ANTLR

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AGENDA

What's Antlr?

Setup

Usage

Example

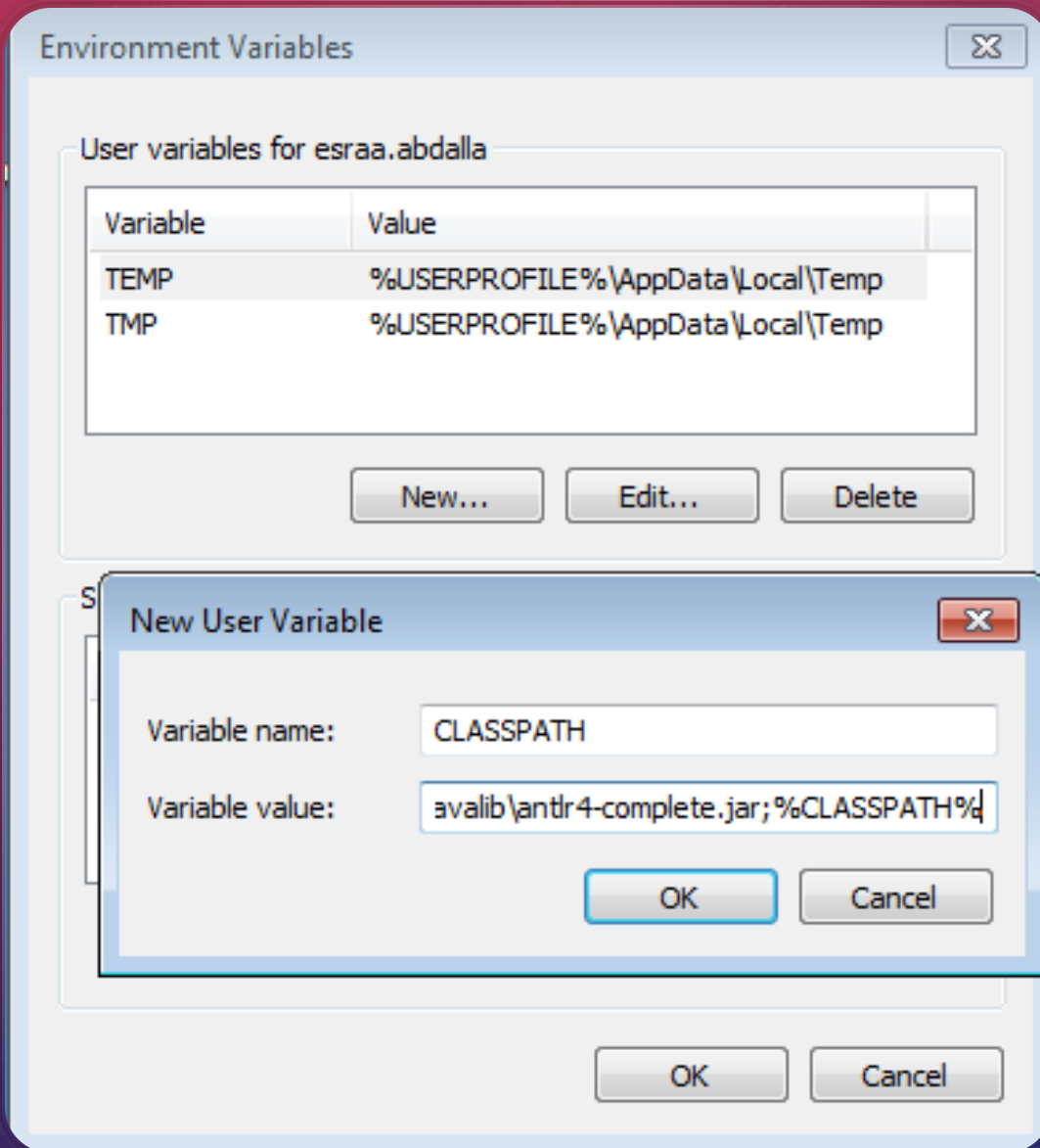Add ANTLR To Java IntelliJ

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WHAT'S ANTLR?

- a tool that translates your grammar to a parser/lexer in Java (or other target language) and the runtime needed by the generated parsers/lexers.

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SETUP

Windows Setup

- Install Java (version 1.6 or higher)

- Download https://www.antlr.org/download/antlr-4.8-complete.jar.

