

Q1 Write a C++ code for the series shown below as per the instructions in the table:

$$f[n] = \sum_{i=0}^n (n - i) * f[i] ; f[0] = 1$$

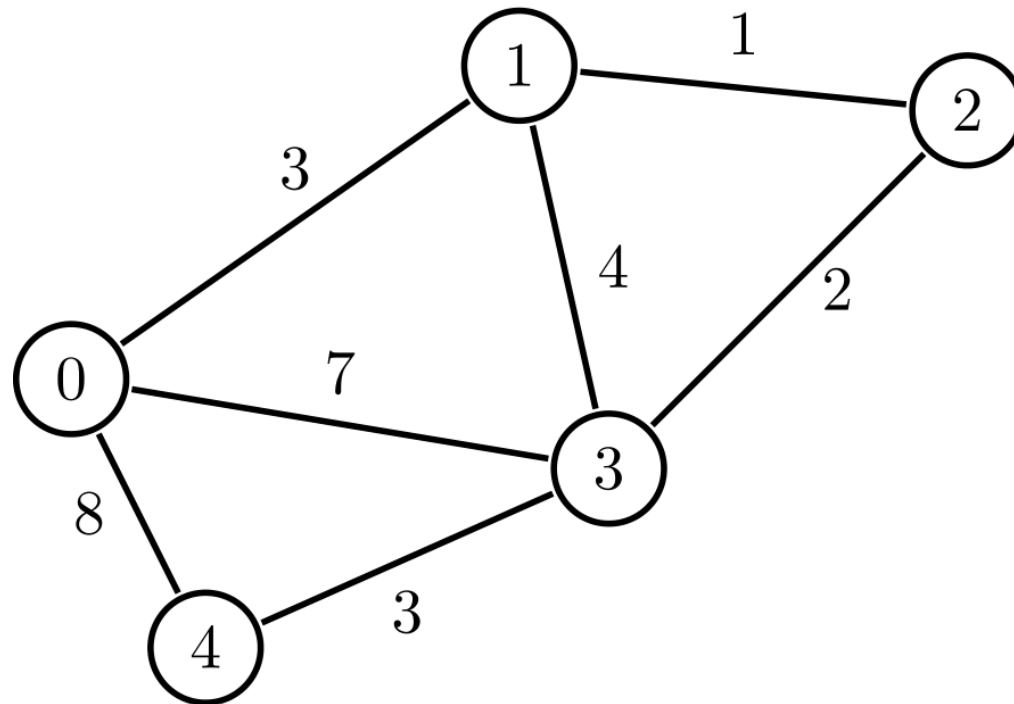
| | (Iterative) | (Recursive) | (Dynamic Programming) |
|-------------------------|-------------|-------------|-----------------------|
| Algorithm | | | |
| Flowchart | | | |
| Time complexity | | | |
| Space complexity | | | |
| C(++) implementation | | | |

Q2. Write a C(++) code for : (a) Linear search; (b) Binary search using divide and conquer algorithm. Find the time complexity in both the cases, i.e., (a) and (b) demonstrating the application of Master's theorem in part (b).

Q3. Write a C(++) code for finding x^n by using divide and conquer algorithm. Find the time complexity in both the cases, i.e., (a) and (b) demonstrating the application of Master's theorem in part (b).

Q4. Write a C(++) code for the classical jump-game problem using dynamic programming approach. Derive the time complexity as well as space complexity for the same.

Q5. For the tree shown below, derive the minimum spanning tree using Kruskal's algorithm, and write the C++ implementation for the same. Derive the time complexity as well as space complexity for the same.



Q6. For the tree shown below, derive the minimum spanning tree using Prim's algorithm, and write the C++ implementation for the same. Derive the time complexity as well as space complexity for the same.

