LESSON 4

main.py

```
[n*n for n in range(10)
 if n % 2 == 0]
```

Py

if · for · [x for x]

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PYTHON SCRIPTING & OOP

LESSON 4

Conditions, Loops and Comprehensions

if/elif/else, for, while, range, enumerate, zip and list comprehensions

if, elif and else

grade.py

```
score = 85
if not 0 <= score <= 100:
    print("invalid")
elif score >= 90:
    grade = "A"
elif score >= 75:
    grade = "B"
else:
    grade = "C"
```

- Python uses if, elif and else, each ending with a colon and an indented block. Compare with …
- Python can chain comparisons like zero less than score less than or equal to one hundred, …

01

for Loops, range and enumerate

loops.py

```
for city in ["Kabul", "Herat"]:
    print(city)
for i in range(1, 6):            # 1 2 3 4 5
    print(i * i)
for n, name in enumerate(["Mariam", "Ahmad"], start=1):
    print(n, name)
for name, score in zip(names, scores): print(name, score)
```

- A Python for loop walks directly over any collection: a list, a string, a file, or a …
- range makes number sequences, enumerate adds a counter, and zip walks two lists side by side.

02

while, break and continue

ask.py

```
while True:
    text = input("Enter a score (q to quit): ")
    if text == "q":
        break
    if not text.isdigit():
        print("numbers only")
        continue
    print("saved", int(text))
```

- while repeats as long as a condition is true. break leaves the loop and continue skips to …
- A while True loop with a break is a common pattern for menus and for asking until the input …

03

List Comprehensions

loop

```
squares = []
for n in range(10):
    if n % 2 == 0: squares.append(n*n)
```

comprehension

```
squares = [n*n for n in range(10)
           if n % 2 == 0]
# [0, 4, 16, 36, 64]
```

- A comprehension builds a list in one line: square brackets, an expression, for, and an …
- The same idea makes dictionaries and sets. Keep them short; if it gets complicated, write a …

04

match-case

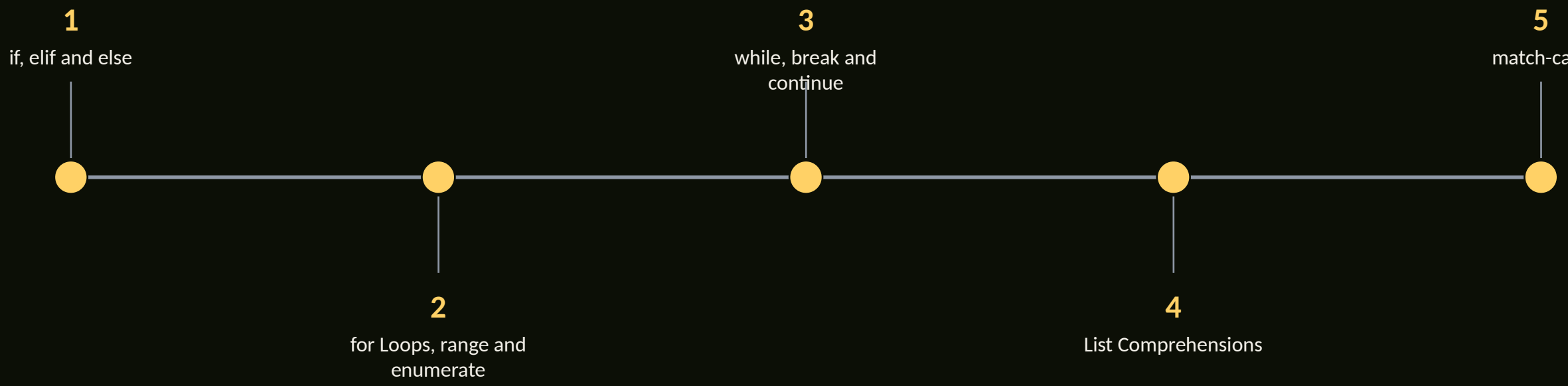
commands.py

```
match command.split():
    case ["start"]:
        print("starting")
    case ["copy", src, dst]:
        print(f"copy {src} -> {dst}")
    case _:
        print("unknown command")
```

- Since Python 3.10, match and case compare a value against patterns, like switch in other …
- It can even match the shape of data, such as a list with two items or a dictionary with …

05

Lesson Map


1
if, elif and else
2
for Loops, range and enumerate
3
while, break and continue
4
List Comprehensions
5
match-case

Sources and Further Reading

grade.py

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PYTHON SCRIPTING & OOP · 4

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Thank you for watching

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