SSN COLLEGE OF ENGINEERING, KALAVAKKAM

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Compiler Design Lab – CS6612

PROGRAMMING ASSIGNMENT-9– IMPLEMENTATION OF BACK END OF THE COMPILER

The Goal

Implement **back end or synthesis stage** of the compiler. The input of this stage is the intermediate code and the output will be the object code in the form of assembly code written using the instruction set of 8086. The generated code has to be run in 8086 microprocessor.

Your code generator supports assignment statement, arithmetic operators, relational operators, iterative constructs, conditional constructs. The source program, generated TAC and the assembly code is shown below.

Source Program:

```
x=0;
for(i=1;i<=10;i++)
  x=x+1
```

Generated TAC:

```
      x=0
      i=1
L3: if i<=10 goto L1
      goto L2
L1: t1=x+i
      x=t1
      t2=i+1
      i=t2
      goto L3
L2:
```

Assembly code generated would be

```
    MOV R0,#0
    MOV R1,#1
    MOV R2,#10
L3: CMP R1, R2
    JLE L1
    JMP L2
L1: ADD R0, R1
    MOV R3, #1
    ADD R1, R3
    JMP L3
L2:
```

Convert into 8086 assembly code ie use registers and instructions as per its specification.

Note:

Like the above form simple small meaningful programs which involve the above constructs and use its TAC to generate the object code for testing your assignment.