- Create Folder Javalib in c drive

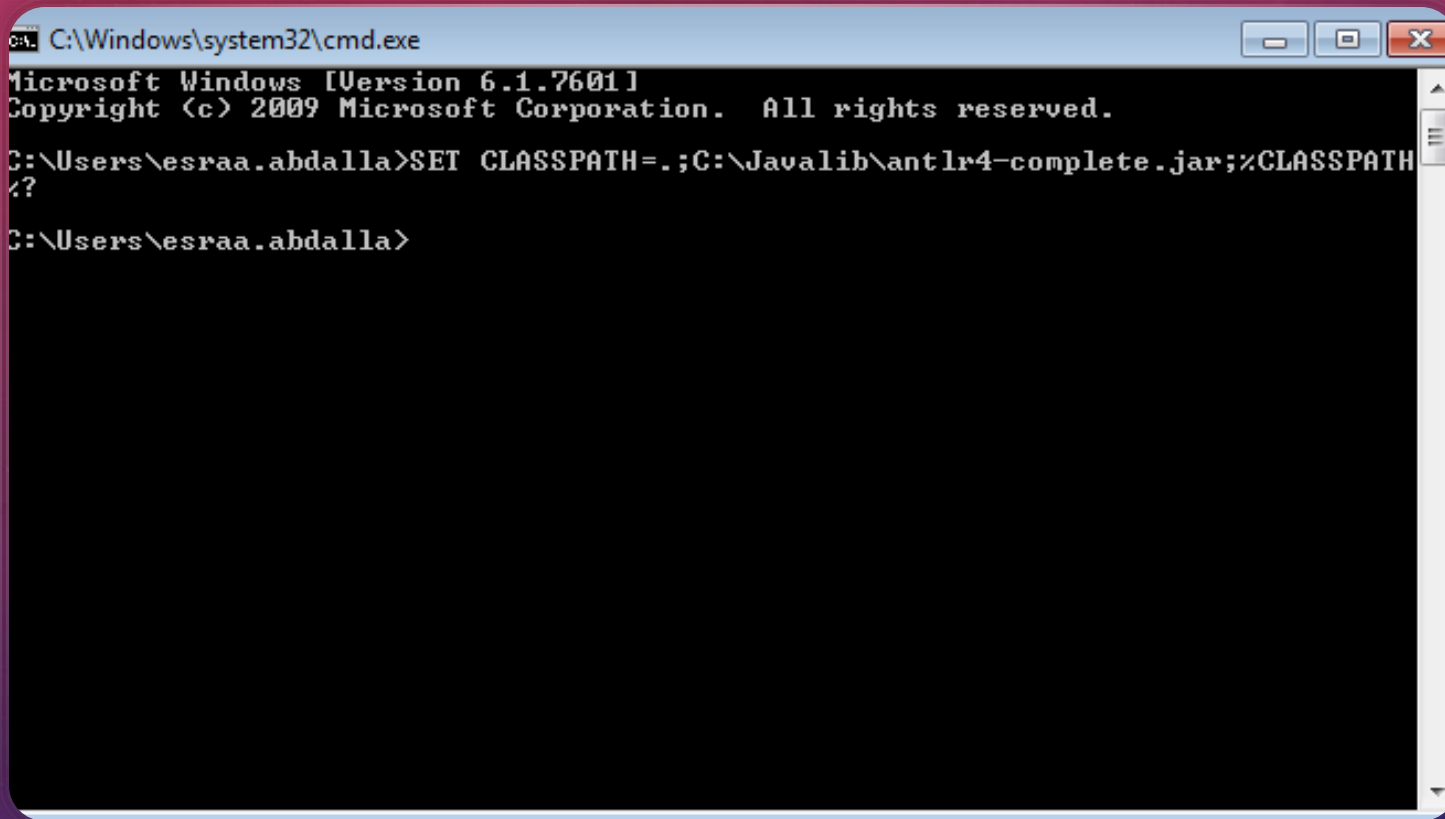- Save file in C:\Javalib

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WINDOWS SETUP

- Add antlr4-complete.jar to CLASSPATH, either:

  - Permanently:

  - Right click on My Computer

  - Advanced System Settings> Environment variables > User Variables > New or Edit if available and add to existing value

  - Variable Name : CLASSPATH

  - Variable Value:

