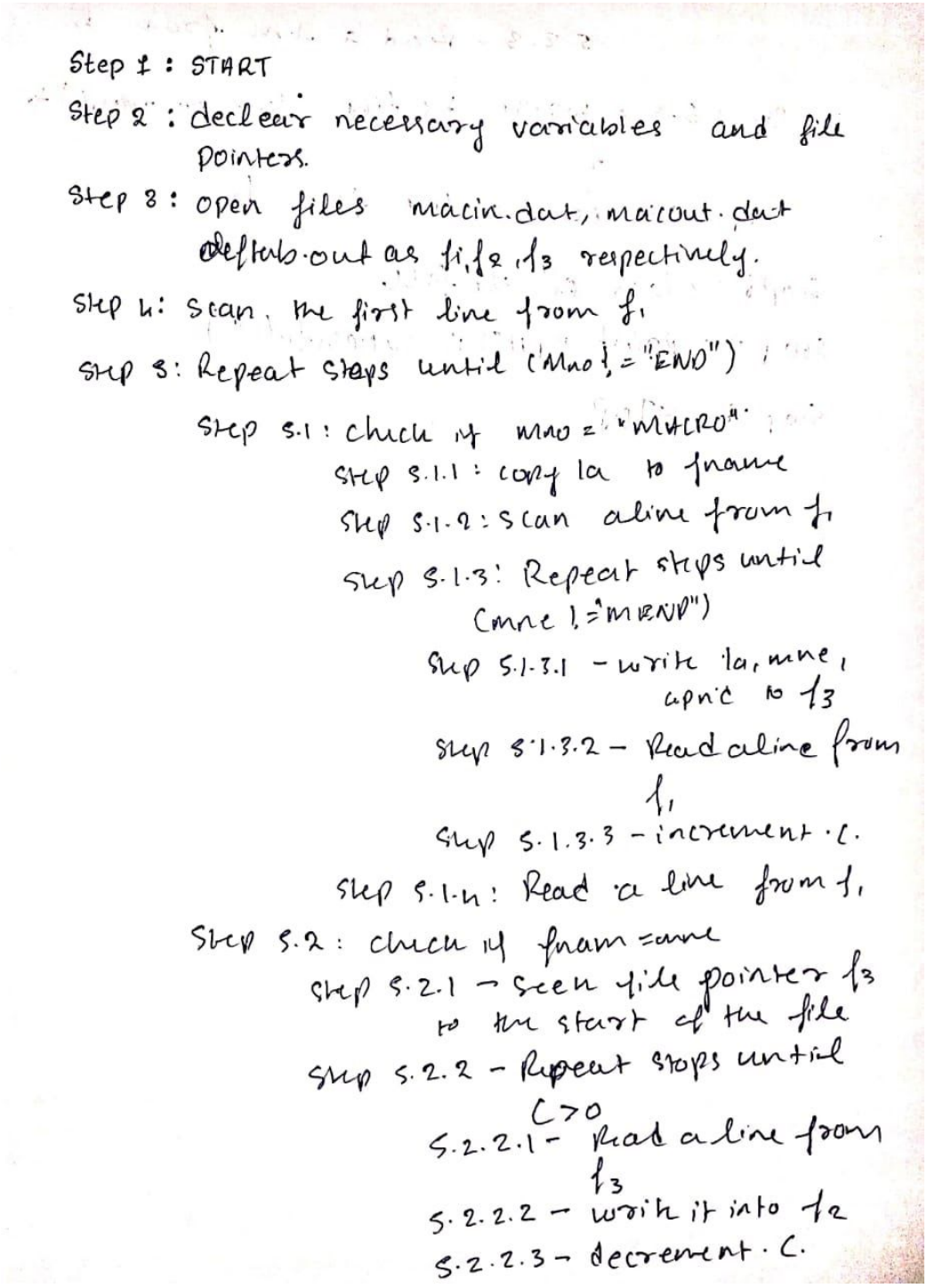
Experiment 10 **Surya Narayanan**

Two pass assembler microprocessor

s5 csb 48



Step 1 : START

Step 2 : declear necessary variables and file pointers.

Step 3 : open files macin.dat, macout.dat deftab.out as f_1, f_2, f_3 respectively.

Step 4: Scan the first line from f_1

Step 5: Repeat steps until (Mno != "END")

Step 5.1 : chuck if mno = "MACRO"

Step 5.1.1 : copy la to fname

Step 5.1.2 : scan a line from f_1

Step 5.1.3 : Repeat steps until (mne != "MEND")

Step 5.1.3.1 – write la, mne, apnic to f_3

Step 5.1.3.2 – Read a line from f_1

Step 5.1.3.3 – increment C.

