CS348-Assignment 2

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README

Submission Contents:

- A2_200101079.cpp
- Readme
- sample_input.txt
- intermediate.txt
- output.txt
- opcode_table.txt
- symbol_table.txt

Running the code:

• To compile the code:

g++ A2_200101079.cpp

C:\Users\DELL\OneDrive\Desktop\sem 6\IPLL\A2_200101079>g++ A2_200101079.cpp

• To run the code:

a.exe <sample_input.txt

C:\Users\DELL\OneDrive\Desktop\sem 6\IPLL\A2_200101079>a.exe <sample_input.txt</pre>

Note: sample_input.txt is the input file here. Any other input file can also be used by changing the command.

Description:

The entire code can be split into the following sections:

- SET OPCODE TABLE
- PRINT OPCODE TABLE IN opcode table.txt FILE
- PRINT SYMBOL TABLE IN symbol_table.txt FILE
- PARSE INPUT AND STORE IT IN A VECTOR
- SET THE ADDRESS OF EACH INSTRUCTION
 - o BYTE
 - o RESB
 - o RESW
 - OTHERS
- GENERATE THE OBJECT CODE
 - o RESB/RESW/END
 - BYTE
 - WORD
 - OTHERS
- GENERATE THE MACHINE CODE

Note: The steps are shown in the code's comments in uppercase.

Output:

On running the code, two output files are generated. They are

• intermediate.txt

The intermediate code, along with comments, is shown in this file. The file's name can be changed in the first line of the generate_final_object_code() function. This code is fully formatted and contains the address of the instruction followed by the label, opcode, and operand in each line.

```
≡ intermediate.txt

     1000 COPY
                  START
                          1000
     1000 FIRST
                  STL
                          RETADR
     1003 CLOOP
                  JSUB
                          RDREC
     1006
                  LDA
                          LENGTH
                  COMP
     1009
                          ZERO
     100C
                  JEQ
                          ENDFIL
     100F
                  JSUB
                          WRREC
     1012
                          CLOOP
                          EOF
     1015 ENDFIL LDA
     1018
                  STA
                          BUFFER
     101B
                  LDA
                          THREE
     101E
                  STA
                          LENGTH
     1021
                  JSUB
                          WRREC
     1024
                  LDL
                          RETADR
                  RSUB
     1027
                          C'EOF'
     102A EOF
                  BYTE
     102D THREE
                  WORD
     1030 ZERO
                  WORD
                          0
18
     1033 RETADR RESW
                          1
     1036 LENGTH RESW
                          1
     1039 BUFFER RESB
                          4096
             SUBROUTINE TO READ RECORD INTO BUFFER
     2039 RDREC
                  LDX
                          ZERO
     203C
                  LDA
                          ZERO
     203F RLOOP
                  TD
                          INPUT
     2042
                          RLOOP
                  JEQ
     2045
                  RD
                          INPUT
     2048
                  COMP
                          ZERO
     204B
                          EXIT
                  JEQ
     204E
                  STCH
                        BUFFER,X
                  TIX
                          MAXLEN
     2051
     2054
                  JLT
                          RLOOP
     2057 EXIT
                          LENGTH
                  STX
     205A
                  RSUB
     205D INPUT
                  BYTE
                          X'F1'
     205E MAXLEN WORD
                          4096
             SUBROUTINE TO WRITE RECORD FROM BUFFER
     2061 WRREC
                  LDX
                          ZERO
     2064 WLOOP
                  TD
                          OUTPUT
     2067
                  JEQ
                          WLOOP
                  LDCH
     206A
                          BUFFER, X
     206D
                  WD
                          OUTPUT
     2070
                  TIX
                          LENGTH
     2073
                  JLT
                          WLOOP
                  RSUB
     2076
                          X'05'
     2079 OUTPUT BYTE
                    END
     207A
                           FIRST
```

• output.txt

The machine code is shown in this file. The file's name can be changed in the first line of the generate_machine_code() function.

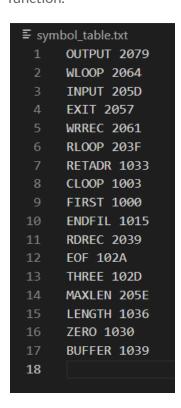
opcode_table.txt

The opcode table is printed in this file. The file's name can be changed in the first line of the print_opcode_table() function.



• symbol_table.txt

The symbol table is printed in this file. The label and its corresponding address are printed in this file. The file's name can be changed in the first line of the print_symbol_table() function.



THANK YOU