

# Programming problems

This page gives a list of [programming](#) problems. These are useful for anyone who wants to learn programming quickly. Each problem has a problem statement and the required output along with multiple solutions (including flawed and ill-performing solutions).

1. Hello world - Write a program to display "Hello world"
2. Addition of 2 numbers - Write a program to add two numbers
3. Greatest of 3 numbers - Find the greatest of three numbers
4. Greatest of N numbers - Find the greatest of N numbers where N is any arbitrary natural number
5. Factorial or Product of N numbers - Given N as input find N!  
Example: N = 4; output is 24 because  $1 \times 2 \times 3 \times 4 = 24$
6. Average of N numbers - Find the average of N numbers
7. Generate prime numbers - Write a program to generate N prime numbers
8. Prime or not - Determine whether given number N is prime or not
9. Generate Fibonacci series - Write a program to generate the Fibonacci series which goes like this 1, 1, 2, 3, 5, 8, 13, 21..
10. Factorization - Break down a number into its prime factors
11. Lowest common divisor - Write a program to determine the lowest common divisor for two numbers
12. Lowest common divisor for N numbers - Write a program to determine the lowest common divisor for N numbers
13. Highest common factor - Find the highest common factor for the two given numbers
14. Highest common factor for N numbers - Find the highest common factor for the N given numbers
15. Quadratic roots - Find the roots of a quadratic equation  $Ax^2 + Bx + C = 0$  given the coefficients A, B, C

16. Area and volume - Write a program to determine the areas and/or volumes of the following geometric entities

- i) Circle    ii) Square    iii) Rectangle    iv) Cuboid
- v) Sphere    vi) Cone    vii) Cylinder

17. Number Series generation –

Arithmetic

- 1, 2, 3, 4, ...
- 1, 3, 5, 7, 9, ...
- 2, 4, 6, 8, ...
- 10, 15, 20, 25 ...

Geometric

- 2, 4, 8, 16
- 10, 100, 1000, 10000, ...
- 3, 27, 243, ...

18. Evaluate  $\cos(x)$  ,  $\sin(x)$  - Write a program to determine the sine and cosine value of given input x.

19. Guess the number –

Ask the user to guess a number between 1 and 100.

Try to guess it using the following logic. Say user has chosen number 80

Prog: Is number 50? User: G (My number is greater than that)

Prog: Is number 75? User: G Prog: Is number 87? User: L (My number is lesser than that)

Prog: Is number 81? User: L (My number is lesser than that)

Prog: Is number 78? User: G

Prog: Is number 79? User: G

Prog: Is number 80? User: Y

20. Digits of a Number - Write a program to display the digits of a number.

Example: Input N is 4219 (say) Output should be 4, 2, 1, 9

21. Number from digits - Write a program to generate the number given the digits .

Example: The given digits are 4, 2, 1, 9 Output should be 4219

22. Reverse a number - Write a program to reverse a number.

Example: Output should be 9124 given 4219

23. Super-prime - Write a program to find whether N is a super-prime or not

Input: 7331 (is super prime) Input: 4550 (is not super prime)

Hint: 7331 is super-prime because, 7331, 733, 73 and 7 are primes

24. Armstrong number - Write a program to determine whether a number is Armstrong number or not

Hint: A number is Armstrong if the sum of cubes of its digits is equal to the number itself Input: 371 (is Armstrong) Input: 456 (is not Armstrong)

25. Generate list of random numbers - Write a program to use an inbuilt library function to generate a list of random numbers. Also try as an added exercise to write a pseudo-random number generator

26. Print ASCII table

27. Matrix addition

28. Matrix Multiplication

29. Palindrome

30. Printing practice (Stars and numbers)

31. String manipulation (String concatenation, sub string, remove spaces)

32. Search and replace in strings

33. Time and date display

34. Date difference

35. Eight queens solution checking

36. Eight queens recursive solution

37. Eight queens non-recursive solution

38. Permutations

39. Combinations
40. Anagram checking
41. Anagram generation
42. Number system conversion
43. Travelling salesman problem
44. Bin-Packing problem
45. Sort N numbers
46. Sort strings in array
47. Linear search
48. Binary search
49. Hashing
50. Indexing
51. Binary trees
52. B+ trees
53. Linked list
54. Telephone directory
55. Expression solving
56. Caesar encryption
57. XOR encryption
58. Random name generation
59. Copy and move files
60. List all directories using recursion and without
61. Spawn a shell process
62. Run two threads
63. Calculator
64. Stack
65. Queues
66. Curve fitting

67. Line fitting
68. Solution of Linear equations
69. Minimax search
70. Preprocessor for C
71. Expression evaluation
72. Sorting in Files
73. Leap year
74. Calendar generation
75. Arithmetic encoding
76. LZW text compression
77. RSA encryption
78. DES encryption
79. Polyalphabetic and Monoalphabetic encryption

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