Step 5.1.4 : Read a line from f_1

Step 5.2 : chuck if fnam = mne

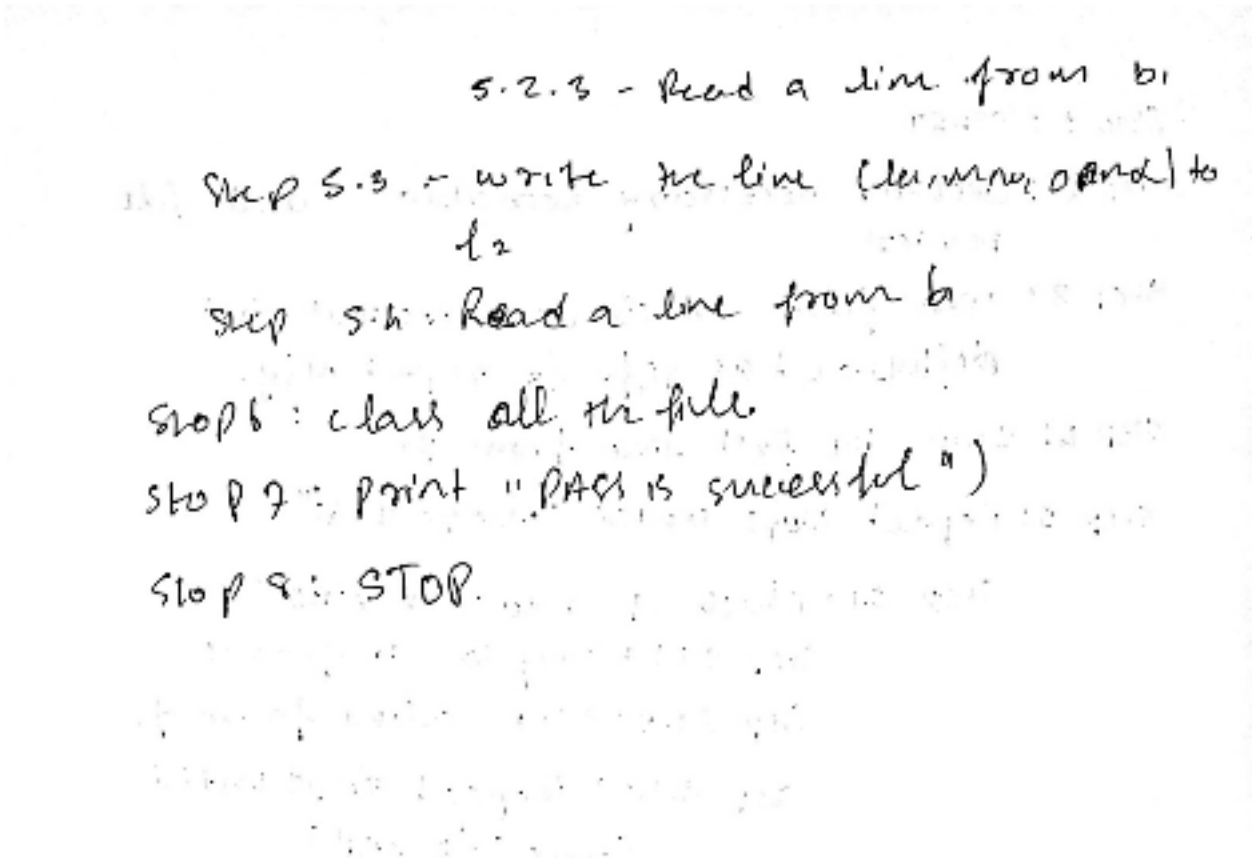
Step 5.2.1 – seek file pointer f_3 to the start of the file

Step 5.2.2 – Repeat steps until C > 0

5.2.2.1 – Read a line from f_3

5.2.2.2 – write it into f_2

5.2.2.3 – decrement C.

