Python Basic 03

Control Flow and Iteration

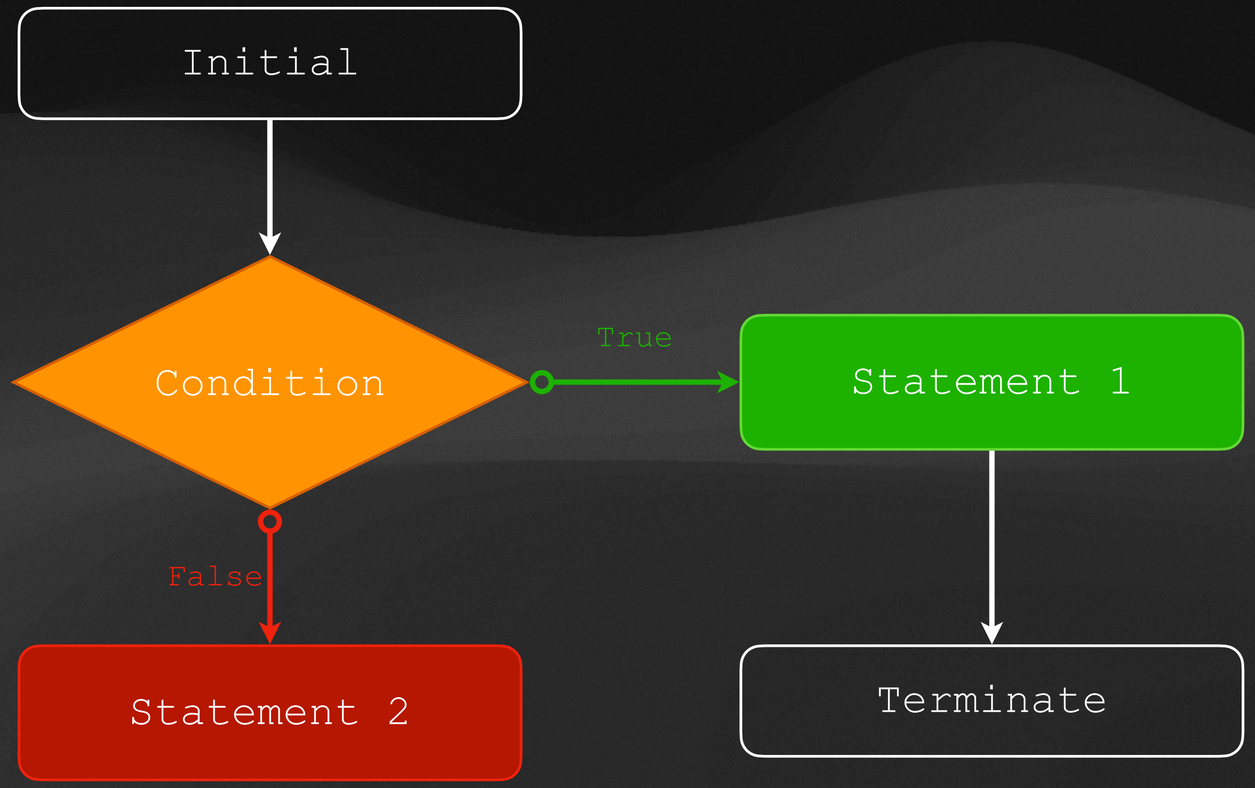
Carlos 2024 Fall

Control Flow

If else statement

```
if condition:
    Statement1
else:
    Statement2
```

```
if condition1:
    Statement1
elif condition2:
    Statement2
else:
    Statement3
```



Control Flow

If else statement

```python
if eval(input('Input your age: ')) >= 20:
    print('Is adult!')
else:
    print('Is not adult!')
```

ex03_if_else_statement.py

```
(.venv) kaiyang@Kais-MacBook-Pro Unit3 % python ex03_if_else_statement.py
Input your age: 25
Is adult!
```

ex03_if_else_statement.py output

Exercise 3-1

- Write a program that can input a score (range 0 ~ 100) and give a grade according to this table

```
(.venv) kaiyang@Kais-MacBook-Pro Assignment
Input a score: 101
Out of range
(.venv) kaiyang@Kais-MacBook-Pro Assignment
Input a score: 89
Grade B+
```

Sample output

Grade	Score range
A+	95 ⬆
A	90 - 94
B+	85 - 89
B	80 - 84
C	Otherwise

What is iteration?

