ChatGPT

Intro to Python - Notes

What is Python?

- High-level, interpreted programming language
- Emphasises readability with a simple syntax
- Dynamically typed (no need to declare variable types)
- Popular for web dev, data science, automation, AI/ML, scripting, etc.

Basic Syntax

Print Statement

```
print("Hello, World!")
```

Comments

```
# This is a single-line comment
"""
This is a
multi-line comment
"""
```

📦 Variables

- No need to declare data type
- Created when you assign a value

```
name = "Aadit"
age = 27
height = 5.9
is_coder = True
```

Data Types

Type	Example
int	`age = 27`
float	`pi = 3.14`
str	`name = "Tania"`
bool	`is_alive = True`
list	`[1, 2, 3]`
tuple	`(1, 2, 3)`
dict	`{"key": "value"}`
set	`{1, 2, 3}`

Use `type()` to check:

```
print(type(name))  # <class 'str'>
```

Operators

Operator	Use	Example
`+ - * /`	Arithmetic	`3 + 4`
`// % **`	Floor, Mod, Power	`10 // 3`
`== !=`	Comparison	`x == y`
`< > <= >=`	Relational	`a > b`
`and or not`	Logical	`a and b`

Control Flow

- `if`, `elif`, `else` for conditions

```
if age > 18:
    print("Adult")
elif age == 18:
    print("Just turned 18")
```

```
else:
    print("Minor")
```

- `for` and `while` loops (see loops note)

Functions

```
def greet(name):
    return f"Hello, {name}"

print(greet("Aadit"))
```

- Use `def` keyword
- Parameters optional
- `return` is used to give back output

Type Conversion

```
age = "25"
age_int = int(age)  # Now it's an integer
```

Functions: `int()`, `float()`, `str()`, `bool()`

⚠ Common Errors

Error	Cause
`SyntaxError`	Bad indentation, missing colon
`NameError`	Variable not defined
`TypeError`	Invalid operation for data type
`ValueError`	Failed type conversion

Best Practices

- Use descriptive variable names
- Follow indentation (4 spaces)
- Use comments to explain logic
- Avoid global variables when possible