  .;C:\Javalib\antlr-4.8-complete.jar;%CLASSPATH%

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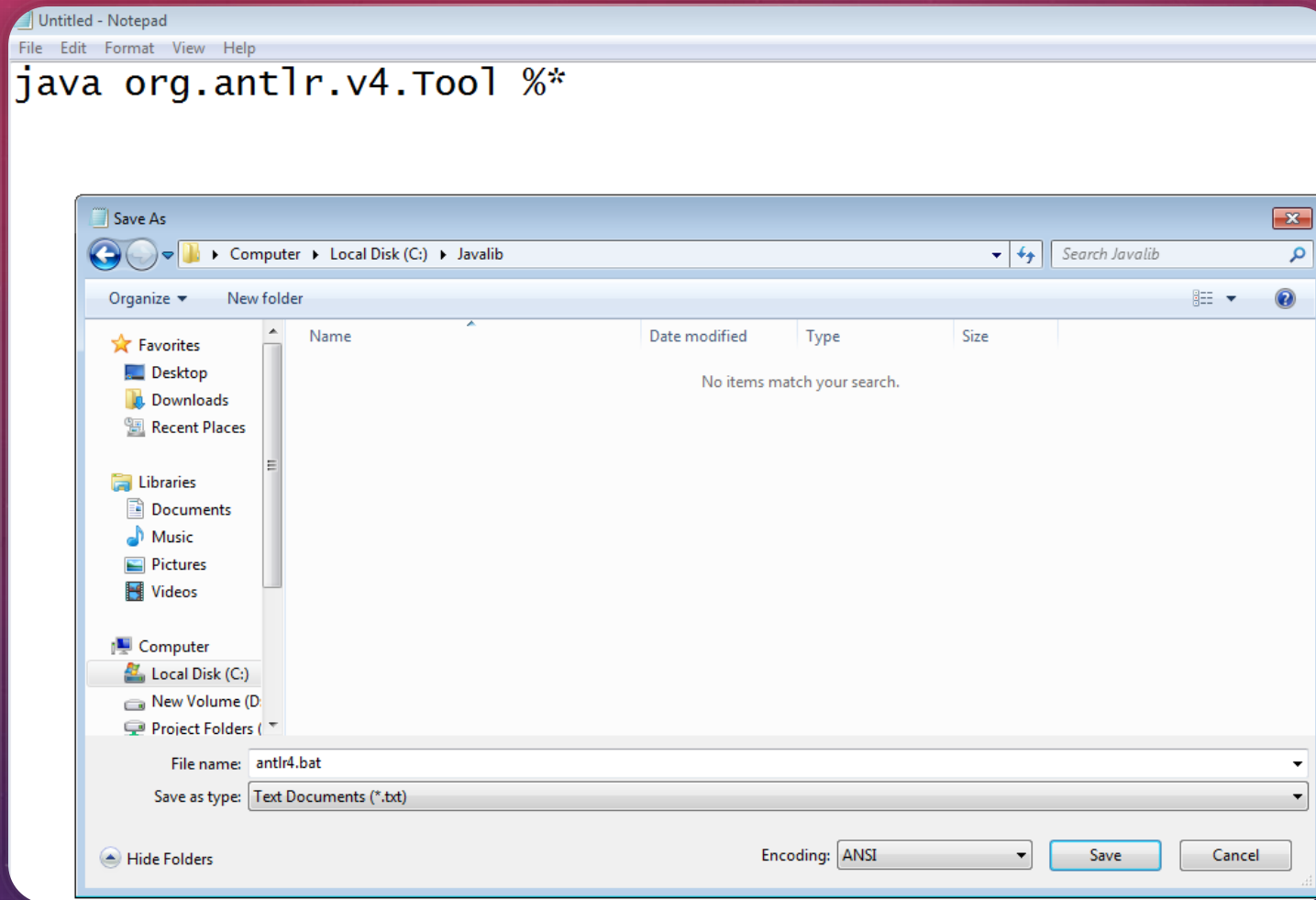
WINDOWS SETUP (CONT.)

```
C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