🐍 Python Basics (Interview Notes)

# 1. What is Python?

- High-level, interpreted, general-purpose programming language.  
- Easy syntax, dynamically typed, portable, huge libraries.

# 2. Python Keywords

- Reserved words with special meaning.  
- Examples: if, else, for, while, def, class, import, True, False, None.  
- Can’t be used as variable names.

# 3. Variables in Python

- Used to store data values.  
- No explicit type declaration required (dynamic typing).

Example:

x = 10 # integer  
y = "Hello" # string  
z = 3.14 # float

- Rules for variable naming:  
 \* Must start with a letter or underscore (\_).  
 \* Can contain letters, digits, underscores.  
 \* Case-sensitive (age, Age, AGE are different).

# 4. Data Types

- Numeric: int, float, complex  
- Sequence: str, list, tuple  
- Mapping: dict  
- Set types: set, frozenset  
- Boolean: True, False  
- NoneType: None

Example:  
a = 10 # int  
b = 10.5 # float  
c = "Python" # string  
d = [1,2,3] # list  
e = (4,5,6) # tuple  
f = {1:"one", 2:"two"} # dict  
g = {1,2,3} # set

# 5. Input & Output

- Input: input() → always returns a string.  
Example:  
name = input("Enter your name: ")  
age = int(input("Enter your age: ")) # typecast to int

- Output: print() function.  
Example:  
print("Hello", name)  
print(f"Your age is {age}") # f-string formatting

# 6. Operators

- Arithmetic: +, -, \*, /, //, %, \*\*  
- Comparison: ==, !=, >, <, >=, <=  
- Logical: and, or, not  
- Assignment: =, +=, -=, \*=, /=  
- Membership: in, not in  
- Identity: is, is not

Example:  
x, y = 10, 3  
print(x // y) # Floor division → 3  
print(x \*\* y) # Power → 1000

# 7. Indentation

- Python uses indentation (spaces/tabs) to define blocks of code.  
- No { } like C/Java.  
Example:  
if True:  
 print("Indented block")

# 8. Conditional Statements

if statement:  
num = 10  
if num > 0:  
 print("Positive")

if-else:  
num = -5  
if num >= 0:  
 print("Positive")  
else:  
 print("Negative")

if-elif-else:  
marks = 85  
if marks >= 90:  
 print("Grade A")  
elif marks >= 75:  
 print("Grade B")  
elif marks >= 50:  
 print("Grade C")  
else:  
 print("Fail")

# Quick Tips for Interviews

- Python variables don’t need type declaration → dynamic typing.  
- Indentation is mandatory (usually 4 spaces).  
- input() always gives string → must typecast when needed.  
- if-elif-else ladder helps avoid multiple if checks.