**DFA.java**

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8    9  10  11  12  13  14  15  16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31  32  33  34  35  36  37  38  39  40  41  42  43  44  45 | **import** **java.util.HashMap**;  **public** **class** **DFA** {  **private** **final** **int**[] terminalStates;  **private** **final** **int** startState;  **private** **final** HashMap<Character, Integer>[] transitions;  **public** **DFA**(**int** countOfStates, Transition[] transitions, **int** startState, **int**[] terminalStates) {  **this**.startState = startState;  **this**.terminalStates = terminalStates;  **this**.transitions = **new** HashMap[countOfStates];  **for** (**int** i = **0**; i < countOfStates; i++) {  **this**.transitions[i] = **new** HashMap<>();  }  **for** (Transition t : transitions) {  **this**.transitions[t.from()].putIfAbsent(t.input(), t.to());  }  }  **public** **boolean** **recognize**(String input) {  **int** curState = **this**.startState;  **for** (**char** curChar : input.toCharArray()) {  HashMap<Character, Integer> curTransition = transitions[curState];  **if** (curTransition.containsKey(curChar)) {  curState = curTransition.get(curChar);  } **else** {  **return** **false**;  }  }  // Is terminal state?  **for** (**int** tState : terminalStates) {  **if** (curState == tState) {  **return** **true**;  }  }  **return** **false**;  }  } |

**Transition.java**

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23 | **public** **class** **Transition** {  **private** **final** **int** fromState;  **private** **final** **char** input;  **private** **final** **int** toState;  **public** **Transition**(**int** fromState, **char** input, **int** toState) {  **this**.fromState = fromState;  **this**.input = input;  **this**.toState = toState;  }  **public** **int** **from**() {  **return** **this**.fromState;  }  **public** **int** **to**() {  **return** **this**.toState;  }  **public** **char** **input**() {  **return** **this**.input;  }  } |

**Main.java**

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19 | **public** **class** **Main** {  **public** **static** **void** **main**(String[] args) {  Transition[] transitions = {  **new** **Transition**(**0**, 'b', **1**),  **new** **Transition**(**1**, 'b', **2**),  **new** **Transition**(**2**, 'b', **3**),  **new** **Transition**(**1**, 'a', **0**),  **new** **Transition**(**3**, 'c', **4**)  };  DFA dfa = **new** DFA(**5**, transitions,**0**, **new** **int**[]{**3**, **4**});  System.out.println(dfa.recognize("bbbc"));  System.out.println(dfa.recognize("bababbbc"));  System.out.println(dfa.recognize("babbbbc"));  System.out.println(dfa.recognize("bbc"));  System.out.println(dfa.recognize("abbc"));  }  } |