Korean Syntactic Complexity Analyzer (KOSCA) Version 1.0

User Manual for KOSCA 1.0

This manual is written for users of KOSCA to analyze their data. It includes (a) a brief tutorial of how to install and use the application.

When using KOSCA 1.0 in your project, please cite this paper:

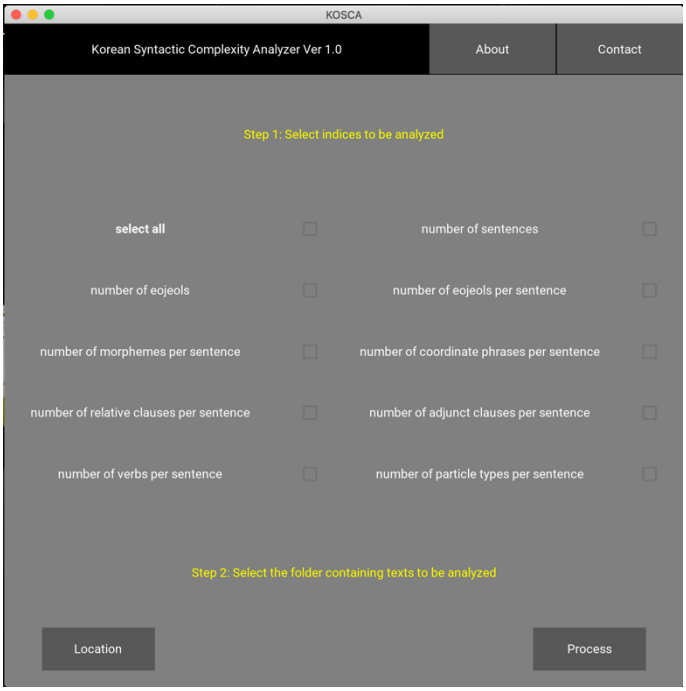
> Hwang, H. & Kim, H. (submitted). Korean Syntactic Complexity Analyzer (KOSCA): An NLP Tool for the Analysis of Syntactic Complexity in Second Language Production.

- Installment
  Download the version of KOSCA appropriate for your operating system (**Mac** or **Windows**) and open it. For Windows users, if the application does not work, please install JAVA following the steps illustrated from p. 3 of this document.

- Syntactic indices in KOSCA 1.0

Category	Index	Measurement
Length of production	Number of sentences	Total number of sentences in text
	Number of eojeols	Total number of eojeols in text
Complexity of sentence	Number of eojeols per sentence	Total number of eojeols / total number of sentences
	Number of morphemes per sentence	Total number of morphemes / total number of sentences
Coordination	Number of coordinate phrases per sentence	Total number of coordinate phrases / total number of sentences
Subordination	Number of relative clauses per sentence	Total number of relative phrases / total number of sentences
	Number of adjunct clauses per sentence	Total number of adjunct phrases / total number of sentences
Particular structures	Number of verbs per sentence	Total number of verbs / total number of sentences
	Number of particle types per sentence	Total number of particle types / total number of sentences

- Input
  (1) Select the indices for analysis.
  (2) Click on the "Location" button (at the left bottom) to locate a folder in which text data for analysis are available. Note that all input files must be text files (.txt). All .txt files in the chosen input folder will be processed by KOSCA 1.0.
  (3) Click on the "Process" button (at the right bottom) to analyze inputted data.



- Output
  An output of the inputted data analyzed in selected syntactic indices will be saved as a comma-separated file named "results.csv", which is runnable in a software, like Number or Excel.

Important for **Windows** users only:
Follow the steps below to make the application work.

1. Download and install the version of Java that is appropriate for your operating system.

(1) Go to https://www.oracle.com/java/technologies/downloads/
(2) Download Java by clicking "Windows" and download the Java Development Kit (JDK) for "x64 Installer". (Note: You may be required to create an Oracle Account to download JAVA).

Java SE Development Kit 18.0.2.1 downloads

Thank you for downloading this release of the Java™ Platform, Standard Edition Development Kit (JDK™). The JDK is a development environment for building applications and components using the Java programming language.

