



**INTERVIEW
KICKSTART**

TECHN



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Must-Learn Topics for C

☐ Basic math

Relevant parts of discrete math pertaining to combinatorics

- ☐ Algebra (linear and quadratic equations, arithmetic, and geometry)
- ☐ Combinatorics
- ☐ Recursive mathematical functions
- ☐ Proofs by mathematical induction
- ☐ Decrease and conquer
- ☐ Asymptotic analysis

☐ Basic data structures

For storing a collection of “n” like items

- ☐ Arrays

Technical Interview Checklist

☐ Binary search variants

- ☐ Regular binary search
- ☐ Bisection
- ☐ Binary search for optimization

☐ Sorting algorithms

- ☐ [Quicksort](#)
- ☐ [Merge sort](#)
- ☐ [Heap sort](#)
- ☐ [Bubble sort](#)
- ☐ [Selection sort](#)
- ☐ [Insertion sort](#)
- ☐ [Counting sort](#)
- ☐ [Radix sort](#)
- ☐ [Bucket sort](#)
- ☐ Cycle sort

Technical Interview Checklist

☐ Generic decrease and conquer for array problems

☐ Prefix sum

☐ Sliding windows

☐ Fixed-length windows

☐ Variable-length windows

☐ Combinatorial enumeration

☐ Backtracking

☐ Tree traversal patterns

☐ [BFS](#)

☐ [DFS](#)

Technical Interview Checklist

☐ Greedy algorithms foundations with interval problems

☐ Advanced graphs

- ☐ Bridges and articulation points
- ☐ Strongly connected components (Tarjan, Kosaraju)
- ☐ Union-find foundations and coding pattern
- ☐ Eulerian path construction
- ☐ Combinatorial optimization on graphs
- ☐ Shortest-path problem
- ☐ Minimum spanning trees
- ☐ All-pairs shortest paths
- ☐ State-space tree
- ☐ Graph search

☐ Advanced trees

Must-Learn Topics for Systems Design Interview

☐ Basics of systems design

- ☐ Online Processing
- ☐ Batch Processing
- ☐ Stream Processing

☐ Basics of networking

- ☐ Network protocols
- ☐ Webserver
- ☐ Cryptographic hash functions

Technical Interview Checklist

☐ Measuring the performance of scalable system

☐ Performance metrics of a scalable system

☐ Correctness

☐ Availability

☐ Throughput

☐ Response time

☐ Service-level agreements

☐ Cache

☐ Reads and writes

☐ LRU cache

☐ Strategies

☐ Consistent hashing

☐ Storage and retrieval

Technical Interview Checklist

☐ Systems design case studies

- ☐ URL shortener
- ☐ Streaming services
- ☐ Chat messenger server
- ☐ Recommendation system
- ☐ Maps
- ☐ Search Engine
- ☐ Unique ID generator

☐ Object modeling

Not required for all companies

- ☐ Basics of UML
- ☐ Design patterns
 - ☐ Composite pattern
 - ☐ Decorator pattern
 - ☐ Facade pattern

Technical Interview Checklist



Concurrency

Not required for all companies

- ☐ Parallelism vs. concurrency
- ☐ Blocked vs. running
- ☐ Mutex
- ☐ Cross-process mutex
- ☐ Condition variable
- ☐ Semaphore
- ☐ Atomic operations
- ☐ Deadlock