

Required Software

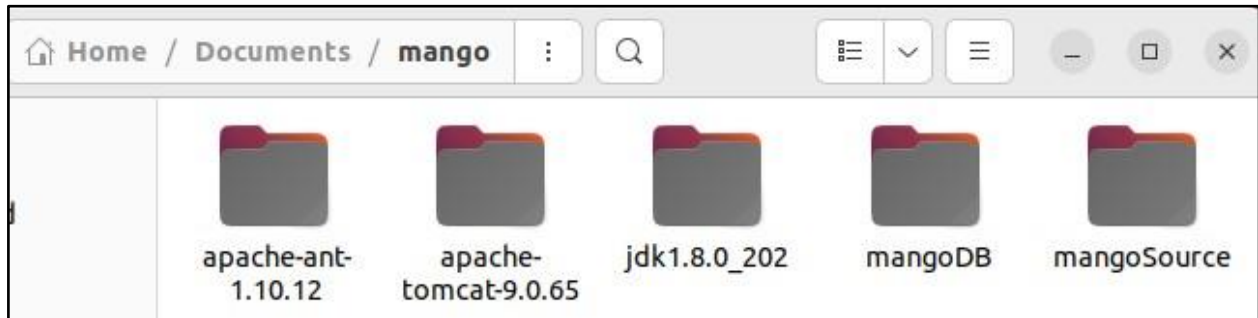
Apache Ant 1.10.x	- Java automated build + deployment tool
Apache tomcat 9.0.x	- Web Server
Java 8 JDK	- Java
mangoSource	- Mango source code
mangoDB	- Mango database

Linux Installation

The following instructions were performed on a clean installation of Ubuntu 22.04. There are no known compatibility issues on other distributions.

File Setup

Download the above required software for your distribution, and extract the directories into a folder. We will extract the files to ~/Documents/mango, but any directory will work.



Environment Variables

Now, we must set some environment variables. The easiest way to do this is by modifying out ~/.bashrc file. Note the absolute paths of ./apache-ant-1.10.12/bin and ./jdk1.8.0_202. In our case, these are /home/morgan/Documents/mango/apache-ant-1.10.12/bin and /home/morgan/Documents/mango/jdk1.8.0_202 respectively.

In our `~/.bashrc` file, we must add ant's bin directory to our PATH, and set JAVA_HOME to be our java directory:

```
export PATH="/home/morgan/Documents/mango/apache-ant-1.10.12/bin":$PATH
export JAVA_HOME="/home/morgan/Documents/mango/jdk1.8.0_202"
```

Make sure that `:$PATH` is appended to the PATH variable. Otherwise, your terminals will act strangely.

Tomcat Configuration

Next, we need to configure tomcat. Edit the `conf/tomcat-users.xml` file in the tomcat directory, and add the following lines:

```
<role rolename="manager-gui"/>
<user username="admin" password="admin" roles="manager-gui,manager-script"/>
```

Ex:



```
16 limitations under the License.
17 -->
18 <tomcat-users xmlns="http://tomcat.apache.org/xml"
19               xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
20               xsi:schemaLocation="http://tomcat.apache.org/xml tomcat-users.xsd"
21               version="1.0">
22
23 <role rolename="manager-text"/>
24 <user username="admin" password="admin" roles="manager-gui,manager-script"/>
25 <!--
```

We also need to make the scripts in tomcat's `bin` directory executable. Navigating here and running `sudo chmod +x *.sh` is sufficient.

```

morgan@computer:~/Documents/mango/apache-tomcat-9.0.65/bin$ sudo chmod +x *.sh
morgan@computer:~/Documents/mango/apache-tomcat-9.0.65/bin$ ls
bootstrap.jar          daemon.sh              startup.bat
catalina.bat           derby.log             startup.sh
catalina.sh            digest.bat            tomcat-juli.jar
catalina-tasks.xml     digest.sh             tomcat-native.tar.gz
ciphers.bat           makebase.bat          tool-wrapper.bat
ciphers.sh             makebase.sh           tool-wrapper.sh
commons-daemon.jar     setclasspath.bat     version.bat
commons-daemon-native.tar.gz setclasspath.sh       version.sh
configtest.bat         shutdown.bat
configtest.sh          shutdown.sh

