

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 built-in GUI library, which requires external libraries like Tkinter or PyQt.

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.

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

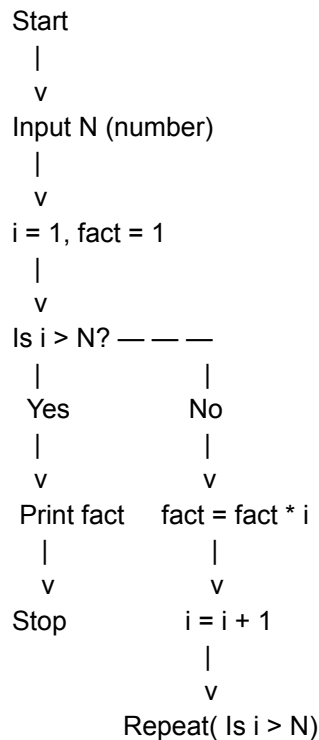
Compilation Process:

- 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)
```