

ÖREBRO UNIVERSITY

COMPILERS AND INTERPRETERS

Assignment 4

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Part A

The deterministic finite state automate was implemented by defining a integer variable state that holds the current state. The lexical analyzer then calls a function `switch_state` with a parameter depending on the input. In the `switch_state` function the state gets switched depending on the current state and the input.

Part B

To replace the lexical analyzer a flex file *scanner.l* was created that scans all the specific tokens needed by the parser. The rules part of the file can be seen in listing 1.

Listing 1: Rules part of flex file scanner.l

```
1  %%
2  [ \t\n]+      { /* ignore whitespace */ }
3  /* numbers */
4  [0-9]+        {
5  yylval = atoi(yytext);
6  return NUM; }
7  /* variable */
8  [a-zA-Z]+     {
9  yylval = lookup(yytext);
10 if (yylval == -1)
11 yylval = insert(yytext, ID);
12 return ID;
13 }
14 /* operators */
15 [-+()*%/=&|<>?:.^] { return *yytext; }
16 /* anything else is invalid */
17 .             printf("Ignoring invalid character '%s'\n", yytext);
18 %%
```