Top Company Interview Questions – Functions (Python & Java)

Disclaimer: When compiling related questions from each lesson, note that not all of them will have answers explicitly mentioned in the material. For such questions, you are encouraged to use ChatGPT and other credible references to find and understand the answers.

1. List the three parts of a function signature and explain how Java (static typing) vs Python (dynamic typing) differ. (Wipro – 2023)

2. Describe how call stacks work during function calls and returns in Java and Python. (Amazon – 2024)

3. In Java, why must programs provide public static void main(String[] args) as the entry point? (Microsoft – 2023)

4. In Python, what is the purpose of if __name__ == "__main__": and when should you use it? (Wipro – 2024)

5. How are command-line arguments received in Java (String[] args) and in Python (sys.argv)? (TCS – 2023)

6. What is the difference between returning a value and printing a value in a function, and why does it matter? (TCS – 2024)

7. Differentiate between declaration and definition in Java methods, and how Python's def handles both. (Capgemini – 2023)

8. What are default and keyword arguments in Python, and what are their Java equivalents or workarounds? (Microsoft – 2024)

9. Why can deep call chains cause stack overflow, and how do JVM stack size and Python's recursion limit affect this? (Accenture – 2023)

10. In Java, why must programs provide public static void main(String[] args) as the entry point? (Microsoft – 2023).

11. Why must a function be defined before it is called in Python's interpreter model? (Accenture – 2023)

12. What is a standard library function, and why is Python's print considered flexible in terms of accepted argument types? (TCS – 2024)

13. Explain why an empty Python file still "runs" successfully and immediately exits. (Wipro – 2023)

14. When would you return multiple values from a Python function, and what are best practices for unpacking them? (Amazon – 2024)

15. Write a function to calculate the factorial of a number.

Example Input: 5 → *Output:* 120

16. Write a function that counts the number of vowels in a given string.
Example Input: "Algorithms" → *Output:* 3

17. Write a function that reverses a given number.
Example Input: 1234 → *Output:* 4321

18. Write a function that accepts a sentence and returns the number of words in it.
Example: "Learning Python is fun" → 4

19. Write a function that returns True if a number is an Armstrong number.
Example: 153 → $1^3 + 5^3 + 3^3 = 153$ → True
