

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.