# SnpEff Installation & Setup Notes

## Purpose of SnpEff

SnpEff is a Java-based tool used to annotate and predict the effects of genetic variants (from VCF files) based on genomic features. It requires Java to run and a reference database for the organism of interest.

## Required Tools

* wget

Purpose: To download files from the internet via command line.

Install:  
sudo apt update  
sudo apt install wget

Why/When: Needed to fetch SnpEff or JDK files without using a browser.

* unzip

Purpose: To extract .zip archives.

Install:  
sudo apt install unzip

Why/When: SnpEff is distributed as a .zip file.

* Java (JRE or JDK)

Purpose: To run .jar files.

Install:  
sudo apt install default-jre  
  
OR install manually:  
tar -xvzf jdk-21.0.6\_linux-x64\_bin.tar.gz  
export PATH=/home/username/jdk-21.0.6/bin:$PATH  
java --version

Why/When: SnpEff is a Java program; without Java, it won’t run.

## Installation Steps (Correct Order)

1. sudo apt update  
2. sudo apt install wget  
3. wget https://snpeff.blob.core.windows.net/versions/snpEff\_latest\_core.zip  
4. sudo apt install unzip  
5. unzip snpEff\_latest\_core.zip  
6. sudo apt install default-jre  
7. java -version  
8. cd snpEff  
9. java -jar snpEff.jar databases

## Explanation of Key Steps

|  |  |  |  |
| --- | --- | --- | --- |
| Step | Command | Why It's Used | When to Run |
| 1 | sudo apt update | Updates package list so you can install latest software. | Before installing any package. |
| 2 | sudo apt install wget | Lets you download files directly from the terminal. | If wget isn’t already installed. |
| 3 | wget <url> | Downloads the SnpEff .zip archive. | Always before extracting SnpEff. |
| 4 | sudo apt install unzip | Allows extracting .zip files. | If you get an unzip: command not found error. |
| 5 | unzip snpEff\_latest\_core.zip | Extracts SnpEff program files. | Once after download. |
| 6 | sudo apt install default-jre | Installs Java runtime so you can run .jar files. | If Java is missing. |
| 7 | java -version | Confirms Java is installed and checks version. | After Java installation. |
| 8 | cd snpEff | Navigates into the SnpEff folder. | Before running the program. |
| 9 | java -jar snpEff.jar databases | Downloads reference genome databases for annotation. | After installation, before first use. |

Tip: If you install a custom JDK manually, you must add it to your PATH every time you open a terminal unless you add the export PATH=... command to your ~/.bashrc file.