\esraa.abdalla>SET CLASSPATH=.;C:\Javalib\antlr4-complete.jar;%CLASSPATH
%?

C:\Users\esraa.abdalla>
```
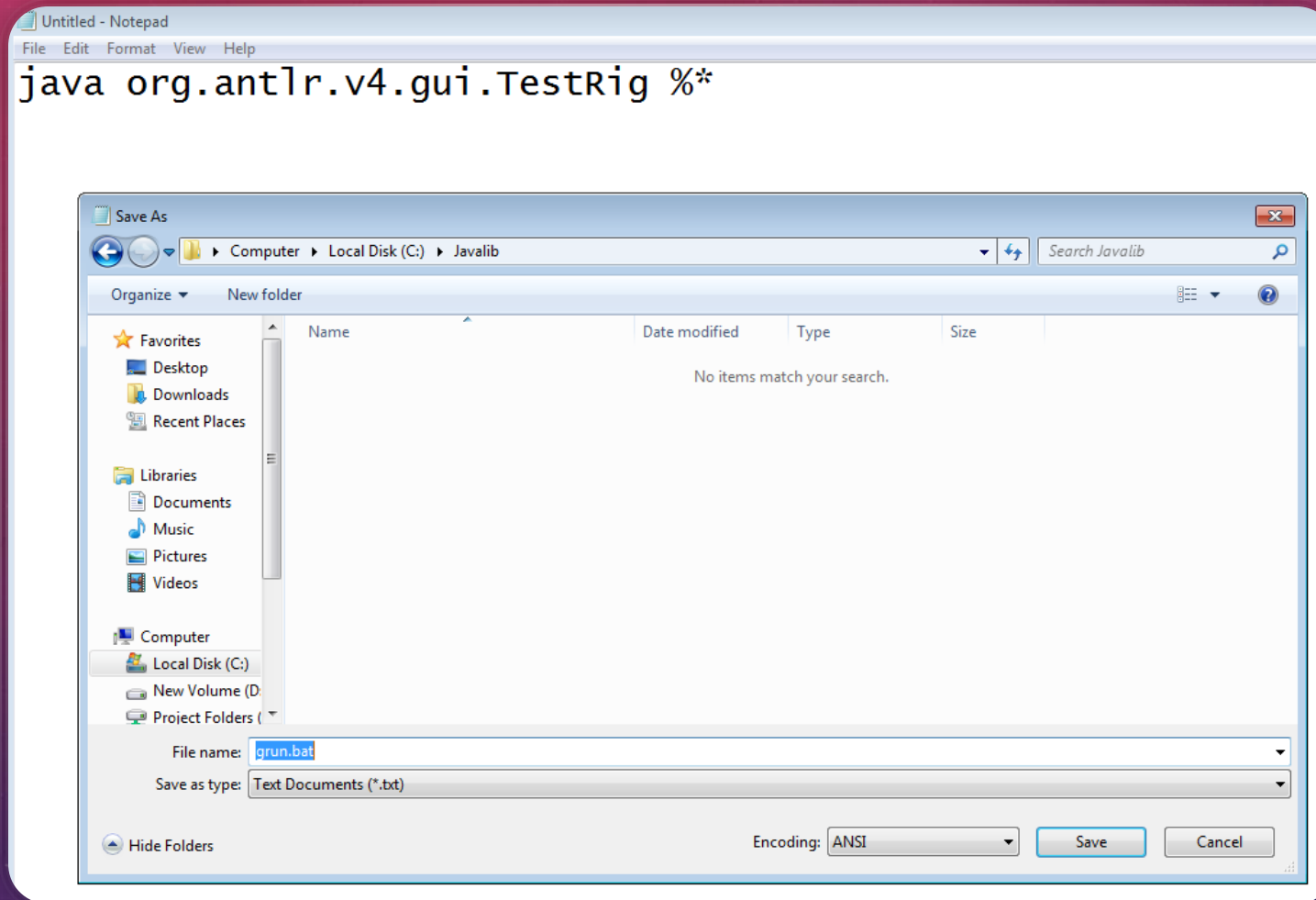
- Add antlr4-complete.jar to CLASSPATH, either:

