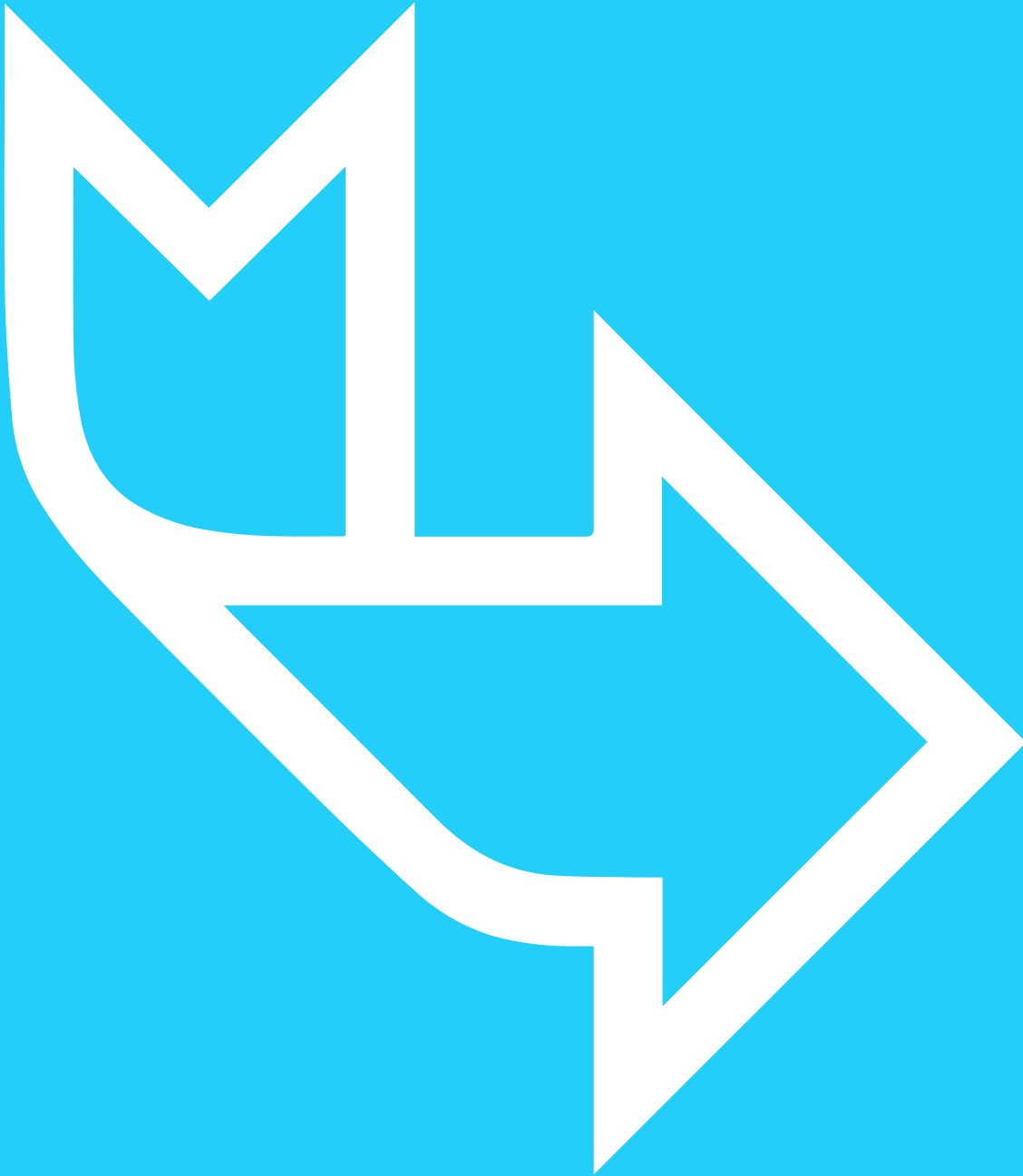
All integer numbers from 2 to 4

```
2  Hello World
3  Hello World
4  Hello World
```

SUMMARY

In this chapter, you learned about:

- **Using iteration (loops) in Python**
  - while
  - for
  - break
- **Using the range function**

Further Reading

→ https://www.python.org/