

## Basic Questions (30 Questions)

1. Write a program to print "Hello, World!".
  2. Create a function to find the sum of two numbers.
  3. Write a Python program to check if a number is even or odd.
  4. Write a program to reverse a string.
  5. Create a function to calculate the factorial of a number.
  6. Write a Python program to find the largest of three numbers.
  7. Write a program to print the multiplication table of a given number.
  8. Write a Python script to find the square of a number.
  9. Write a Python program to check if a year is a leap year.
  10. Write a program to convert temperature from Celsius to Fahrenheit.
  11. Write a Python program to count the number of vowels in a string.
  12. Write a function to check if a string is a palindrome.
  13. Write a Python program to find the sum of digits of a number.
  14. Create a list and print the third element.
  15. Write a Python program to sort a list of numbers in ascending order.
  16. Write a Python program to find the largest number in a list.
  17. Write a program to generate the Fibonacci sequence up to  $n$  terms.
  18. Create a program to calculate the area of a rectangle.
  19. Write a Python program to find the smallest number in a list.
  20. Write a program to count the frequency of each character in a string.
  21. Write a Python script to merge two dictionaries.
  22. Write a Python program to print all prime numbers in a given range.
  23. Write a program to check if a number is prime or not.
  24. Write a Python program to find the GCD of two numbers.
  25. Write a program to find the LCM of two numbers.
  26. Create a Python script to replace all occurrences of a substring in a string.
  27. Write a Python program to check if a given string is a valid email address.
  28. Write a Python program to swap two numbers without using a temporary variable.
  29. Write a function to calculate the length of a string.
  30. Write a Python program to find the maximum and minimum in a list.
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## Intermediate Questions (40 Questions)

31. Write a Python program to remove duplicates from a list.
32. Create a Python script to reverse a list without using built-in functions.
33. Write a program to count the occurrences of a word in a string.
34. Write a Python program to find the second largest number in a list.
35. Create a Python script to check if a string contains only numbers.
36. Write a Python program to find the intersection of two lists.
37. Create a Python program to flatten a nested list.
38. Write a program to check if a string is a valid palindrome, ignoring spaces and case.
39. Write a Python program to generate all permutations of a string.

40. Create a Python program to find the union of two sets.
  41. Write a Python script to find all the unique elements in a list.
  42. Write a Python program to check if a given list is sorted.
  43. Write a Python function to find the sum of elements in a list recursively.
  44. Create a Python script to calculate the frequency of words in a file.
  45. Write a program to find the transpose of a matrix.
  46. Create a Python program to implement bubble sort.
  47. Write a Python program to implement binary search.
  48. Create a Python script to check if two strings are anagrams.
  49. Write a Python program to implement a stack using a list.
  50. Write a Python program to implement a queue using a list.
  51. Create a Python program to merge two sorted lists.
  52. Write a Python program to remove all occurrences of a specific element in a list.
  53. Write a Python script to calculate the sum of all even numbers in a list.
  54. Create a Python program to generate a random password.
  55. Write a program to check if a string starts with a specific substring.
  56. Write a Python program to calculate the dot product of two vectors.
  57. Create a Python program to find the first non-repeated character in a string.
  58. Write a Python script to convert a list of tuples into a dictionary.
  59. Write a Python program to find the longest common prefix of a list of strings.
  60. Write a program to calculate the factorial of a number using recursion.
  61. Create a Python script to check if a number is a perfect square.
  62. Write a Python program to implement insertion sort.
  63. Write a Python program to remove leading and trailing whitespaces from a string.
  64. Create a program to find all subsets of a set.
  65. Write a Python program to check if a number is a perfect number.
  66. Write a Python script to convert a decimal number to binary.
  67. Write a program to check if two lists are identical.
  68. Create a Python program to implement Caesar cipher encryption.
  69. Write a Python script to calculate the number of days between two dates.
  70. Write a program to find the longest word in a string.
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### **Advanced Questions (30 Questions)**

71. Write a Python program to implement merge sort.
72. Create a Python program to find the median of a list.
73. Write a Python program to solve the Tower of Hanoi problem.
74. Create a Python program to implement a binary tree and its traversals (inorder, preorder, postorder).
75. Write a Python program to implement quicksort.
76. Create a Python script to calculate the determinant of a matrix.
77. Write a Python program to implement a priority queue.
78. Create a program to solve the N-Queens problem.
79. Write a Python program to find the shortest path in a graph using Dijkstra's algorithm.

80. Create a Python program to check if a graph is bipartite.
  81. Write a Python program to calculate the sum of all nodes in a binary tree.
  82. Create a Python script to generate a histogram from a dataset.
  83. Write a Python program to find the connected components in a graph.
  84. Create a program to implement the Knapsack problem using dynamic programming.
  85. Write a Python program to check if a string matches a given regular expression.
  86. Write a Python program to implement the Rabin-Karp string matching algorithm.
  87. Create a Python program to solve the Sudoku puzzle.
  88. Write a Python script to evaluate a mathematical expression given as a string.
  89. Create a program to implement the Floyd-Warshall algorithm for all-pairs shortest paths.
  90. Write a Python program to solve a system of linear equations.
  91. Create a Python program to implement a hash map.
  92. Write a Python program to find the convex hull of a set of points.
  93. Create a program to generate all possible combinations of k elements from a list.
  94. Write a Python program to implement the A\* search algorithm.
  95. Create a Python script to solve the Traveling Salesman Problem (TSP).
  96. Write a Python program to implement an LRU cache.
  97. Create a Python program to simulate a producer-consumer problem.
  98. Write a Python program to implement a trie (prefix tree).
  99. Create a Python script to implement a graph coloring algorithm.
  100. Write a Python program to create a chatbot using NLP libraries.
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