  - Temporarily, at command line:
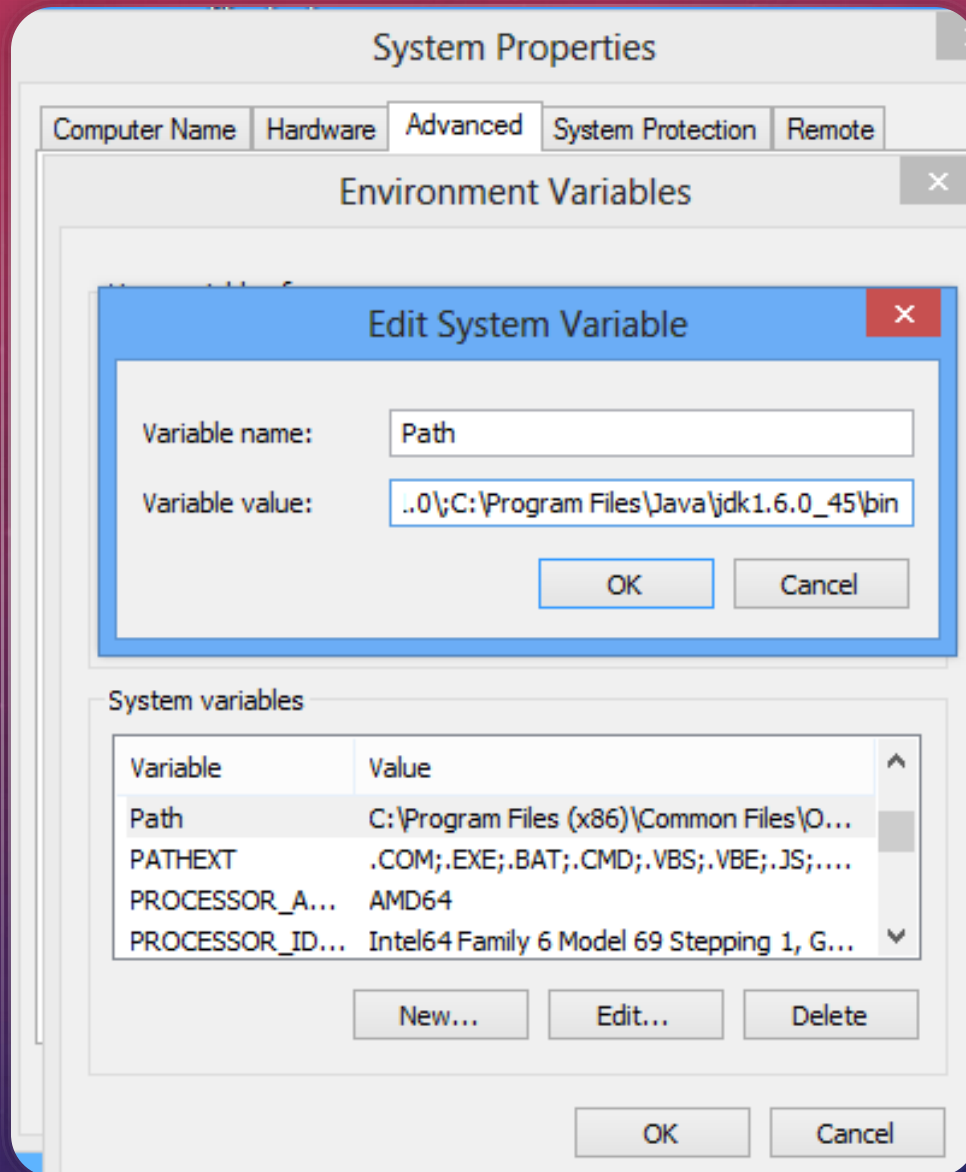   SET CLASSPATH=.;C:\Javalib\antlr-4.8-complete.jar;%CLASSPATH%