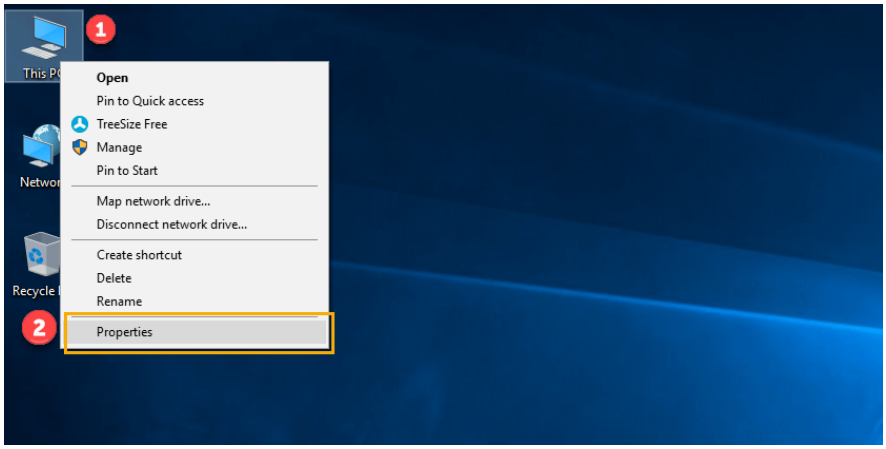
The JDK includes tools for developing and testing programs written in the Java programming language and running on the Java platform.

Linux macOS Windows

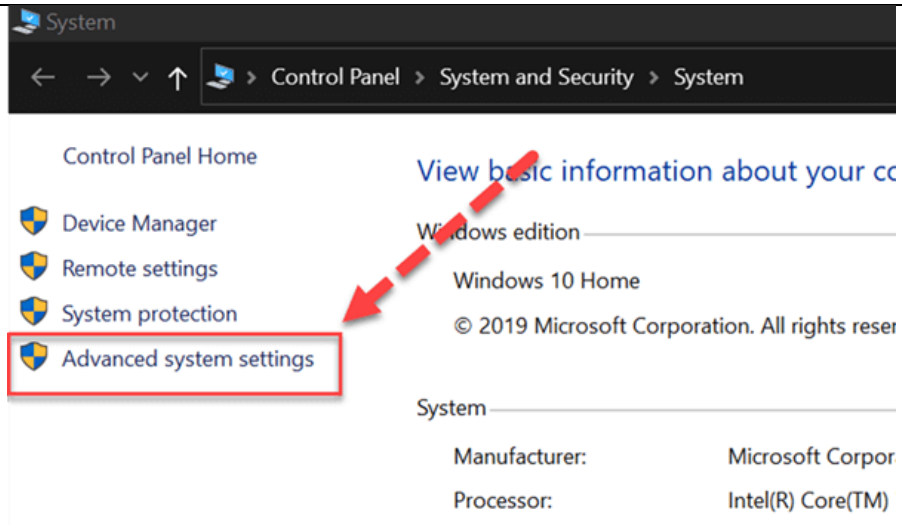
Product/file description	File size	Download
x64 Compressed Archive	172.93 MB	https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.zip (sha256)
x64 Installer	153.45 MB	https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.exe (sha256)
x64 MSI Installer	152.33 MB	https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.msi (sha256)

(3) Once the Java download is complete, run the exe and install Java.

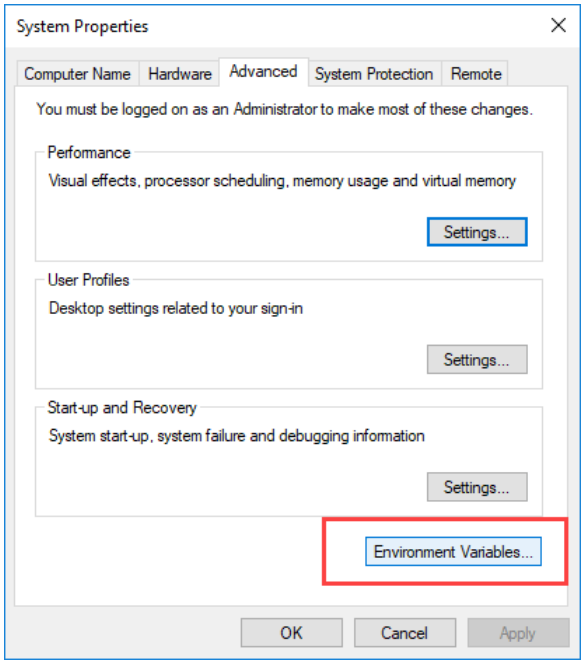
2. Set Environment Variables in Java in the following manner.
(1) Right click on the "My Computer" on the desktop and select the "properties".



