# Assignment-1

# IAS machine

I have two code files test1_IMT2019521.c and test2_IMT2019521.c

I have implemented the IAS machine and tested two different cases in test1.c and test2.c files.

test1.c file has the pre programmed memory to check the correct implementation of the following c code-

```
main( ){
int a = 15, b = 5, c;
if ( a > = b )
        c = a  - b;
else
        c = a + b;
}
```

Assemble language code regarding the above c code is -

word(0) -- LOAD 15 to AC, SUB 5 from AC

word(1) -- conditional jump to word(3) , LOAD 15 to AC

word(2) -- ADD 5

word(3) -- STOR from AC to this location , LSH AC(this is not in the c code but added to test the implementation only)

word(4) -- HALT

machine language code regarding the above c code is -

"00000001000000001111000001100000000000101",
"00001111000000000011000000010000000001111",
"--------------------00000101000000000101",
"00100001000000000000000010100000000000000",
"00000000000000000000000000000000000000000".

test2.c file has the pre programmed memory to check the correct implementation of the following c code-

```
main( ){
int a = 5, b = 15, c;
if ( a > = b )
        c = a  - b;
else
        c = a + b;
}
```

Assemble language code regarding the above c code is -

word(0) -- LOAD 5 to AC, SUB 15 from AC

word(1) -- conditional jump to word(3) , LOAD 5 to AC

word(2) -- ADD 15

word(3) -- STOR from AC to this location , LSH AC(this is not in the c code but added to test the implementation of LSH only)

word(4) -- HALT

machine language code regarding the above c code is -

"00000001000000000101000001100000000001111",

"00001111000000000011000000010000000000101",

"--------------------00000101000000001111",

"00100001000000000000000010100000000000000",

"00000000000000000000000000000000000000000".

INSTRUCTIONS implemented-

1. STOR M(X)
2. LOAD M(X)
3. JUMP M(X , 0:19 )
4. JUMP + M(X , 0:19 )
5. ADD M(X)
6. SUB M(X)
7. LSH
8. HALT

OUTPUT

For test1.c the output is in the snapshot1 attached

The program should give the output c = 10.

And the accumulator should contain the value 20 in it.

For test2.c the output is in the snapshot2 attached

The program should give the output c = 20.

And the accumulator should contain the value 40 in it.

Snapshots have output in the format -

Value of c

Changed Memory word (word(3)) by storing ‘c’ from AC

AC value after LSH.

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