

100+

CONSTRAINT

INTERVIEW QUESTIONS

CONSTRAINTS QUESTIONS

- Q1.** Write a constraint to generate the pattern 1221122112211.
- Q2.** Write a constraint for sorting elements in a dynamic array using constraints.
- Q3.** Write a constraint to print unique elements in a 2D array without using the "unique" keyword.
- Q4.** Write a constraint for payload generation, where the size is between 11 and 22, and each value is 2 greater than the previous.
- Q5.** Write a code to simulate cyclic randomization behavior without using the "randc" keyword.
- Q6.** Write a constraint such that a 4-bit variable is not the same as the last five occurrences.
- Q7.** Write a constraint for two random variables such that one variable does not match the other, and five bits are toggled.
- Q8.** Write a constraint such that the sum of any three consecutive elements in an array is even.
- Q9.** Write a constraint for a variable such that the number of ones depends on the value of another variable.
- Q10.** Write a constraint on a 16-bit random vector to generate alternating pairs of 0's and 1's.
- Q11.** Write a constraint to randomly generate unique prime numbers in an array between 1 and 200, with 7 in the number.
- Q12.** Write a constraint to generate a 32-bit number with exactly one bit high using `$onehot()`.
- Q13.** Write a constraint for a 16-bit variable such that no two consecutive ones are generated.
- Q14.** Write a constraint for a variable where the range 0–100 is 70% and 101–255 is 30%.
- Q15.** Write a constraint so that the elements in two queues are different.
- Q16.** Write a code to check whether the randomized number is an Armstrong number.
- Q17.** Write a constraint to generate the Fibonacci sequence.
- Q18.** Write a constraint to check whether the randomized number is a palindrome.
- Q19.** Write a constraint for a 2D dynamic array to print consecutive elements.
- Q20.** Write a code to generate unique elements in an array without using the "unique" keyword or constraints.
- Q21.** Write a constraint demonstrating the use of the "solve before" constraint.
- Q22.** Write a constraint to generate a 10-bit variable with alternating values (e.g., 1010101010).
- Q23.** Write a constraint to generate even numbers between 10 to 30 using a fixed-size array, dynamic array, and queue.
- Q24.** Write a constraint such that the array size is between 5 to 10, and the values are in ascending order.
- Q25.** Write a constraint to randomly generate 10 unique numbers between 99 and 100.
- Q26.** Write a constraint to generate consecutive and non-consecutive elements in a fixed-size array.
- Q27.** Write a constraint to generate a variable with 0–31 bits as 1 and 32–61 bits as 0.
- Q28.** Write a constraint to generate prime numbers between the range of 1 to 100.
- Q29.** Write a constraint to generate unique numbers in an array without using the "unique" keyword.
- Q30.** Write a constraint to generate an array with unique values and multiples of 3.

- Q31.** Write a constraint on a two-dimensional array to generate even numbers in the first 4 locations and odd numbers in the next 4 locations.
- Q32.** Write a program to randomize a 32-bit variable but only randomize the 12th bit.
- Q33.** Write a constraint such that even locations contain odd numbers and odd locations contain even numbers.
- Q34.** Write a constraint to generate the factorial of the first 5 even and odd numbers.
- Q35.** Write a constraint for a 32-bit random variable to have 12 number of 1's non-consecutively.
- Q36.** Write a constraint to generate a random even number between 50 and 100.
- Q37.** Write a constraint to generate random values 25, 27, 30, 36, 40, 45 without using "set membership."
- Q38.** Write a constraint to generate the pattern 0102030405.
- Q39.** Write a code to generate a random number between 1.35 and 2.57.
- Q40.** Write a constraint to generate the pattern 1122334455.
- Q41.** Write a constraint to generate the pattern 5 -10 15 -20 25 -30.
- Q42.** Write a constraint to generate the pattern 9 19 29 39 49 59 69 79.
- Q43.** Write a constraint to generate the pattern 1234554321.
- Q44.** Write a constraint to generate the pattern 0101010101.
- Q45.** Write a constraint to generate a 64-bit number where only the lower and upper 8 bits are random and the rest are zeros.
- Q46.** Write a constraint such that each element in a dynamic array is greater than the sum of all previous elements.
- Q47.** Write a constraint for a dynamic array where every element is a multiple of its index (starting from index 1).
- Q48.** Write a constraint for generating a Gray code sequence of 5 bits.
- Q49.** Write a constraint such that all elements in an array are powers of 2 and sorted in descending order.
- Q50.** Write a constraint for a 32-bit variable such that the number of trailing zeros is between 5 and 10.
- Q51.** Write a constraint to generate an array such that the sum of the first half is equal to the sum of the second half.
- Q52.** Write a constraint such that in an array of size 10, the difference between every two adjacent elements is 3.
- Q53.** Write a constraint to generate a 16-bit random variable such that the Hamming weight (number of 1's) is exactly 8.
- Q54.** Write a constraint to generate values for 3 variables a, b, c such that $a^2 + b^2 = c^2$ (Pythagorean triplets).
- Q55.** Write a constraint to generate a variable that is divisible by both 6 and 9 but not by 18.
- Q56.** Write a constraint such that all array elements are prime and in non-increasing order.
- Q57.** Write a constraint to generate a sequence alternating between a positive even number and a negative odd number.
- Q58.** Write a constraint for a 4x4 matrix where each row and column has unique values.
- Q59.** Write a constraint such that in a queue of size 10, the median value is always 50.
- Q60.** Write a constraint such that the binary representation of a number is palindromic (e.g.,

