



**AN-NAJAH NATIONAL UNIVERSITY**

**FACULTY OF ENGINEERING AND INFORMATION  
TECHNOLOGY**

## **Compilers**

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**HW#1 \_ Scanners 2023**

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**Write a set of regular expressions to describe the lexemes of the language.**

1. identifiers:

```
[ 'a'-'z' | 'A'-'Z' | '_' ]. [ 'a'-'z' | 'A'-'Z' |  
0-9 | '_' ] *
```

2. Keywords:

```
("program"|"var"|"constant"|"integer"  
|"bool"|"string"|"float"|"true"|"false"|"if"|"fi"  
|"then"|"else"|"while"|"do"|"od"  
|"and"|"or"|"read"|"write"|"for"|"from"|"to"|"by")
```

3. Integer Literals:

```
( '+' | '-' | λ ). [0-9] +
```

4. float literal:

```
( '+' | '-' | λ ). [0-9] + . ' ' . [0-9] +
```

5. string:

```
' ' ' . ([0-9] + | [ 'a'-'z' ] | [ 'A'-'Z' ] | [ '^ ' '\n' ] ) * . ' ' '
```

6. operators:

```
' ( ' | ' ) ' | ' : ' | ' : ' . ' = ' | ' + ' | ' \ ' | ' - ' | ' * ' | ' / ' | ' = ' | ' ! ' . ' = ' | ' <  
' | ' > ' | ' < ' . ' = ' | ' > ' . ' = ' | ' [ ' | ' ] ' | ' ? ' | ' . ' | ' { ' | ' } '
```

7. Comments:

```
' # ' . ' # ' . [ '^ '\n' ] * . ( ' # ' . ' # ' | λ )
```

8. White space:

```
[ ' \t ' | ' \r ' | ' \f ' | ' \n' ]
```