# Pass 1

```java
import java.util.*;

import java.io.*;


class Pass1 {

    static String mnt[][] = new String[5][3]; // Assuming 5 macros in 1 program

    static String ala[][] = new String[10][2]; // Assuming 2 arguments in each macro

    static String mdt[][] = new String[20][1]; // Assuming 4 LOC for each macro

    static int mntc = 0, mdtc = 0, alac = 0;


    public static void main(String args[]) {

        pass1();

        System.out.println("Macro Name Table(MNT)");

        display(mnt, mntc, 3);

        System.out.println("Argument List Array(ALA) for Pass1");

        display(ala, alac, 2);

        System.out.println("Macro Definition Table(MDT)");

        display(mdt, mdtc, 1);

    }


    static void pass1() {

        int index = 0, i;

        String s, prev = "", substring;

        try {

            BufferedReader inp = new BufferedReader(new FileReader("input.txt"));

            while ((s = inp.readLine()) != null) {

                if (s.equalsIgnoreCase("MACRO")) {

                    prev = s;

                    for (; !(s = inp.readLine()).equalsIgnoreCase("MEND"); mdtc++, prev = s) {

                        if (prev.equalsIgnoreCase("MACRO")) {

                            StringTokenizer st = new StringTokenizer(s);
```

```java
                    String str[] = new String[st.countTokens()];

                    for (i = 0; i < str.length; i++)

                        str[i] = st.nextToken();

                    mnt[mntc][0] = (mntc + 1) + ""; // MNT formation

                    mnt[mntc][1] = str[0];

                    mnt[mntc++][2] = (++mdtc) + "";

                    st = new StringTokenizer(str[1], ","); // Tokenizing the arguments

                    String string[] = new String[st.countTokens()];

                    for (i = 0; i < string.length; i++) {

                        string[i] = st.nextToken();

                        ala[alac][0] = alac + ""; // ALA table formation

                        index = string[i].indexOf("=");

                        if (index != -1)

                            ala[alac++][1] = string[i].substring(0, index);

                        else

                            ala[alac++][1] = string[i];

                    }

                } else { // Automatically eliminates tagging of arguments in definition

                    index = s.indexOf("&");

                    substring = s.substring(index);

                    for (i = 0; i < alac; i++)

                        if (ala[i][1].equals(substring))

                            s = s.replaceAll(substring, "#" + ala[i][0]);

                }

                mdt[mdtc - 1][0] = s;

            }

            mdt[mdtc - 1][0] = s;

        }

    }

} catch (FileNotFoundException ex) {

    System.out.println("Unable to find file ");
```

```java
        } catch (IOException e) {
            e.printStackTrace();
        }
    }
    static void display(String a[][], int n, int m) {
        int i, j;
        for (i = 0; i < n; i++) {
            for (j = 0; j < m; j++)
                System.out.print(a[i][j] + " ");
            System.out.println();
        }
    }
}
```

## Output:

Macro Name Table(MNT)

1 INCR1 1

2 INCR2 5

Argument List Array(ALA) for Pass1

0 &FIRST

1 &SECOND

2 &ARG1

3 &ARG2

Macro Definition Table(MDT)

INCR1 &FIRST,&SECOND=DATA9

A 1,#0

L 2,#1

MEND

INCR2 &ARG1,&ARG2=DATA5

L 3,#2

ST 4,#3

MEND