```

Configuring mango's build.properties

The final configuration step we must perform is modifying mangoSource/build.properties. The **tomcat.home** and **db.url** must be set to the absolute paths of the apache tomcat and mangoDB directories. In our case, our build.properties file is as follows:

```

Open  build.properties  Save
~/Documents/mango/mangoSource
23 tomcat.home=/home/morgan/Documents/mango/apache-tomcat-9.0.65
24 #Ex: tomcat.home=/home/morgan/Documents/mango/apache-tomcat-9.0.65
25
26 tomcat.manager.url=http://localhost:8080/manager/test
27 tomcat.manager.username=admin
28 tomcat.manager.password=admin
29 tomcat.hostname=webapps
30
31 # App name and app path are separated to accomodate root deployments. (i.e. 'ROOT' vs. '/')
32 tomcat.appdir=test
33 tomcat.apppath=/test
34
35 log4j.xml.logThreshold=warn
36
37 db.type=derby
38
39 db.url=/home/morgan/Documents/mango/mangoDB
40 #Ex: db.url=/home/morgan/Documents/mango/mangoDB
41
42 db.username=
43 db.password=
44
45 convert.db.type=
46 convert.db.url=
47 convert.db.username=
48 convert.db.password=
49
50 grove.url=http://mango.serotoninsoftware.com/servlet
51
52 # This property is only used for building a distribution.
53 version=1.0.0

```

Quickstart

To run mango, first navigate to apache tomcat's bin directory and run the startup.sh script. Then, navigate to mangoSource and run the following commands to compile mango and reload tomcat respectively:

```
ant fullDeploy ant  
reload
```

Once done, you should be able to navigate to <http://localhost:8080/test> in a browser to access mango. Note that once tomcat's startup.sh script has been run, enacting any code changes made to mango only requires running the two ant commands.

Example of all commands to launch mango:

```
morgan@computer:~/Documents/mango$ ./apache-tomcat-9.0.65/bin/startup.sh
Using CATALINA_BASE:   /home/morgan/Documents/mango/apache-tomcat-9.0.65
Using CATALINA_HOME:   /home/morgan/Documents/mango/apache-tomcat-9.0.65
Using CATALINA_TMPDIR: /home/morgan/Documents/mango/apache-tomcat-9.0.65/temp
Using JRE_HOME:        /home/morgan/Documents/mango/jdk1.8.0_202
Using CLASSPATH:       /home/morgan/Documents/mango/apache-tomcat-9.0.65/bin/bootstrap.jar:/home/morgan/Documents/mango/apache-tomcat-9.0.65/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
morgan@computer:~/Documents/mango$ cd mangoSource/
morgan@computer:~/Documents/mango/mangoSource$ ant fullDeploy
Buildfile: /home/morgan/Documents/mango/mangoSource/build.xml

compile:
  [javac] Compiling 1 source file to /home/morgan/Documents/mango/mangoSource/build/WEB-INF/classes
static:
build:
createConfigFiles:
  [copy] Copying 1 file to /home/morgan/Documents/mango/mangoSource/build/WEB-INF/classes
  [copy] Copying 1 file to /home/morgan/Documents/mango/mangoSource/build/WEB-INF/classes
fullBuild:
copy:
  [copy] Copying 3 files to /home/morgan/Documents/mango/apache-tomcat-9.0.65/webapps/test
fullDeploy:

BUILD SUCCESSFUL
Total time: 0 seconds
morgan@computer:~/Documents/mango/mangoSource$ ant reload
Buildfile: /home/morgan/Documents/mango/mangoSource/build.xml

reload:
  [reload] OK - Reloaded application at context path [/test]

BUILD SUCCESSFUL
Total time: 48 seconds
morgan@computer:~/Documents/mango/mangoSource$
```

Mango homepage (the username and password are both **admin**):



Windows Installation

File Setup

First, download the software listed in the **Required Software** section. Note that for Java 8, only the installation wizard is available on Oracle's website. This guide will show how to use Java 8 without installing it, as it may cause problems for your computer when running a program that requires a newer java version. To do this, you may download the raw java 8 installation files from [here](#). Make sure to download the **.zip** version. If you are unconcerned with this, you may use Oracle's java 8 JDK installer instead.

