

```
public static String removeDoubleCharacters(String str) {  
    if (str.isEmpty()) {  
        return str;  
    }  
    StringBuilder result = new StringBuilder();  
    char prev = str.charAt(0);  
    result.append(prev);  
    for (int i = 1; i < str.length(); i++) {  
        char cur = str.charAt(i);  
        if (prev != cur) {  
            result.append(str.charAt(i));  
        }  
        prev = cur;  
    }  
    return result.toString();  
}
```

The diagram illustrates the flow of execution through the code blocks. Nodes are represented by colored circles: purple for the initial function call and empty check, red for the return statement, yellow for the StringBuilder initialization, orange for the character assignment and loop start, and light yellow for the loop body and return statement. Lines connect these nodes to show the sequence of execution, including jumps for the if-statement and the for-loop.