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WINDOWS SETUP (CONT.)

- Open notepad

- Write java org.antlr.v4.Tool %*

- Save file inside C:\Javalib as antlr4.bat

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WINDOWS SETUP (CONT.)

- Open notepad

- Write   java org.antlr.v4.gui.TestRig %*

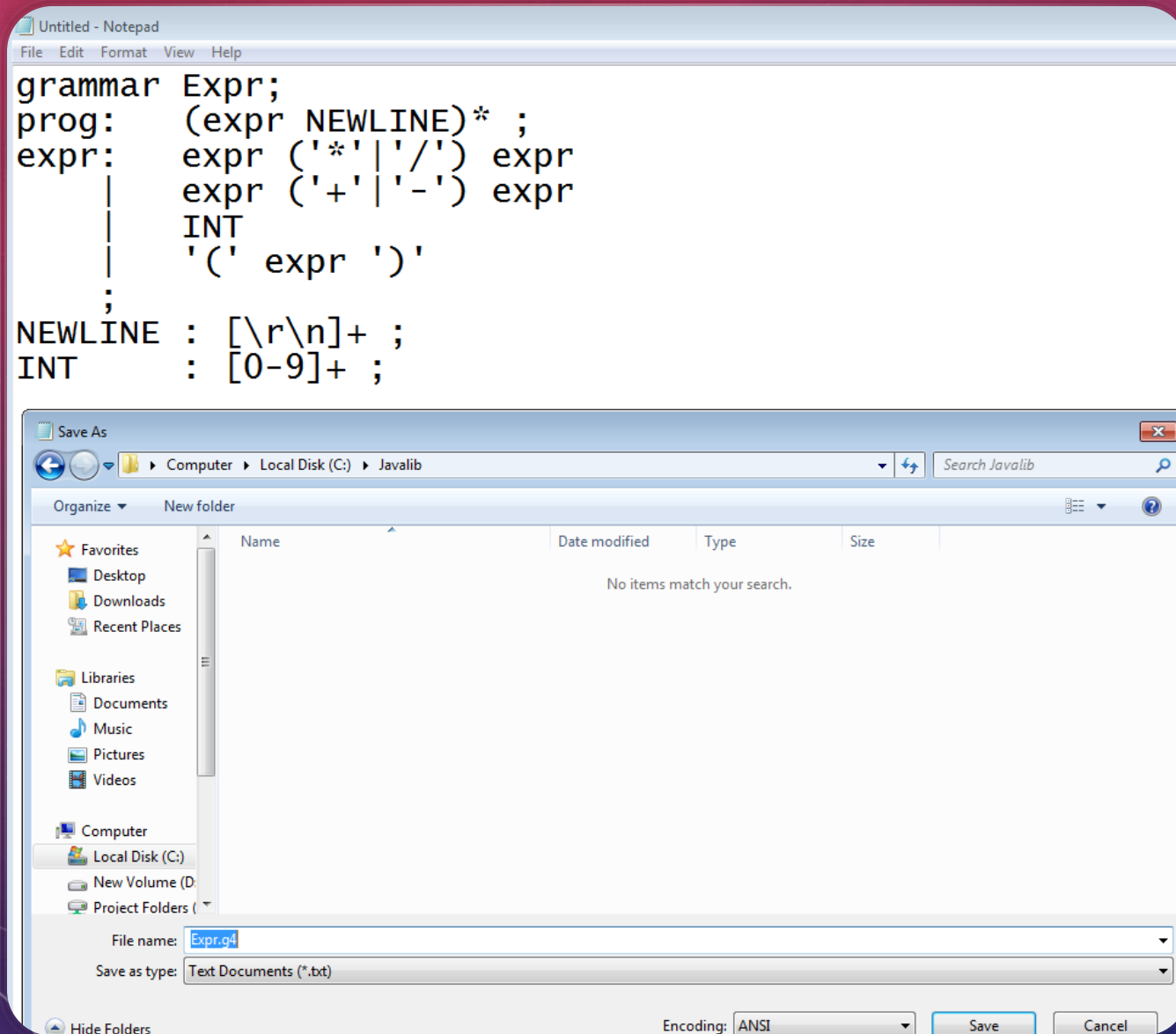- Save file
inside C:\Javalib as grun.bat

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WINDOWS SETUP

- You have to make sure that path of your java JDK is defined on the enviroment variables -> System Variables ->PATH->Edit

