



Intro to game programming

Object Orientation with Java and Greenfoot

Credits to Oracle and University of Kent

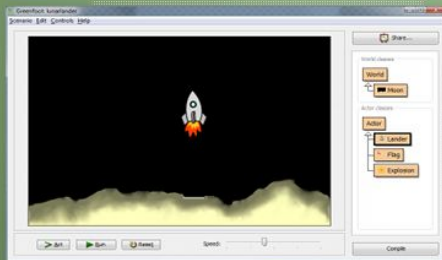
Programs needed



1. Java JDK 7 or later (<http://www.oracle.com/technetwork/java/javase/downloads/index.html>)
2. Greenfoot (<https://www.greenfoot.org/download>)
3. File archive manager, eg. “7zip”, for unpacking example files

Greenfoot

Teach & Learn Java Programming



Educational software designed to make learning programming easy and fun

Interactive

Visual tools coupled with programming, making learning to program easier

Real Programming

Learn and teach Java, one of the most popular languages in the world

Global

Discuss, share and interact with user communities, both for learners and teachers

[Enter Greenfoot site](#)

[find out more](#)

The Software



Download Greenfoot for free: runs on Windows, Mac and Linux

The Book



'Introduction to Programming with Greenfoot' is the official book used by both teachers and students

The Greenroom



The instructor community: share resources and discuss with other instructors.

Greenfoot



Username

Password

Remember Me? ☐

[Sign Up](#), [Lost Password](#)

[Activity](#)

[About](#)

[Documentation](#)

[Download](#)

[Scenarios](#)

[Discuss](#)

Download Greenfoot

Version: 3.1.0

Installation Instructions can be found [here](#) and frequently asked questions are answered [here](#).

Windows

7, 8 and 10.



Mac OS X

10.8.3 or later.



Ubuntu

Supports Debian



Pure Java

For any OS.
Requires JDK.



Standalone

For Windows, runs from a USB
stick. Includes JDK.



Translations

Greenfoot has been translated into many different languages. Find [information on how to change the interface language in Greenfoot](#), and get other translated materials.

Support

If you have problems related to Greenfoot, you can [contact our technical support](#).

Old Versions

The [version history](#) and [old versions of Greenfoot](#) are available.

Source Code

The [source code](#) for the Greenfoot IDE is also available, under the GNU General Public Licence version 2 with classpath exception.

Greenfoot



Username

Password

Remember Me? ☐ [Login](#)

[Sign Up](#), [Lost Password](#)

[Activity](#)

[About](#)

[Documentation](#)

[Download](#)

[Scenarios](#)

[Discuss](#)

Download Greenfoot

Version: 3.1.0

Installation Instructions can be found [here](#) and frequently asked questions are answered [here](#).

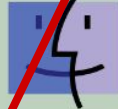
Windows

7, 8 and 10.



Mac OS X

10.8.3 or later.



Ubuntu

Supports Debian



Pure Java

For any OS.
Requires JDK.



Standalone

For Windows, runs from a USB
stick. Includes JDK.



Translations

Greenfoot has been translated into many different languages. Find [information on how to change the interface language in Greenfoot](#), and get other translated materials.

Support

If you have problems related to Greenfoot, you can [contact our technical support](#).

Old Versions

The [version history](#) and [old versions of Greenfoot](#) are available.

Source Code

The [source code](#) for the Greenfoot IDE is also available, under the GNU General Public Licence version 2 with classpath exception.

Greenfoot



Username

Password

Remember Me? ☐ [Login](#)

[Sign Up](#), [Lost Password](#)

[Activity](#)[About](#)[Documentation](#)[Download](#)[Scenarios](#)[Discuss](#)

Installing Greenfoot

Windows

Simply download and double-click the .msi file to start the Windows installer.

Note that if you already have a previous version of Greenfoot installed, you will need to uninstall it first - go to the Control Panel and then "Programs and Features" to uninstall Greenfoot.

Mac OS X

Download the zip file and extract it. You can move the Greenfoot application bundle into your "Application" folder if you wish.

If your version of Mac OS X is too old to run the current version (i.e. pre 10.8.3), go to the 'Old versions' link further down on the downloads page. There you can find previous Greenfoot versions that run on older Mac OS systems.

Ubuntu

Download the file and open it to launch the Ubuntu software manager.

Installing Greenfoot this way normally results additionally in the installation of OpenJDK 8. Although Greenfoot may work with OpenJDK 8, it is *strongly* recommended that you install Oracle's JDK 8 instead. See [this launchpad page](#) for details on how to install the Oracle JDK on Ubuntu.

Debian

Greenfoot 3 can be used with either OpenJDK or the Oracle JDK. We recommend use of the Oracle JDK for the best experience.

To install Greenfoot using the Oracle JDK, it is necessary to first install the Oracle JDK as a Debian package by creating the package from an Oracle JDK bundle downloaded from the Oracle website. You then use the **java-package** tool to create a Debian package, which you can install using standard Debian package management utilities. See the [instructions for java-package here](#).

To install Greenfoot using OpenJDK, it may be necessary to [add the backports section to your package sources list](#).

