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Python Concepts: Brief Answers
1. What is Python, and why is it popular?
Python is a high-level, versatile programming language known for its simplicity
and readability. It is popular because of its wide range of applications (data
analysis, web development, AI), extensive libraries, and strong community
support.
2. What is an interpreter in Python?
An interpreter executes Python code line by line, converting it into
machine-readable format, which allows for easier debugging and platform
independence.
3. What are pre-defined keywords in Python?
Pre-defined keywords are reserved words in Python (e.g., if, else, True) that
have special meanings and cannot be used as variable names.
4. Can keywords be used as variable names?
No, Python keywords cannot be used as variable names because they serve
specific syntactical purposes in the language.
5. What is mutability in Python?
Mutability refers to an object's ability to change its state or contents after
creation. Mutable objects (like lists) can be modified, while immutable objects
(like tuples) cannot.
6. Why are lists mutable, but tuples are immutable?
Lists are mutable to allow dynamic changes (e.g., adding/removing elements),
making them versatile. Tuples are immutable to ensure data integrity and
optimize performance when the data shouldn't change.
7. What is the difference between '==' and 'is' operators in Python?
'==' checks for value equality (if two objects have the same value), while 'is'
checks for identity equality (if two objects refer to the same memory location).
8. What are logical operators in Python?
Logical operators (and, or, not) are used to combine or negate boolean
expressions, enabling complex conditional logic.
9. What is type casting in Python?
Type casting is converting one data type into another, e.g., int('123') converts a
string to an integer.
10. What is the difference between implicit and explicit type casting?
- Implicit: Python automatically converts data types (e.g., int to float during
division).
- Explicit: The programmer manually converts data types using functions like
int(), str().
11. What is the purpose of conditional statements in Python?

Conditional statements (if, elif, else) control the flow of execution by performing specific actions based on conditions.

12. How does the elif statement work?

The elif statement is used after an if to check multiple conditions sequentially. If one condition is true, the corresponding block executes, skipping the rest.

13. What is the difference between for and while loops?

- for: Iterates over a sequence (e.g., list, range) with a predefined number of iterations.
- while: Repeats a block of code as long as the condition remains true, useful for indefinite loops.

14. Describe a scenario where a while loop is more suitable than a for loop.

A while loop is ideal for user input validation, where the exact number of iterations isn't known, e.g., repeatedly asking for input until a valid response is provided.