PVP Siddhartha Institute of Technology, Kanuru, Vijayawada-7

Academic Year: 2024-25   **Program: B.Tech (CSE)**
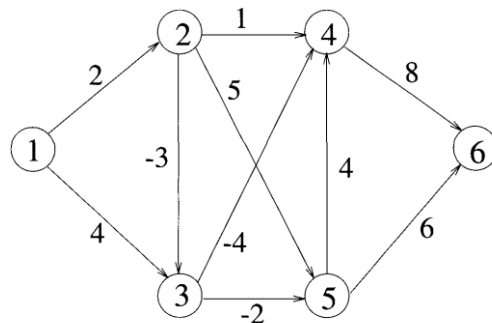
Subject: Advanced Data Structures & Algorithm Analysis(20CS3302)

Regulation: PVP23

Year/Semester: II Year I Semester (Section-1)

Assignment – 4

1. Show that the generating nth Fibonacci number using dynamic programming can reduce the time complexity from $O(2^n)$ to $O(n)$.

2. Apply Bellman-ford algorithm for the following graph from source vertex 1 to all the shortest paths.

3. Construct the optimal binary search tree for the following instance.
   Let the identifier set (a1, a2, a3, a4) = (cout, float, int, if, while) with p(1) =1/20, p(2) =1/5, p(3) =1/10, p(4)= 1/20, q(0) = 1/5, q(1)=1/10, q(2)=1/5, q(3)=1/20, q(4)=1/20. By constructing w(i,j) c(i,j), and r(i,j)

4. Find an optimal solution for the following 0/1 knapsack instance.

   n = 5 and knapsack capacity m = 6

Item	Weight	profit
1	3	25
2	2	20
3	1	15
4	4	40
5	5	50

5. **Apply Floyd warshall algorithm for the following graph.**
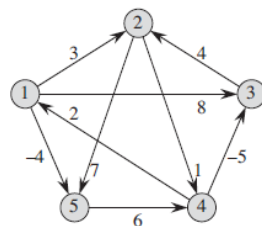
Dead line for submission of assignment -4 is **18-11-2024**