

```

1  package Macroprocessor;
2
3  import java.io.*;
4  import java.util.*;
5
6  public class Pass2 {
7      private final Map<String, Integer> MNT = new HashMap<>();
8      private final List<String> MDT = new ArrayList<>();
9      private final List<String> intermediateCode = new ArrayList<>();
10     private final List<String> outputCode = new ArrayList<>();
11
12     public Pass2() {
13         // Simulating already available MNT, MDT, and intermediate code from Pass-I
14
15         // Macro Name Table: Macro name → MDT index
16         MNT.put("INCR", 0);
17
18         // Macro Definition Table
19         MDT.add("INCR &ARG");
20         MDT.add("ADD &ARG, =1");
21         MDT.add("MEND");
22
23         // Intermediate Code (no macro definitions)
24         intermediateCode.add("START");
25         intermediateCode.add("MOV A, B");
26         intermediateCode.add("INCR A");
27         intermediateCode.add("END");
28     }
29
30     public void expandMacros() {
31         for (String line : intermediateCode) {
32             String[] tokens = line.trim().split("\\s+");
33
34             if (tokens.length == 0) continue;
35
36             String macroName = tokens[0];
37
38             if (MNT.containsKey(macroName)) {
39                 int index = MNT.get(macroName);
40                 String actualArg = tokens.length > 1 ? tokens[1] : "";
41
42                 // Skip the macro header in MDT
43                 index++;
44
45                 while (!MDT.get(index).equalsIgnoreCase("MEND")) {
46                     String defLine = MDT.get(index);
47
48                     // Replace formal argument with actual argument
49                     String expandedLine = defLine.replace("&ARG", actualArg);

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50         outputCode.add(expandedLine);
51         index++;
52     }
53     } else {
54         outputCode.add(line);
55     }
56 }
57 }
58
59 public void displayOutput() {
60     System.out.println("≡≡≡ Final Output Code ≡≡≡");
61
62     try (BufferedWriter writer = new BufferedWriter(new
63 FileWriter("output.txt"))) {
64         for (String line : outputCode) {
65             System.out.println(line);           // Console output
66             writer.write(line + "\n");          // Write to output.txt
67         }
68         System.out.println("Output written to output.txt");
69     } catch (IOException e) {
70         System.out.println("Error writing to file: " + e.getMessage());
71     }
72 }
73
74 public static void main(String[] args) {
75     Pass2 pass2 = new Pass2();
76     pass2.expandMacros();
77     pass2.displayOutput();
78 }
```