❖ Flatten Doubly Linked List:
- ▪ Explanation:
  The program flattens a multilevel doubly linked list by recursively traversing each node and its child nodes. For each node with a child, it flattens the child list and connects it to the current node, ensuring that all nodes are linked in a single-level structure. The process continues until all nodes across all levels are processed, returning the head of the newly flattened list.
- ▪ Time Complexity and Space Complexity:
  - ○ O(n+m)　　　　　O(1)

- ▪ Flowchart:

```
        [Start]
     |
      v
[Input head of multilevel doubly linked list]
     |
      v
[Is head null?] -- Yes --> [Return null]
     | No
      v
[Set current = head, tail = head]
     |
      v
[While current is not null]
     |
      v
[Does current have a child?] -- Yes -->
     |                         |
```

```
            |                                    v
            |                     [Flatten child list recursively]
            |                                    |
            |                                    v
            |                     [Connect current.next to child head]
            |                                    |
            |                                    v
            |                     [Update tail to last node of child list]
            |                                    |
            |                                    v
            |                     [Connect tail to next node]
            |                                    |
            |                                    v
            |                                    |
            |                                    |
            |--- No -------------------->|
            |                                    |
            |                                    v
            |                     [Update tail to current]
            |                                    |
            |                                    v
            |                     [Set current = current.next]
            |                                    |
            |                                    v
            |                     [End While Loop]
            |                                    |
            |                                    v
            |                     [Return head]
            |
            v
        [End]
```