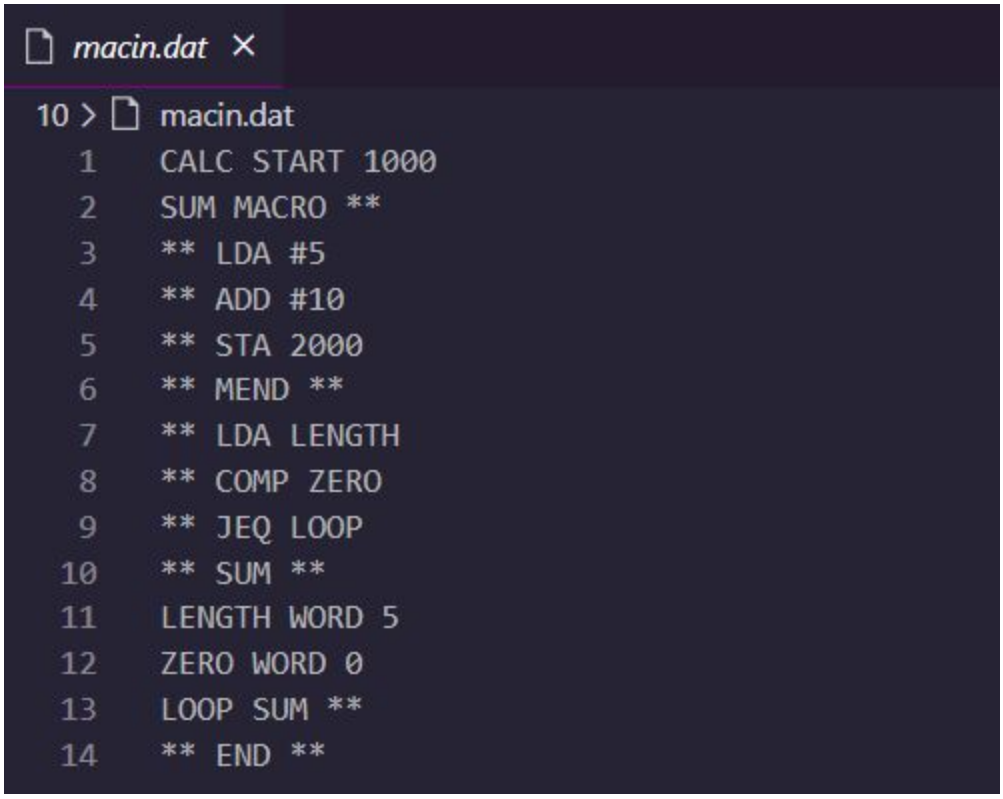


Program

```c
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
int main()
{
    FILE *f1, *f2, *f3;
    int c = 0;
    char mne[20], opnd[20], la[20], fname[10];
    f1 = fopen("macin.dat", "r");
    f2 = fopen("macout.dat", "w+");
    f3 = fopen("deftab.dat", "w+");
    fscanf(f1, "%s%s%s", la, mne, opnd);
    while (strcmp(mne, "END") != 0)
    {
        if (strcmp(mne, "MACRO") == 0)
        {
            strcpy(fname, la);
```

```
            fscanf(f1, "%s%s%s", la, mne, opnd);
            while (strcmp(mne, "MEND") != 0)
            {
                fprintf(f3, "%s\t%s\t%s\n", la, mne, opnd);
                fscanf(f1, "%s%s%s", la, mne, opnd);
                c++;
            }
            fscanf(f1, "%s%s%s", la, mne, opnd);
        }
        if (strcmp(fname, mne) == 0)
        {
            fseek(f3, 0, SEEK_SET);
            while (c > 0)
            {
                fscanf(f3, "%s%s%s", la, mne, opnd);
                fprintf(f2, "%s\t%s\t%s\n", la, mne, opnd);
                c--;
            }
            fscanf(f1, "%s%s%s", la, mne, opnd);
        }
        fprintf(f2, "%s\t%s\t%s\n", la, mne, opnd);
        fscanf(f1, "%s%s%s", la, mne, opnd);
    }
    fclose(f1);
    fclose(f2);
    fclose(f3);
    printf("PASS 1 is successful");
    return (0);
}
```

Input



```
macin.dat
10 > macin.dat
1    CALC START 1000
2    SUM MACRO **
3    ** LDA #5
4    ** ADD #10
5    ** STA 2000
6    ** MEND **
7    ** LDA LENGTH
8    ** COMP ZERO
9    ** JEQ LOOP
10   ** SUM **
11   LENGTH WORD 5
12   ZERO WORD 0
13   LOOP SUM **
14   ** END **
```

Output

```
macout.dat
10 > macout.dat
1    CALC    START   1000
2    **  LDA LENGTH
3    **  COMP    ZERO
4    **  JEQ LOOP
5    **  LDA #5
6    **  ADD #10
7    **  STA 2000
8    LENGTH  WORD    5
9    ZERO    WORD    0
10   **  END **
11
```

```
deftab.dat
10 > deftab.dat
1    **  LDA #5
2    **  ADD #10
3    **  STA 2000
4
```