- Add jdk path at the end of variable value in your machine

- Note:- don't overwrite the existing path

- For other operating systems you can find the details here

- https://github.com/antlr/antlr4/blob/master/doc/getting-started.md

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USAGE

Construct Grammar

↓

ANTLR

↓
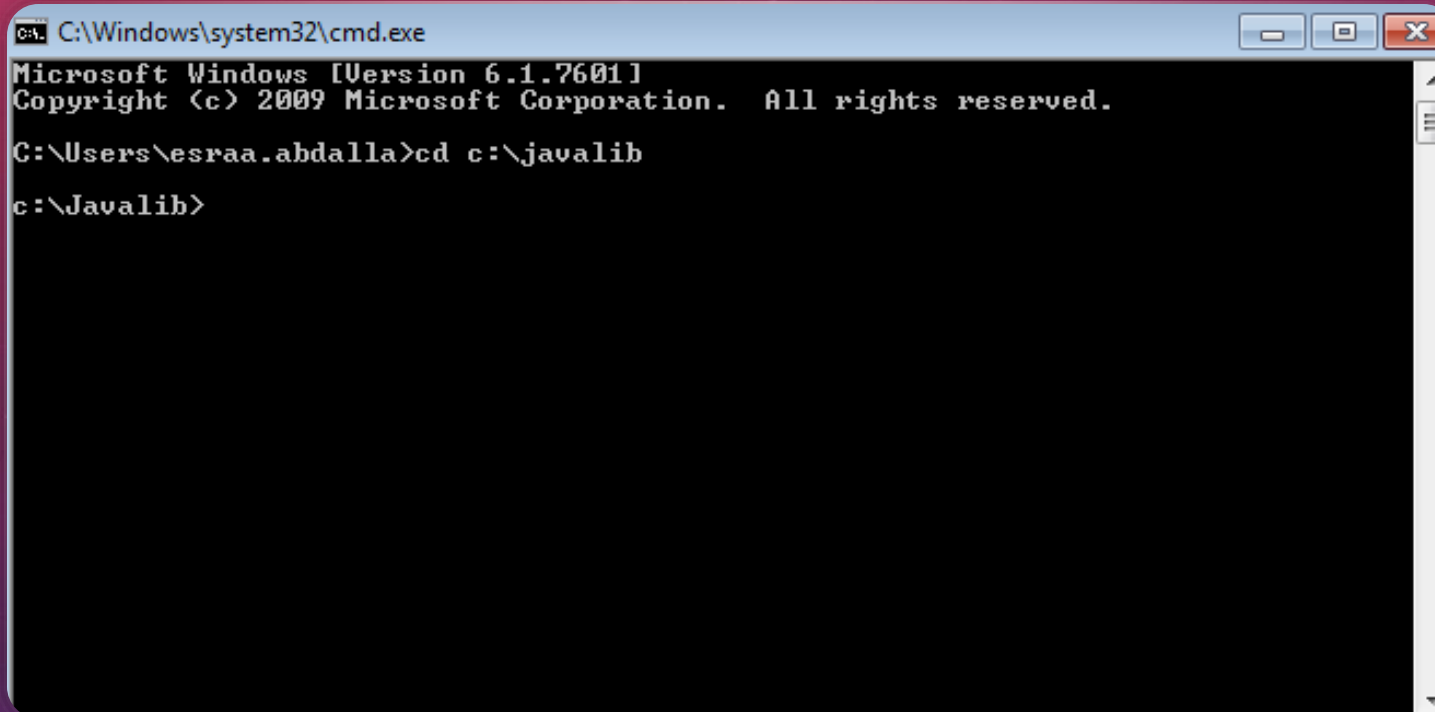
Generate Parser/ Lexer
in Target language

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EXAMPLE

- Create new file and name it Expr.g4
- Save file inside C:\Javalib
- Edit this file and write the following

grammar Expr;

prog: (expr NEWLINE)* ;

expr: expr ('*'|'/') expr

   | expr ('+'|'-') expr

   | INT

   | '(' expr ')'

   ;

NEWLINE : [\r\n]+ ;

INT   : [0-9]+ ;

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EXAMPLE (CONT.)

```
C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\esraa.abdalla>cd c:\javalib

c:\Javalib>
```

- Open cmd
- Type the following commands:-

1. cd c:\javalib

2. antlr4 Expr.g4

3. javac Expr*.java

4. grun Expr prog –gui

11+2*3

(in order to end of file Press

Ctrl+Z -> windows

Ctrl+D ->Unix)

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EXAMPLE (CONT.)

- grammar Expr;
  prog: (expr NEWLINE)* ;
  expr: expr ('*'|'/') expr { System.out.print("01")}
     | expr ('+'|'-') expr{ System.out.print("10")}
     | INT
     | '(' expr ')'
     ;
  NEWLINE : [\r\n]+ ;
  INT   : [0-9]+ ;

// you can add { System.out.print("01")}

// As an example to simulate the action for beside desired part of the expression

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EXAMPLE (CONT.)

