Arab Academy for Science and Technology

Faculty of Engineering

الأكاديمية العربية للعلوم والتكنولوجيا والنقل البحري

Arab Academy for Science, Technology & Maritime Transport

Project Modi-SIC Report
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1.0 About Project

The project was generated by only one student using Python programming language for its flexibility and wide variety of functions, what makes it the best choice to work on such project.

The Modi-SIC project supports instructions of format one and format three either immediate or not. It helps the user recognize errors in the time of compilation specifying the type and the location of error and how to correct it.

Cases handled:

1. Any syntax errors by validating the program name length, the right syntax of START the size of the program.
2. Any syntax errors near end like its address not matching with START's.
3. The right syntax of BYTE and its values as well as WORD and its maximum and minimum size, also RESW and RESB.
4. Checking on used label's whether they are defined or not and checking for their repetition.
5. The program does not execute unless it is error free.
6. It ignores any operand given to a format-one instruction.
7. It gets rid of all unnecessary elements in the program text such as comments and line numbers.
8. Not only that but it may be more effective to try it to know other options.

2.0 Sample Input:

```
1   PROG1 START  2000
2                FLOAT
3                LDA GAMMA
4                STA INDEX
5                SIO
6          TIO
7   LOOP   LDX    INDEX
8                LDA    GAMMA
9                STA    ALPHA,X
10               LDA    INDEX
11               ADD    #3
12               STA    INDEX
13               COMP   K100
14               TIX    TWENTY
15               JLT LOOP
16               FIX
17  INDEX  RESB   1
18  ALPHA  RESW   100
19  GAMMA        BYTE   X'0502'
20  K100   WORD   100
21  TWENTY       WORD   20
22         END    2000
```

3.0 Intermediate.txt:

```
PROG1   START   2000
        FLOAT
        LDA     GAMMA
        STA     INDEX
        SIO
        TIO
LOOP    LDX     INDEX
        LDA     GAMMA
        STA     ALPHA,X
        LDA     INDEX
        ADD     #3
        STA     INDEX
        COMP    K100
        TIX     TWENTY
        JLT     LOOP
        FIX
INDEX   RESB    1
ALPHA   RESW    100
GAMMA   BYTE    X'0502'
K100    WORD    100
TWENTY  WORD    20
        END     2000
```

4.0 Out_Pass1.txt:

```
      PROG1   START  2000
2000          FLOAT
2001          LDA    GAMMA
2004          STA    INDEX
2007          SIO
2008          TIO
2009  LOOP    LDX    INDEX
200c          LDA    GAMMA
200f          STA    ALPHA,X
2012          LDA    INDEX
2015          ADD    #3
2018          STA    INDEX
201b          COMP   K100
201e          TIX    TWENTY
2021          JLT    LOOP
2024          FIX
2025  INDEX   RESB   1
2026  ALPHA   RESW   100
2152  GAMMA   BYTE   X'0502'
2154  K100    WORD   100
2157  TWENTY  WORD   20
215a          END    2000
```

5.0 Symbol_Table.txt:

```
LOOP    2009
INDEX   2025
ALPHA   2026
GAMMA   2152
K100    2154
TWENTY  2157
```

6.0 Out_Pass2.txt:

```
PROG1   START   2000
        FLOAT           C0
        LDA     GAMMA   002152
        STA     INDEX   0C2025
        SIO             F0
        TIO             F8
LOOP    LDX     INDEX   042025
        LDA     GAMMA   002152
        STA     ALPHA,X 0CA026
        LDA     INDEX   002025
        ADD     #3      190003
        STA     INDEX   0C2025
        COMP    K100    282154
        TIX     TWENTY  2C2157
        JLT     LOOP    382009
        FIX             C4
INDEX   RESB    1
ALPHA   RESW    100
GAMMA   BYTE    X'0502' 0502
K100    WORD    100     000064
TWENTY  WORD    20      000014
        END     2000
```

7.0 HTE.txt:

```
H  0PROG1  002000  000154
T  002000  1e      C0      002152  0C2025  F0  F8  042025  002152  0CA026  002025  190003  0C2025  282154
T  00201e  07      2C2157  382009  C4
T  002152  08      0502    000064  000014
E  002154  002000
```