Practice Questions for Students:
1. Write a simple algorithm for finding the maximum of three numbers using pseudo code.

Algorithm:
Input three numbers a, b and c.
Output: Display the maximum of the three numbers

```
Begin
  If a > b and a > c then
    Return a
  Else If b > a and b > c then
    Return b
  Else
    Return c
  End If
End
```

2. Compare and contrast two different programming languages, highlighting their strengths and weaknesses

Python:

Strengths:

- Easy to learn and use due to its simple syntax.
- Dynamic typing, which allows quick development.
- Extensive libraries and community support.
- Great for rapid prototyping, data analysis, web development, and automation.

Weaknesses:

- Slower execution compared to compiled languages (e.g., Java).
- Weak in mobile and game development.
- No Multithreading Support

Java:

Strengths:

- High performance due to Just-In-Time (JIT) compilation.
- Strong object-oriented features.
- Platform Independent i.e., Works on any computer or device because of the JVM (Java Virtual Machine).
- Large community and good support for web and enterprise applications.

Weaknesses:

- More complex syntax compared to Python.
- Slower than natively compiled languages (e.g., C++).
- Requires more memory and resources for applications.

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3. Explain the compilation process and how it differs from interpretation.

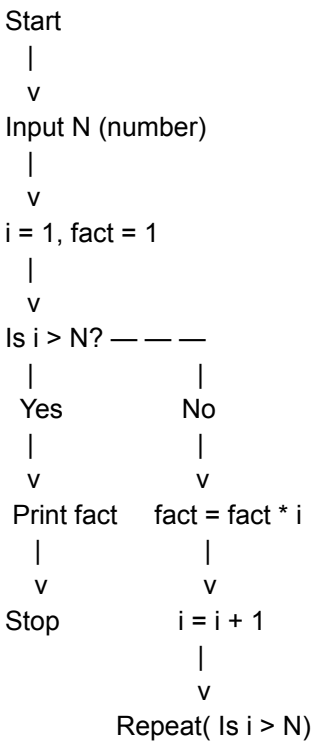
Compilation Process:

- The entire source code is translated into machine code by a compiler before execution.
- This results in an executable file, which can be run multiple times without recompilation.
- Example: C, C++, Java (bytecode compilation).

Interpretation:

- The source code is executed line by line by an interpreter without producing an executable file.
- Faster debugging, as the interpreter stops at errors during execution.
- Example: Python, JavaScript.

4. Create a flowchart for a program that calculates the factorial of a given number.



5. Write a function in your preferred programming language to calculate the area of a rectangle.

Python:

```
def area_of_rectangle(length, breadth):
    area = length * breadth
    return area

len = 12
bre = 14
result = area_of_rectangle(len, bre)
print(“Area of the rectangle is:”, result)
```