

Lecture 10 worksheet

Question 1

In groups list the information that an assembler would need access to in order to carry out translation of an assembly program. Hint: think in terms of trying to assemble an unfamiliar program by hand what info would you need?

Question 2

Translate the following assembly language into 16-bit machine instructions. Assume that the symbol BOB has value 31.

- @7
- D=0
- 0;JMP
- A=D&M;JLT
- @BOB
- AD=!M

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Question 3

```
// Computes 1+...+RAM[0]
// And stored the sum in RAM[1]
    @i
    M=1    // i = 1
    @sum
    M=0    // sum = 0
(LLOOP)
    @i    // if i>RAM[0] goto WRITE
    D=M
    @R0
    D=D-M
    @WRITE
    D;JGT
    @i    // sum += i
    D=M
    @sum
    M=D+M
    @i    // i++
    M=M+1
    @LOOP // goto LOOP
    0;JMP
(WRITE)
    @sum
    D=M
    @R1
    M=D    // RAM[1] = the sum
(END)
    @END
    0;JMP
```

Complete the symbol table below:

R0 _____

R1 _____

i _____

sum _____

LOOP _____

WRITE _____