Java Programming

Bauhaus-Universität Weimar

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Task 1
We want to create a double chained list. Create a generic class `DCList`. The nodes of the list should implement the following properties:

1. `public Node(... value)` A constructor initializing the data of the node
2. `public String toString(...)` Should print the value of the node
3. `public void setNextNode(...)` Sets the next node
4. `public void setPreviousNode(...)` Sets the previous node
5. `public Node... getNextNode()` Returns the next node
6. `public Node... getPreviousNode()` Returns the previous node
7. `public ... getValue()` Returns the value of the node

Furthermore, the following methods should be implemented directly in your `DCList`:

1. `public boolean isEmpty()` Checks if the List ist empty
2. `public void display()` Prints the complete list
3. `public void add(int position, ... value)` Adds the value at the corresponding position
4. `public void add(... value)` Appends the value to the list
5. `public void remove(... value)` Removes the first node containing the value
6. `public void removeFirst()` Removes the first node in the list
7. `public void removeLast()` Removes the last node in the list
8. `public void clear()` Removes all nodes
9. `public Node... getFirst()` Returns the first node in the list
10. `public Node... getLast()` Returns the last node in the list
11. `public Node... get(int position)` Returns the node at the corresponding position
12. `public int find(... value)` Returns the position of the node with the given value or returns -1 if the node is not in the list
13. `public boolean contains(... value)` Checks if the given value is in the list
14. `public int size()` Returns the number of nodes in the list