

گزارش فاز اول پروژه اصول طراحی کامپایلر

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توضیحات فایل Parser.flex

در این فایل کد های مورد نیاز برای شناسایی Identifierها، اعداد با تایپ های مختلف، Operatorها، Keywordها و ... وجود دارد.

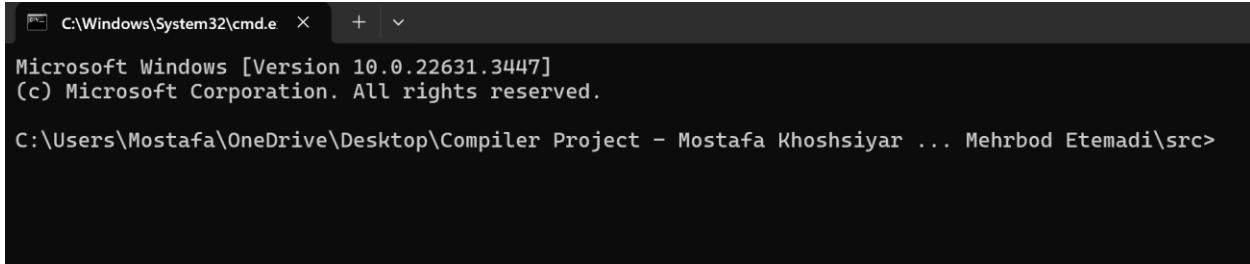
همچنین کد های مورد نیاز برای چاپ کردن موارد ذکر شده به صورت فرمت ذکر شده در فایل پروژه وجود دارد.

به عنوان نمونه قسمت شناسایی Operatorها و Keywordها در تصویر زیر قابل مشاهده است:

```
39  /****Keyword****/
40  "begin"    | "do"      | "for"     | "true"    |
41  "bool"     | "double"   | "if"      | "try"     |
42  "break"    | "else"     | "int"     | "while"   |
43  "case"     | "end"      | "return"  | "void"    |
44  "class"    | "float"    | "switch"  |
45  { System.out.println("Keyword (%s) - Line %d, Column %d".formatted(yytext(), yyline+1, yycolumn+1));}
46
47
48  /****Separator****/
49  "("         { System.out.println("Left Parenthesis () - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
50  ")"         { System.out.println("Right Parenthesis () - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
51  "["         { System.out.println("Left Brackets () - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
52  "]"         { System.out.println("Right Parenthesis () - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
53  "{"         { System.out.println("Left Acolades () - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
54  "}"         { System.out.println("Right Acolades () - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
55  "."         { System.out.println("Dot (.) - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
56  ";"         { System.out.println("Comma (,) - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
57  ";"         { System.out.println("Semicolon (;) - Line %d, Column %d".formatted(yyline+1, yycolumn+1));}
58
59  /****Operator****/
60  "=" |     "==" |     "!=" |     "!=" |
61  "<" |     "<=" |     ">" |     ">=" |
62  "+" |     "+=" |     "-." |     "-=" |
63  "*" |     "*=" |     "/" |     "/=" |
64  "%" |     "%=" |     "++" |     "--" |
65  "***" { System.out.println("Operator (%s) - Line %d, Column %d".formatted(yytext(), yyline+1, yycolumn+1));}
```

نحوه اجرا

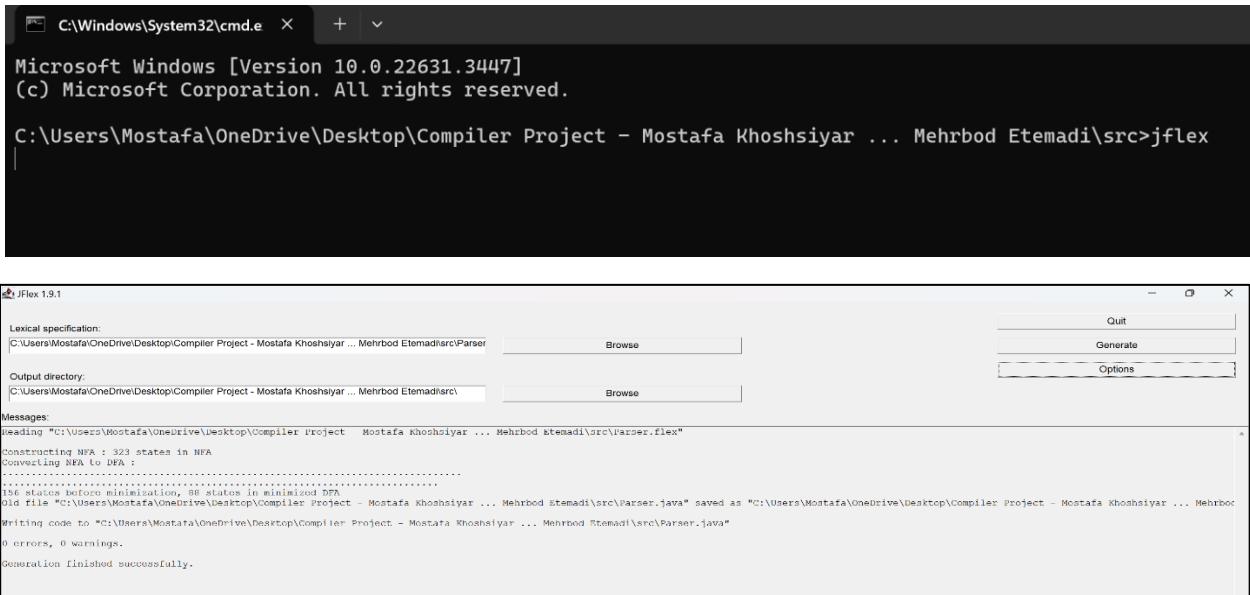
۱- در فolder حاوی فایل cmd ، Parser.flex را اجرا می کنیم.



```
C:\Windows\System32\cmd.e > Microsoft Windows [Version 10.0.22631.3447]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>
```

