Python Functions, Recursion, Files, and Modules - Exam Questions

Functions

1. Q: Define a function in Python. How is it different from calling a function?

A:

- Defining a function in Python involves using the def keyword to specify the function's name, parameters, and code block.

Example:

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

- Calling a function means executing it by using its name and providing required arguments.

Example:

```python
print(greet("Alice"))
```

2. Q: What is the purpose of the return statement in Python?

A: The return statement is used to send a value back to the caller from a function. If no return is specified, the function returns None by default.

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16. Q: Write a program using scipy to compute the integration of a mathematical function.

A:

```python
from scipy.integrate import quad


# Function to integrate
def f(x):
    return x ** 2


result, _ = quad(f, 0, 1)  # Integrate f(x) from 0 to 1
print(result)
```

Functions

1. Q: What are built-in functions in Python? Name five commonly used ones with examples.

   A: Built-in functions are functions provided by Python that don't require importing any module. Examples:

   - len(): Returns the length of an object.

     ```python
     print(len([1, 2, 3]))  # Output: 3
     ```

   - type(): Returns the type of an object.

     ```python
     print(type(5))  # Output: <class 'int'>
     ```

   - print(): Outputs data to the console.

   - input(): Takes input from the user.

   - sum(): Returns the sum of elements in an iterable.

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15. Q: How can you calculate the difference between two dates using the datetime module?

   A:

   ```python
   from datetime import date

   date1 = date(2023, 12, 1)
   date2 = date(2024, 12, 1)
   difference = date2 - date1
```

```
print(difference.days)  # Output: 366 (leap year)
```