

## Tutorial 4

1. What are the main data structures necessary for an assembly scheme? State the purpose of each of them.
2. Write down the pass numbers(PASS 1/ PASS 2) of the following activities that occur in a two pass assembler:
  - a. Object code generation
  - b. Literals added to literal table
  - c. Listing printed
  - d. Address location of local symbols
3. Explain the concept of single pass assembler with a suitable example.
4. Given the following source program:

Show the content of the symbol table, MOT at the end of PASS 1.

```
START 102
READ X
READ Y
MOVER AREG, X
ADD AREG, Y
MOVEM AREG, RESULT
PRINT RESULT
STOP
X DS 1
Y DS 1
RESULT DS 1
END
```

5. Design an automata for valid identifiers, integer constant and comments.
6. Design an automata which accept a language of all strings starting with 'a' and ending with 'b.'