1001, 1110111).

- Q61.** Write a constraint such that an array represents a max-heap structure.
- Q62.** Write a constraint where a dynamic array's elements form an arithmetic progression.
- Q63.** Write a constraint such that the bitwise XOR of all elements in an array is zero.
- Q64.** Write a constraint to generate a 32-bit number with all even-numbered bits set to 1 and all odd-numbered bits set to 0.
- Q65.** Write a constraint such that all elements in a dynamic array are square numbers.
- Q66.** Write a constraint for a 32-bit variable where no two 1's are within 3 bits of each other.
- Q67.** Write a constraint where the sum of even-indexed elements equals the sum of odd-indexed elements.
- Q68.** Write a constraint to generate an array with a user-defined mean (average).
- Q69.** Write a constraint to generate numbers with binary weight (number of 1's) greater than 20.
- Q70.** Write a constraint where an array forms a geometric progression.
- Q71.** Write a constraint to generate two 16-bit numbers such that their bitwise AND is zero.
- Q72.** Write a constraint to ensure all digits of a randomized 3-digit number are unique.
- Q73.** Write a constraint to generate a number divisible by 11 but not by 5.
- Q74.** Write a constraint to create a Latin square ($n \times n$ grid with unique values in each row and column).
- Q75.** Write a constraint to randomize an array such that it is symmetric ($a[i] == a[n-1-i]$).
- Q76.** Write a constraint for a 64-bit variable where each byte has exactly 2 bits set.
- Q77.** Write a constraint such that one variable is a rotated version of another.
- Q78.** Write a constraint such that the difference between max and min of an array is less than 10.
- Q79.** Write a constraint to randomize a number that ends with the digit 7 and is a multiple of 9.
- Q80.** Write a constraint for a 2D array such that the sum of each row is a constant.
- Q81.** Write a constraint such that all elements in an array are in the Fibonacci series.
- Q82.** Write a constraint such that the product of any two adjacent elements is a prime number.
- Q83.** Write a constraint for a 4x4 matrix to have all row and column sums equal.
- Q84.** Write a constraint such that a number has alternating 2 bits set and 2 bits cleared.
- Q85.** Write a constraint for a dynamic array such that every third value is greater than 100.
- Q86.** Write a constraint where a variable's lower nibble is equal to its upper nibble.
- Q87.** Write a constraint such that a number is equal to the reverse of its bits.
- Q88.** Write a constraint to generate a 32-bit number with exactly 4 groups of consecutive 1's.
- Q89.** Write a constraint such that the LSB of each element in an array toggles compared to the previous.
- Q90.** Write a constraint to create a sequence that mimics a clock signal (e.g., 11001100...).
- Q91.** Write a constraint to randomize a floating point variable within a logarithmic range.
- Q92.** Write a constraint such that the binary representation has an equal number of 1's and 0's.
- Q93.** Write a constraint where each value in an array is equal to the difference between the next two values.
- Q94.** Write a constraint such that every prime index of an array holds a prime number.
- Q95.** Write a constraint to generate a byte with a specific Hamming distance from another byte.
- Q96.** Write a constraint such that an array's values form a sine wave pattern (increasing then decreasing).
- Q97.** Write a constraint where only alternate nibbles in a 32-bit number are randomized.
- Q98.** Write a constraint where the sum of array elements equals a given random constant.
- Q99.** Write a constraint such that a number has all odd bits set and even bits cleared.

Q100. Write a constraint to generate a random MAC address that conforms to unicast and globally unique rules.

