Python Mock Interview Summary: All Topics

## 📌 Python Data Types Summary

- \*\*String\*\*: Text data (e.g., `'hello'`)  
- \*\*int\*\*: Whole numbers (e.g., `10`)  
- \*\*float\*\*: Decimal numbers (e.g., `3.14`)  
- \*\*bool\*\*: Boolean values (`True` / `False`)  
- \*\*list\*\*: Mutable, ordered, allows duplicates  
- \*\*tuple\*\*: Immutable, ordered, allows duplicates  
- \*\*dict\*\*: Key-value pairs, mutable, no duplicate keys  
- \*\*set\*\*: Unordered, mutable, no duplicates

## 📌 List vs Tuple vs Dict vs Set

- \*\*List\*\*: Ordered, mutable, allows duplicates  
- \*\*Tuple\*\*: Ordered, immutable, allows duplicates  
- \*\*Dict\*\*: Unordered (as of Python 3.6+, insertion ordered), key-value, mutable  
- \*\*Set\*\*: Unordered, mutable, no duplicates

## 📌 Type Casting

- Used to convert between data types using `int()`, `str()`, `float()`, etc.  
- Example: `int('10')` → `10`, `str(100)` → `'100'`

## 📌 Comparison and Identity Operators

- `==` → compares values  
- `is` → compares memory location (object identity)

## 📌 Logical Operators

- `and`, `or`, `not` used to combine or invert conditions.

## 📌 Control Flow: If-Else

- Used to control the execution based on conditions.  
- Syntax:  
```python  
if condition:  
 # code  
else:  
 # code  
```

## 📌 Loops: for vs while

- \*\*for loop\*\*: Iterates over a sequence.  
- \*\*while loop\*\*: Runs as long as the condition is `True`.

## 📌 Functions and Arguments

- `def` keyword used to define a function.  
- Accepts parameters and may return a value using `return`.  
- Default arguments can be used: `def greet(name='Guest'):`

## 📌 Return Statement

- Used to return values from a function.  
- Example:  
```python  
def square(x):  
 return x \* x  
```

## 📌 Break and Continue

- `break`: Exit the loop.  
- `continue`: Skip current iteration and go to next.

## 📌 Global vs Local Variables

- \*\*Global\*\*: Declared outside functions, accessible everywhere.  
- \*\*Local\*\*: Declared inside a function, accessible only inside it.  
- Use `global` keyword to modify global variable inside a function.

## 📌 List Comprehension

- A concise way to create lists.  
- Syntax: `[expression for item in iterable if condition]`  
- Example: `[x for x in range(10) if x % 2 == 0]`

## 📌 FizzBuzz Function Example

```python  
def fizz\_buzz(number):  
 if number % 3 == 0 and number % 5 == 0:  
 return 'FizzBuzz'  
 elif number % 3 == 0:  
 return 'Fizz'  
 elif number % 5 == 0:  
 return 'Buzz'  
 else:  
 return number  
```

## 📌 File Handling Summary

- `open(filename, mode)` opens a file.  
- Modes: `'r'`, `'w'`, `'a'`, `'x'`, `'b'`, `'t'`  
- `read()`, `readline()`, `readlines()` used to read content  
- `write()` adds content to file  
- `seek(position)` moves file pointer  
- `with open()` ensures file closes automatically  
- `os.path.exists()` or `pathlib.Path().exists()` checks file existence

## 📌 File Write + Read Example

```python  
with open("sample.txt", "w") as f:  
 f.write("Hello, Python!")  
  
with open("sample.txt", "r") as f:  
 print(f.read())  
```

## 🌟 Overall Performance Review

Rating: ⭐️⭐️⭐️⭐️☆ (4/5)  
  
✔️ Strengths:  
- Strong grasp of foundational topics like data types, control flow, and file handling.  
- Good participation and willingness to learn.  
  
📈 Areas for Improvement:  
- Clarify minor misunderstandings (e.g., `'a'` mode behavior, file pointer usage).  
- Practice writing complete code snippets with correct syntax.  
  
📝 Recommendation:  
Continue practicing short programs, especially in functions, OOP, and automation scripts to improve confidence and precision.