In order to print the action:-

- Open cmd
- Type the following commands:-
- cd c:\javalib
- antlr4 Expr.g4
- javac Expr*.java
- grun Expr prog –tokens

11+2*3

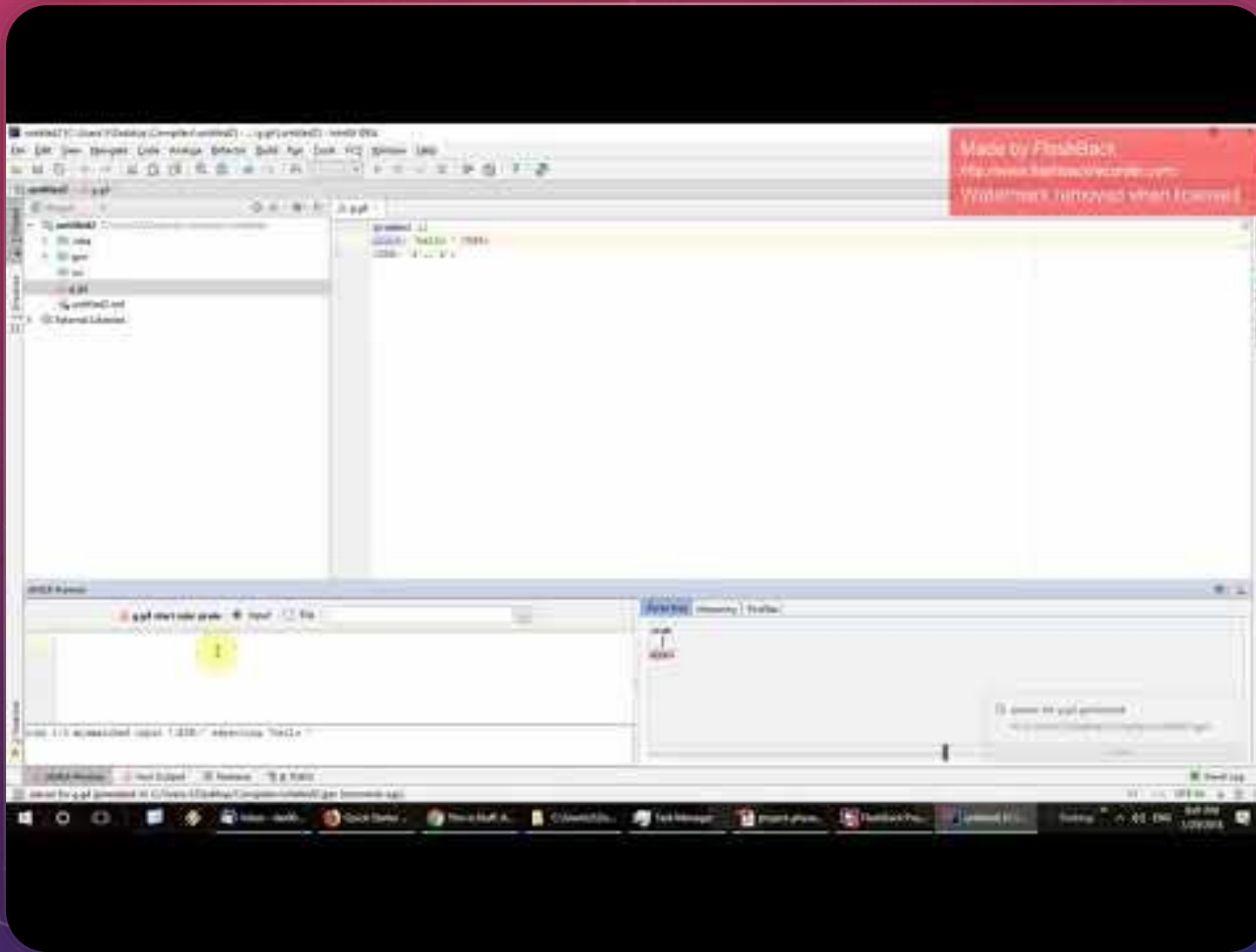(in order to end of file Press

Ctrl+Z -> windows

Ctrl+D ->Unix)

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ADD ANTLR
TO JAVA INTELLIJ

- Download Java Intellij from

https://www.jetbrains.com/idea/download/#section=windows

- Add Antlr to Java Intellij using this video

https://www.youtube.com/watch?v=svEZtRjVBTY

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REFERENCES

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- https://github.com/antlr/antlr4/blob/master/doc/getting-started.md

- https://www.antlr.org/

- https://www.youtube.com/watch?v=svEZtRjVBTY

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THANK YOU !

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