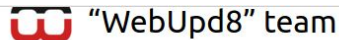
Other materials



- Course site
<https://bit.ly/2tzbv63>
- Example files
- Greenfoot API
<https://www.greenfoot.org/files/javadoc>

For convenience, bookmark or collect files from shared folder

Installing on Linux - Ubuntu



Overview Code Bugs Blueprints Translations Answers

Oracle Java (JDK) 8 / 9 Installer PPA

PPA description

Oracle Java (JDK) Installer (automatically downloads and installs Oracle JDK8). There are no actual Java files in this PPA.

Important -> Why Oracle Java 7 And 6 Installers No Longer Work: <http://www.webupd8.org/2017/06/why-oracle-java-7-and-6-installers-no.html>

Update: Oracle Java 9 has reached end of life: <http://www.oracle.com/technetwork/java/javase/downloads/jdk9-downloads-3848520.html>

The PPA supports Ubuntu 18.04, 17.10, 16.04, 14.04 and 12.04.

More info (and Ubuntu installation instructions):

- for Oracle Java 8: <http://www.webupd8.org/2012/09/install-oracle-java-8-in-ubuntu-via-ppa.html>

Debian installation instructions:

- Oracle Java 8: <http://www.webupd8.org/2014/03/how-to-install-oracle-java-8-in-debian.html>

For Oracle Java 10, see a different PPA: <https://www.linuxuprising.com/2018/04/install-oracle-java-10-in-ubuntu-or.html>

Adding this PPA to your system

You can update your system with unsupported packages from this untrusted PPA by adding **ppa:webupd8team/java** to your system's Software Sources. ([Read about installing](#))

```
sudo add-apt-repository ppa:webupd8team/java
sudo apt-get update
```

► [Technical details about this PPA](#)

For questions and bugs with software in this PPA please contact [WebUpd8](#).

Linux terminal:~\$

```
sudo add-apt-repository ppa:webupd8team/java
sudo apt-get update
sudo apt-get install oracle-java8-installer
```

Update October 20, 2016:

Previously, this package would increment the Java priority to make it default. The oracle-java8-installer package now sets the Java priority to 1081, and that may or may not set it as default, depending on other Java packages you may have installed (for instance, if Java 7 is also installed, Java 8 becomes default, but if Java 9 is installed, Java 8 doesn't become default).

To make Java 8 default, you must install the "oracle-java8-set-default" package (which configures the Java environment variables and sets it as default), which I added as a "Recommended" package to "oracle-java8-installer".

In Ubuntu, recommended packages are automatically installed, so "oracle-java8-set-default" should be installed when installing "oracle-java8-installer". In Linux Mint on the other hand, recommended packages are not installed by default, so you must install this package manually if you want to set Oracle Java 8 as default.

Installing on Linux - Ubuntu



```
using default oracle-java8-installer wgetrc settings for it.
Downloading Oracle Java 8...
--2018-05-10 14:25:07-- http://download.oracle.com/otn-pub/java/jdk/8u171-b11/512cd62ec5174c3487ac...
slår upp download.oracle.com (download.oracle.com)... 2.18.35.31
Ansluter till download.oracle.com (download.oracle.com)[2.18.35.31]:80... ansluten
HTTP-begäran skickad, väntar på svar... 302 Moved Temporarily
Address: https://edelivery.oracle.com/otn-pub/java/jdk/8u171-b11/512cd62ec5174c3487ac...
--2018-05-10 14:25:09-- https://edelivery.oracle.com/otn-pub/java/jdk/8u171-b11/512cd62ec5174c3487ac...
slår upp edelivery.oracle.com (edelivery.oracle.com)... 23.13.247.92, 2a02:26f0:e2...
Ansluter till edelivery.oracle.com (edelivery.oracle.com)[23.13.247.92]:443... ans
HTTP-begäran skickad, väntar på svar... 302 Moved Temporarily
Address: http://download.oracle.com/otn-pub/java/jdk/8u171-b11/512cd62ec5174c3487ac...
--2018-05-10 14:25:11-- http://download.oracle.com/otn-pub/java/jdk/8u171-b11/512cd62ec5174c3487ac...
Ansluter till download.oracle.com (download.oracle.com)[2.18.35.31]:80... ansluten
HTTP-begäran skickad, väntar på svar... 200 OK
Längd: 190890122 (182M) [application/x-gzip]
Sparar till: "jdk-8u171-linux-x64.tar.gz"
```

```

  0K ..... 1% 292K 10m28s
3072K ..... 3% 173K 13m51s
6144K ..... 4% 119K 17m22s
9216K ..... 6% 119K 18m52s
12288K ..... 8% 126K 19m23s
15360K ..... 9% 154K 18m54s
18432K ..... 11% 119K 19m12s
21504K ..... 13% 137K 18m57s
24576K ..... 14% 176K 18m11s
27648K ..... 16% 101K 18m38s
30720K ..... 18% 91,8K 19m7s
33792K ..... 19% 110K 19m4s
36864K ..... 21% 107K 18m59s
39936K ..... 23% 97,7K 19m1s
43008K ..... 24% 101K 18m54s
46080K ..... 26% 164K 18m13s
```