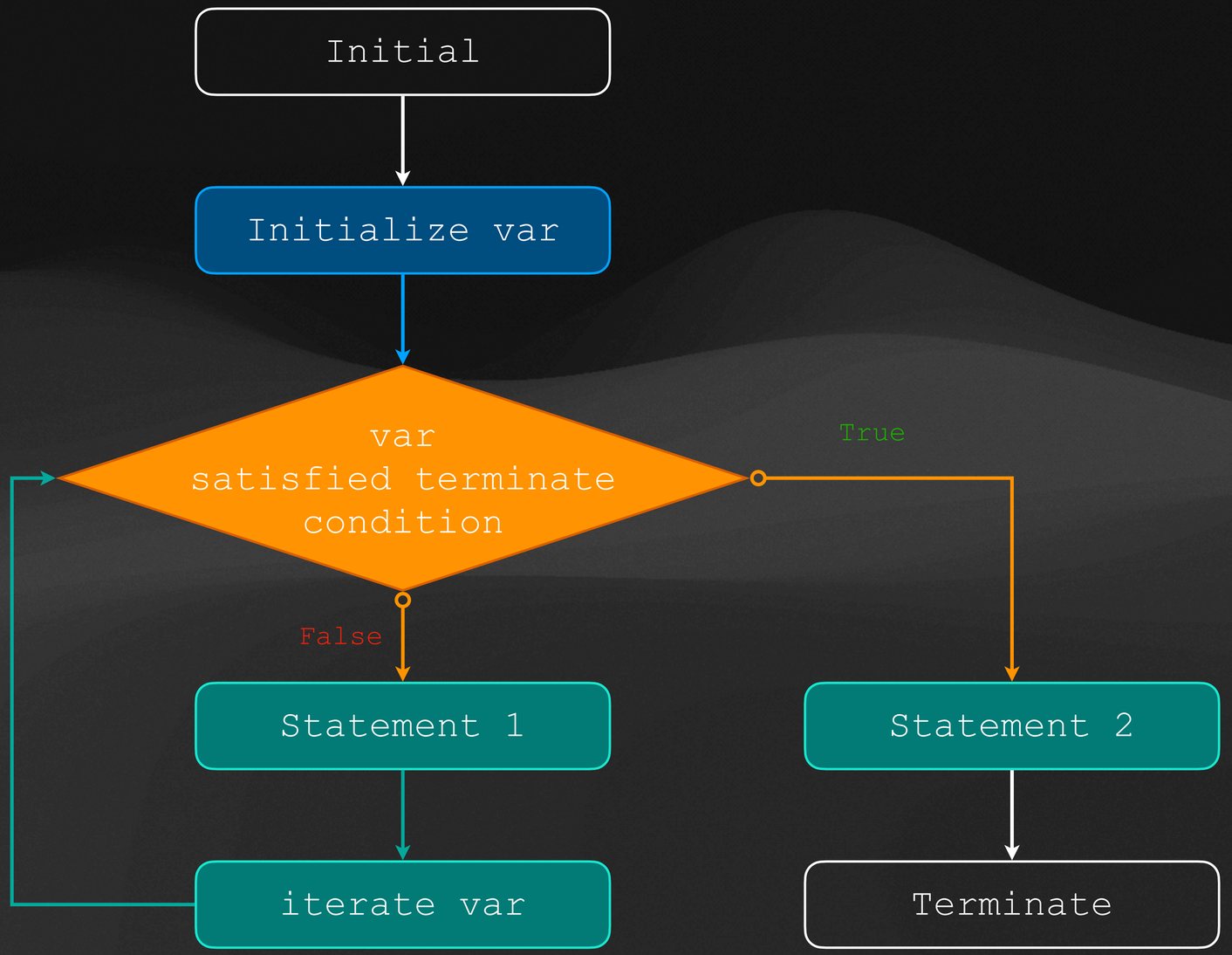
An example

```
(.venv) kaiyang@Kais-MacBook-Pro Class_Example % python3 test.py
Hello!
Hello!
Hello!
Hello!
Hello!
```

What is iteration?