۲- حال JFlex را اجرا می کنیم و با کلیک بر روی Browse فایلParser.flex را انتخاب می کنیم.



```
C:\Windows\System32\cmd.e > Microsoft Windows [Version 10.0.22631.3447]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>jflex
```

JFlex 1.9.1

Lexical specification:
C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src\Parser

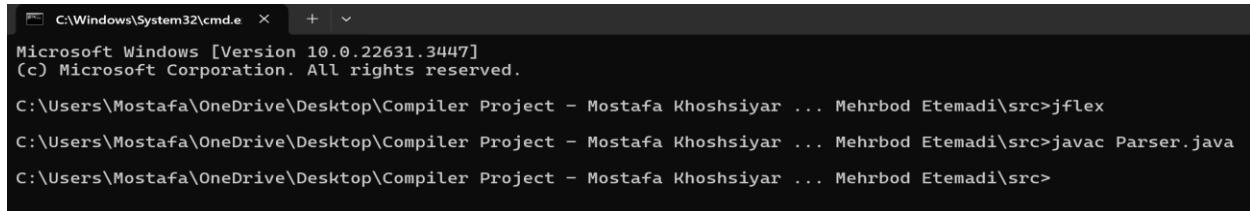
Output directory:
C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src

Messages:

```
Reading "C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src\Parser.flex"
Constructing NFA: 323 states in NFA
Converting NFA to DFA: ...
..... 
156 states before minimization, 98 states in minimized DFA
Old file "C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src\Parser.java" saved as "C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src\Parser.java"
Writing code to "C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src\Parser.java"
0 errors, 0 warnings.
Generation finished successfully.
```

۳- با این کار فایل Parser.java ساخته می شود.

حال با دستور javac Parser.java فایل جاوای ساخته شده را کامپایل می کنیم تا فایل Parser.class ساخته شود.