After installing Oracle Java and the "oracle-java8-set-default" package, running "java -version" in a terminal should output something like this:

```
Linux terminal:~$
andrei@andrei-desktop:~$ java -version
java version "1.8.0_111"
Java(TM) SE Runtime Environment (build 1.8.0_111-b14)
Java HotSpot(TM) 64-Bit Server VM (build 25.111-b14, mixed mode)
```

Or, "javac -version":

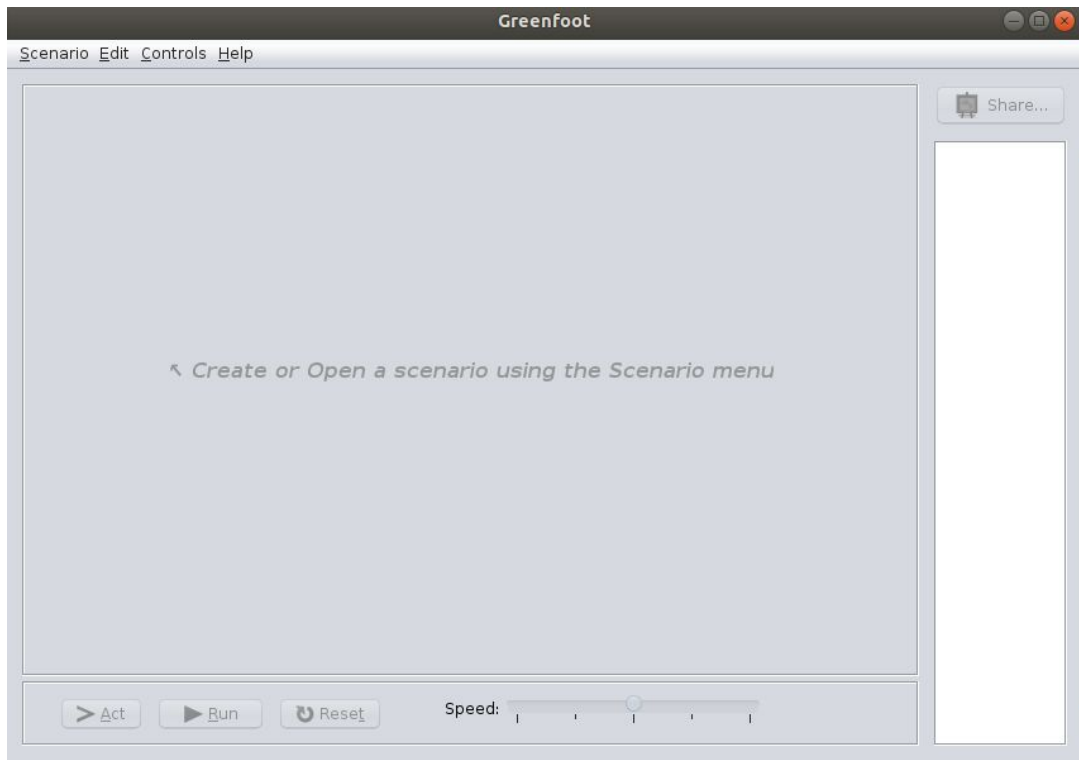
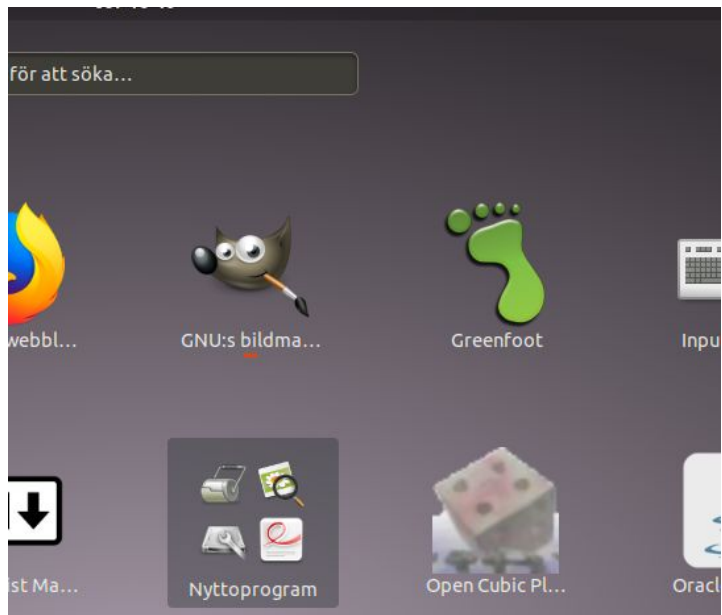
```
Linux terminal:~$
andrei@andrei-desktop:~$ javac -version
javac 1.8.0_111
```

And so on.

```
$ sudo apt-get install libcanberra-gtk-module
```

Opening up Greenfoot

P I N K
{p r o g r a m m i n g}





```
for( int time = 0; time < maxTime ; time++ ) {  
    if ( time >= maxTime / 2 ) {
```

— **break;**

```
}
```

```
}
```