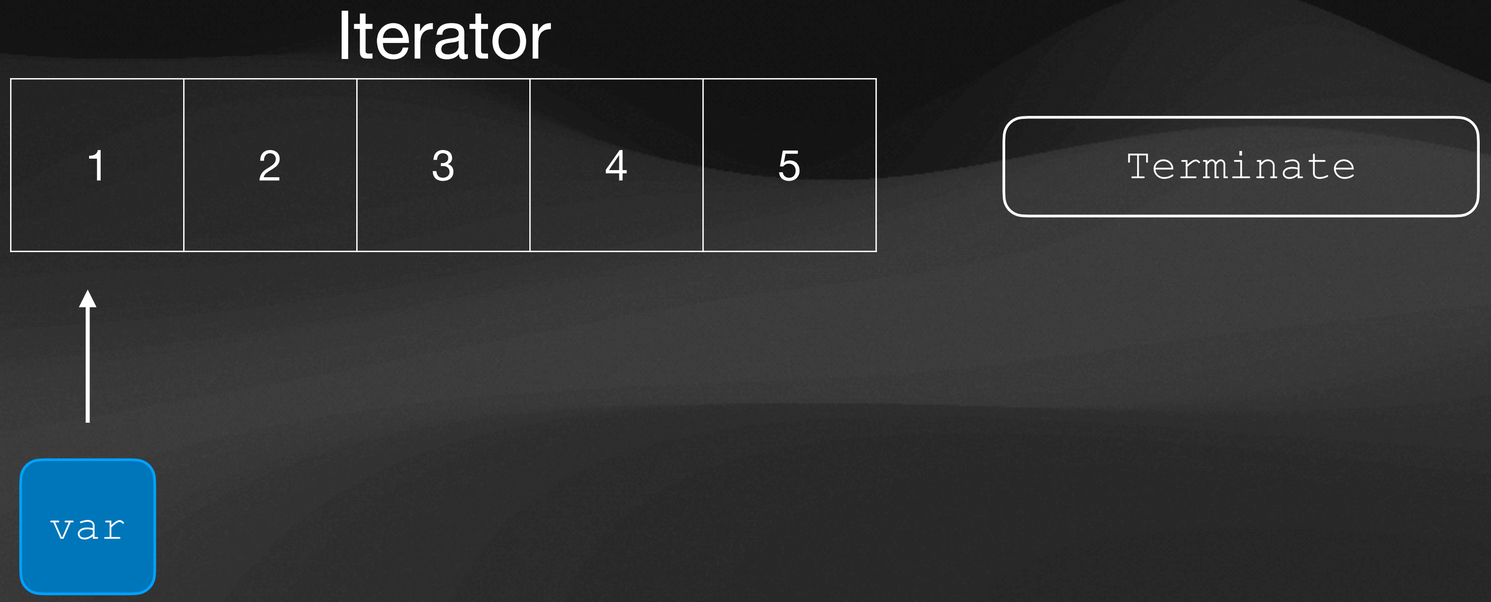
For Loop

```
For var in iterator:
    Statement1
[else:
    Statement2
]
```



What is iteration?

For Loop



Iteration

Iterator: Range(start, end, [step])

```
range(start, end, [step=1])
```

$$\longrightarrow \quad start,\ start + 1 \cdot step,\ \ldots,\ until\ start + i \cdot step > end$$

```
range(0, 5)
```

$$\longrightarrow \quad 0,\ 1,\ 2,\ 3,\ 4$$

Iteration

Iterator: Range(start, end, [step])

```python
for i in range(0, 5):
    print(i)
```

ex03_forLoop.py

```
(.venv) kaiyang@Kais-MacBook-Pro Unit3
0
1
2
3
4
```

ex03_forLoop.py output

```python
for i in range(0, 5, 2):
    print(i)
```

ex03_forLoop2.py

```
(.venv) kaiyang@Kais-MacBook-Pro Unit3
0
2
4
```

ex03_forLoop2.py output

Iteration

Iterator: List

```python
index = [0, 2, 4, 5, 7]

for i in index:
    print(i)
```

ex03_forLoop3.py

```
(.venv) kaiyang@Kais-MacBook-Pro Unit3
0
2
4
5
7
```

ex03_forLoop3.py output

Exercise 3-2

- Using Exercise 3-1’s table
- Ask user how many student’s score need to be mark
- Iteratively input a score and output the grade

```
(.venv) kaiyang@Kais-MacBook-Pro Assignment
How many student's score need to be mark? 3
Input a score: 55
Grade C
Input a score: 99
Grade A+
Input a score: 10
Grade C
```

Sample output