OpenLogic's OpenJDK Downloads

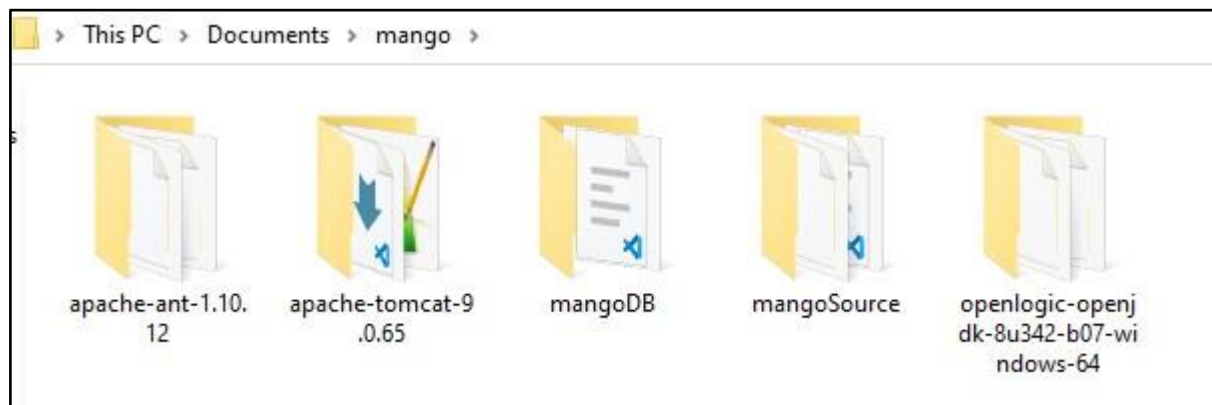
JAVA VERSION: 8
 OPERATING SYSTEM: Windows
 ARCHITECTURE: x86 64-bit
 JAVA PACKAGE: JDK

Reset

Java 8

JAVA VERSION	OPERATING SYSTEM	ARCHITECTURE	JAVA PACKAGE	DOWNLOAD
8u342-b07	Windows	x86 64-bit	JDK	.zip .msi
8u332-b09	Windows	x86 64-bit	JDK	.msi .zip
8u292-b10	Windows	x86 64-bit	JDK	.zip .msi

Once everything has been downloaded, create a folder for your project and extract everything into it. In our case, we have created a folder in C:\Users\morga\OneDrive\Documents\mango.



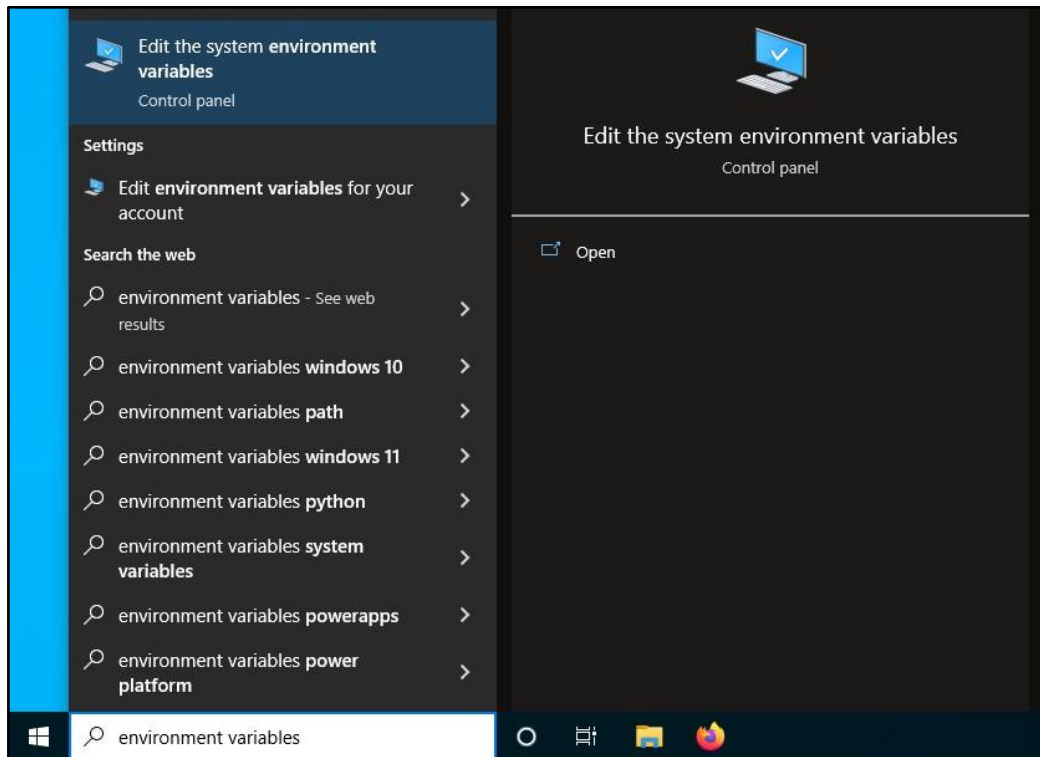
Environment Variables

Make note of the absolute paths of ant's bin folder and the java JDK folder. In our case, these are:

