

Lecture 11 - Worksheet

Question 1

Look at the following program. Think about the broad steps you might need to build a symbol table for such a program.

```
// 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
```

Lecture 11 - Worksheet

Question 2

Look at the following program again. Write down the broad steps that need to be taken to turn this into assembly code.

```
// 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
```

Lecture 11 - Worksheet

Question 3

Look at the following program again. Write down a symbol table produced from this code.

```
// 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
```