

# Compiler Construction

## Assignment-01

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### Test1.lang Outputs:

```
PS C:\Users\Hp\OneDrive\Desktop\23i-0656-23i-0655-C> java src.ManualScanner tests/test1.lang
Reading file: tests/test1.lang
--- Manual Scanner Output ---
<START, "start", Line: 1, Col: 1>
<DECLARE, "declare", Line: 2, Col: 6>
<IDENTIFIER, "Count", Line: 2, Col: 14>
<ASSIGNMENT_OP, "=", Line: 2, Col: 20>
<INTEGER, "10", Line: 2, Col: 22>
<SEMICOLON, ";", Line: 2, Col: 24>
<DECLARE, "declare", Line: 3, Col: 6>
<IDENTIFIER, "Price", Line: 3, Col: 14>
<ASSIGNMENT_OP, "=", Line: 3, Col: 20>
<FLOAT, "45.50", Line: 3, Col: 22>
<SEMICOLON, ";", Line: 3, Col: 27>
<LOOP, "loop", Line: 6, Col: 6>
<LPAREN, "(", Line: 6, Col: 11>
<IDENTIFIER, "Count", Line: 6, Col: 12>
<RELATIONAL_OP, ">", Line: 6, Col: 18>
<INTEGER, "0", Line: 6, Col: 20>
<RPAREN, ")", Line: 6, Col: 21>
<LBRACE, "{", Line: 6, Col: 23>
<OUTPUT, "output", Line: 7, Col: 10>
<STRING, "\"Value is: \"", Line: 7, Col: 17>
<ARITHMETIC_OP, "+", Line: 7, Col: 30>
<IDENTIFIER, "Count", Line: 7, Col: 32>
<SEMICOLON, ";", Line: 7, Col: 37>
<IDENTIFIER, "Count", Line: 8, Col: 10>
<INC_DEC_OP, "--", Line: 8, Col: 15>
<SEMICOLON, ";", Line: 8, Col: 17>
<RBRACE, "}", Line: 9, Col: 6>
<FUNCTION, "function", Line: 15, Col: 6>
<IDENTIFIER, "Calculate", Line: 15, Col: 15>
<LPAREN, "(", Line: 15, Col: 24>
<IDENTIFIER, "X", Line: 15, Col: 25>
```

```
--- Scanner Statistics ---
Total Tokens: 40
Lines Processed: 19
Token Counts by Type:
  START      : 1
  FINISH     : 1
  LOOP       : 1
  DECLARE    : 2
  OUTPUT     : 1
  FUNCTION   : 1
  RETURN     : 1
  IDENTIFIER : 8
  INTEGER    : 3
  FLOAT      : 1
  STRING     : 1
  ARITHMETIC_OP : 2
  RELATIONAL_OP : 1
  ASSIGNMENT_OP : 2
  INC_DEC_OP   : 1
  LPAREN      : 2
  RPAREN      : 2
  LBRACE      : 2
  RBRACE      : 2
  SEMICOLON   : 5

--- Symbol Table ---
Name          Type      First Line Frequency
Price         IDENTIFIER 3           1
X             IDENTIFIER 15          2
Calculate     IDENTIFIER 15          1
Count         IDENTIFIER 2           4
```

## JFlex Scanner Output:

```
PS C:\Users\Hp\OneDrive\Desktop\23i-0656-23i-0655-C> java src.JFlexRunner
Reading from: tests/test1.lang
--- JFlex Scanner Output ---
<START, "start", Line: 1, Col: 1>
<DECLARE, "declare", Line: 2, Col: 5>
<IDENTIFIER, "Count", Line: 2, Col: 13>
<ASSIGNMENT_OP, "=", Line: 2, Col: 19>
<INTEGER, "10", Line: 2, Col: 21>
<SEMICOLON, ";", Line: 2, Col: 23>
<DECLARE, "declare", Line: 3, Col: 5>
<IDENTIFIER, "Price", Line: 3, Col: 13>
<ASSIGNMENT_OP, "=", Line: 3, Col: 19>
<FLOAT, "45.50", Line: 3, Col: 21>
<SEMICOLON, ";", Line: 3, Col: 26>
<LOOP, "loop", Line: 6, Col: 5>
<LPAREN, "(", Line: 6, Col: 10>
<IDENTIFIER, "Count", Line: 6, Col: 11>
<RELATIONAL_OP, ">", Line: 6, Col: 17>
<INTEGER, "0", Line: 6, Col: 19>
<RPAREN, ")", Line: 6, Col: 20>
<LBRACE, "{", Line: 6, Col: 22>
<OUTPUT, "output", Line: 7, Col: 9>
<STRING, "'Value is: ''", Line: 7, Col: 16>
<ARITHMETIC_OP, "+", Line: 7, Col: 29>
<IDENTIFIER, "Count", Line: 7, Col: 31>
<SEMICOLON, ";", Line: 7, Col: 36>
<IDENTIFIER, "Count", Line: 8, Col: 9>
<INC_DEC_OP, "--", Line: 8, Col: 14>
<SEMICOLON, ";", Line: 8, Col: 16>
<RBRACE, "}", Line: 9, Col: 5>
<FUNCTION, "function", Line: 15, Col: 5>
<IDENTIFIER, "Calculate", Line: 15, Col: 14>
<LPAREN, "(", Line: 15, Col: 23>
<IDENTIFIER, "X", Line: 15, Col: 24>
<RPAREN, ")", Line: 15, Col: 25>
```

## Result:

Both scanners produce identical token sequences, confirming the correctness of the manual DFA implementation.