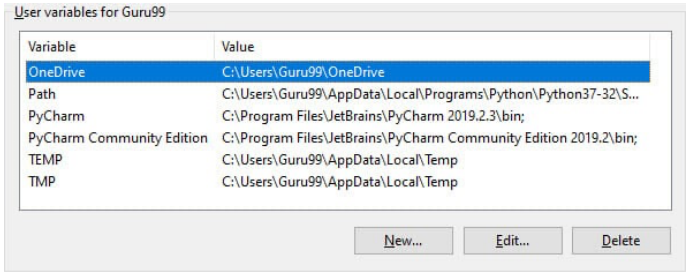
(2) Click on "advanced system settings".



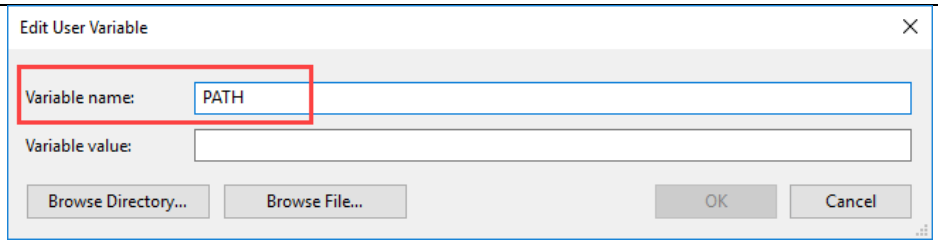
(3) Click on "Environment Variables" to set a runtime environment for Java.



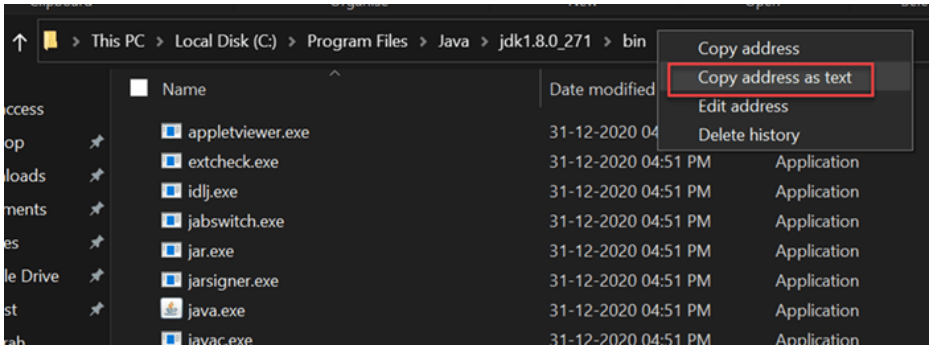
(4) Click on "New…" button.



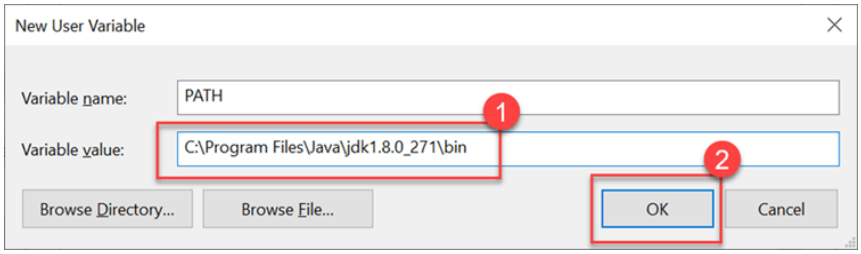
(5) Type "PATH" in the "Variable name".



(6) Copy the path of "bin" folder under the "JDK" folder.

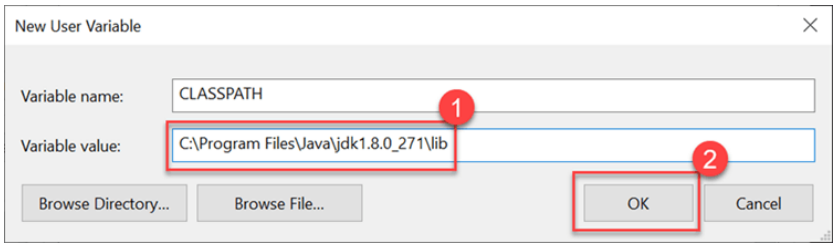


(7) Paste the copied path in "Variable value" and then click on "OK".



(8) Click on "New…" button.

(9) Type "CLASSPATH" in the "Variable name". And, copy the path of "lib" folder under the "JDK" folder and past it in "Variable value" and then click on "OK".



Pictures from https://www.guru99.com/install-java.html