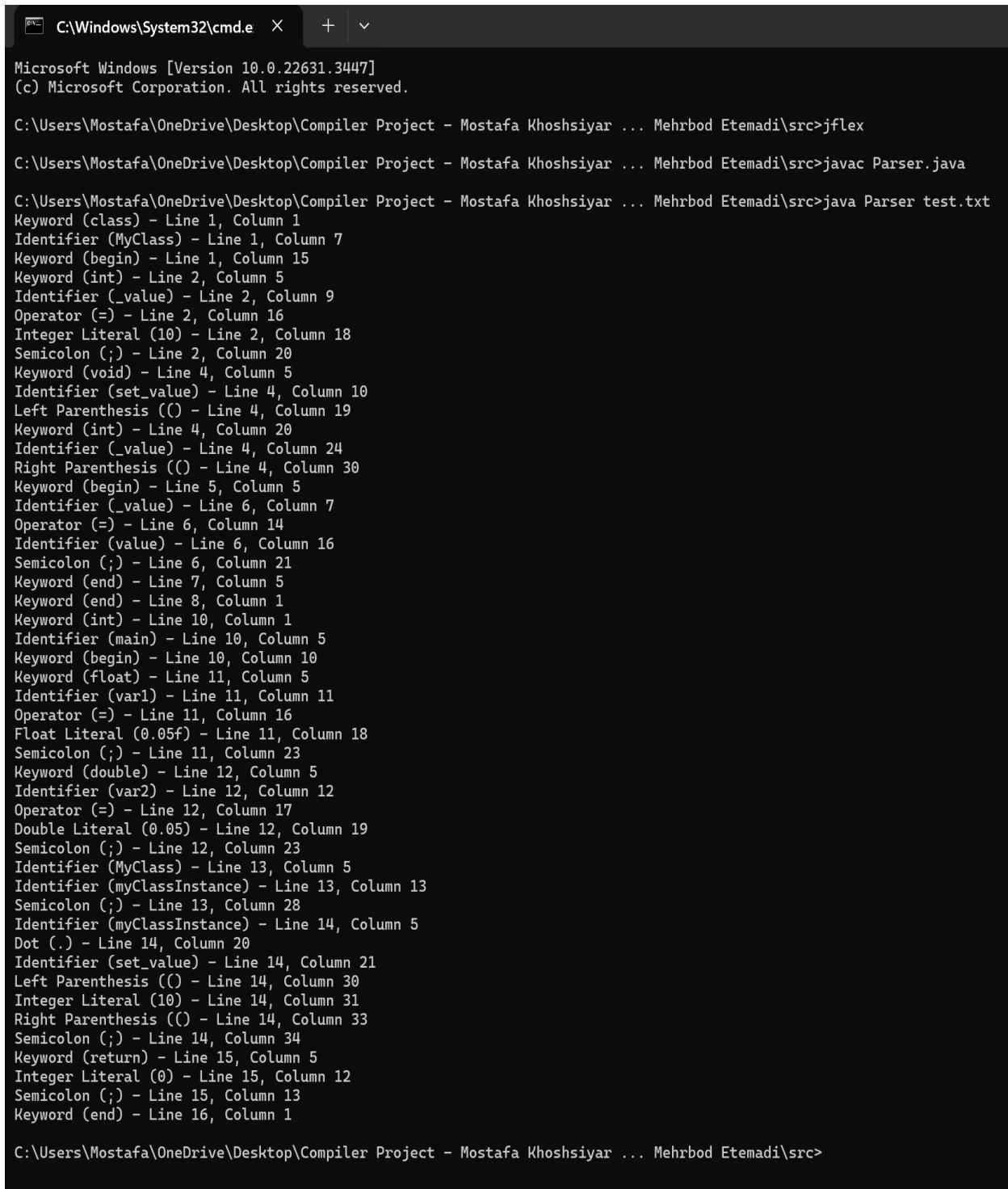


```
C:\Windows\System32\cmd.e > Microsoft Windows [Version 10.0.22631.3447]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>jflex
C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>javac Parser.java
C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>
```

4-سپس با قرار دادن فایل test.txt در فولدر حاوی فایل های بالا و با دستور

می توانیم خروجی را در cmd ببینیم.



```
C:\Windows\System32\cmd.e X + ^ Microsoft Windows [Version 10.0.22631.3447]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>jflex
C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>javac Parser.java
C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>java Parser test.txt
Keyword (class) - Line 1, Column 1
Identifier (MyClass) - Line 1, Column 7
Keyword (begin) - Line 1, Column 15
Keyword (int) - Line 2, Column 5
Identifier (_value) - Line 2, Column 9
Operator (=) - Line 2, Column 16
Integer Literal (10) - Line 2, Column 18
Semicolon (;) - Line 2, Column 20
Keyword (void) - Line 4, Column 5
Identifier (set_value) - Line 4, Column 10
Left Parenthesis (()) - Line 4, Column 19
Keyword (int) - Line 4, Column 20
Identifier (_value) - Line 4, Column 24
Right Parenthesis (()) - Line 4, Column 30
Keyword (begin) - Line 5, Column 5
Identifier (_value) - Line 6, Column 7
Operator (=) - Line 6, Column 14
Identifier (value) - Line 6, Column 16
Semicolon (;) - Line 6, Column 21
Keyword (end) - Line 7, Column 5
Keyword (end) - Line 8, Column 1
Keyword (int) - Line 10, Column 1
Identifier (main) - Line 10, Column 5
Keyword (begin) - Line 10, Column 10
Keyword (float) - Line 11, Column 5
Identifier (var1) - Line 11, Column 11
Operator (=) - Line 11, Column 16
Float Literal (0.05f) - Line 11, Column 18
Semicolon (;) - Line 11, Column 23
Keyword (double) - Line 12, Column 5
Identifier (var2) - Line 12, Column 12
Operator (=) - Line 12, Column 17
Double Literal (0.05) - Line 12, Column 19
Semicolon (;) - Line 12, Column 23
Identifier (MyClass) - Line 13, Column 5
Identifier (myClassInstance) - Line 13, Column 13
Semicolon (;) - Line 13, Column 28
Identifier (myClassInstance) - Line 14, Column 5
Dot (.) - Line 14, Column 20
Identifier (set_value) - Line 14, Column 21
Left Parenthesis (()) - Line 14, Column 30
Integer Literal (10) - Line 14, Column 31
Right Parenthesis (()) - Line 14, Column 33
Semicolon (;) - Line 14, Column 34
Keyword (return) - Line 15, Column 5
Integer Literal (0) - Line 15, Column 12
Semicolon (;) - Line 15, Column 13
Keyword (end) - Line 16, Column 1

C:\Users\Mostafa\OneDrive\Desktop\Compiler Project - Mostafa Khoshsiyar ... Mehrbod Etemadi\src>
```