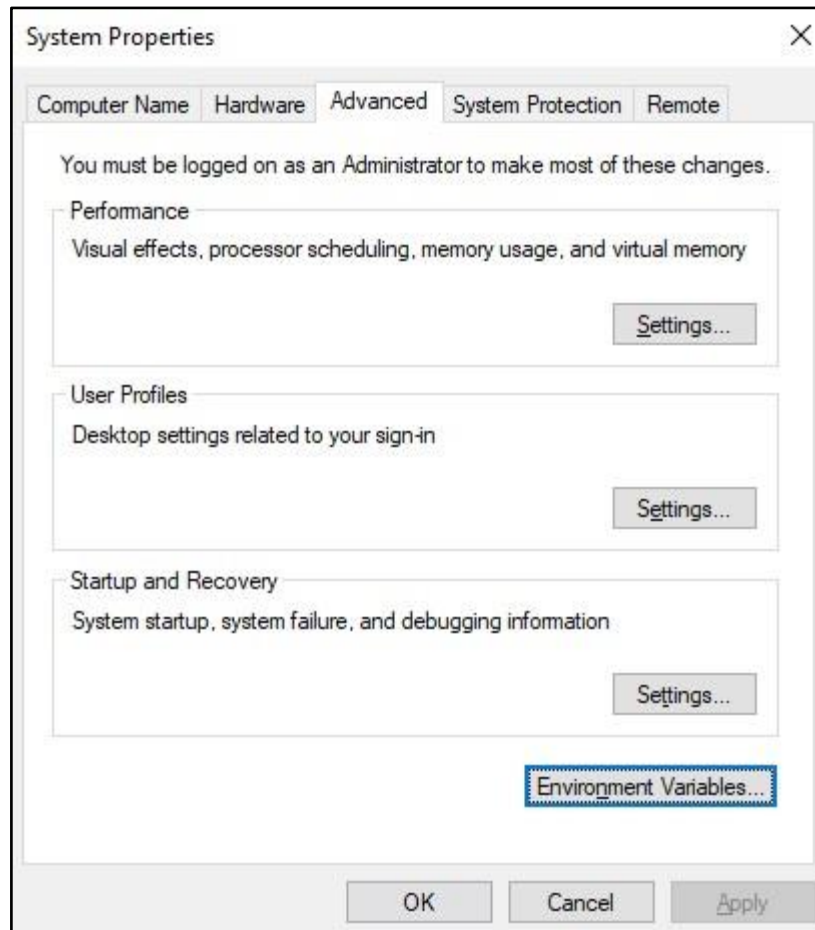
C:\Users\morga\OneDrive\Documents\mango\apache-ant-1.10.12\bin

C:\Users\morga\OneDrive\Documents\mango\openlogic-openjdk-8u342-b07-windows-64

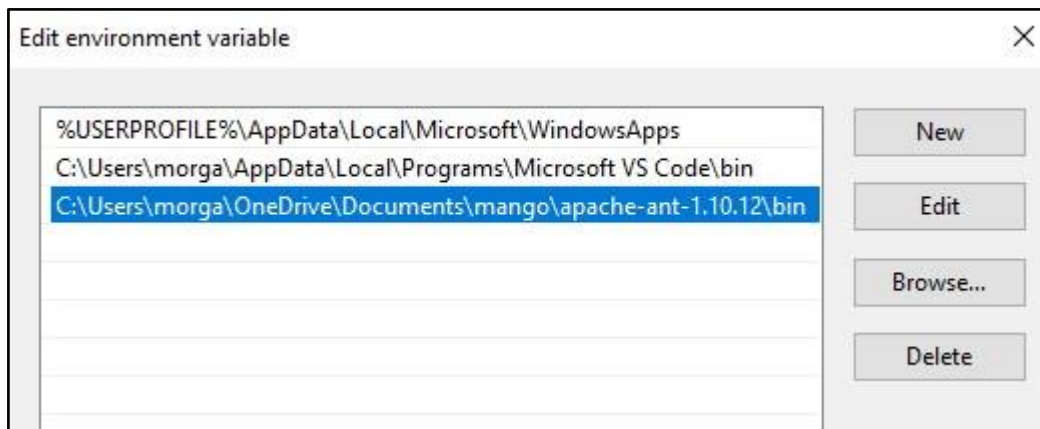
If you used Oracle's JDK installation wizard, you may skip any step in this section that involves the second path. First, we need to navigate to search “environment variables” in the windows search bar.



This should open a “System Properties” window.
Next, click the **Environment Variables...** button.



Finally, we can start editing the Environment Variables. Click on the **Path** entry in the top section (User variables section), and then click the **Edit** button. This should open a new window with several paths. Click **New** and paste your ant bin path into the new entry. Your Path entry should look similar to this:

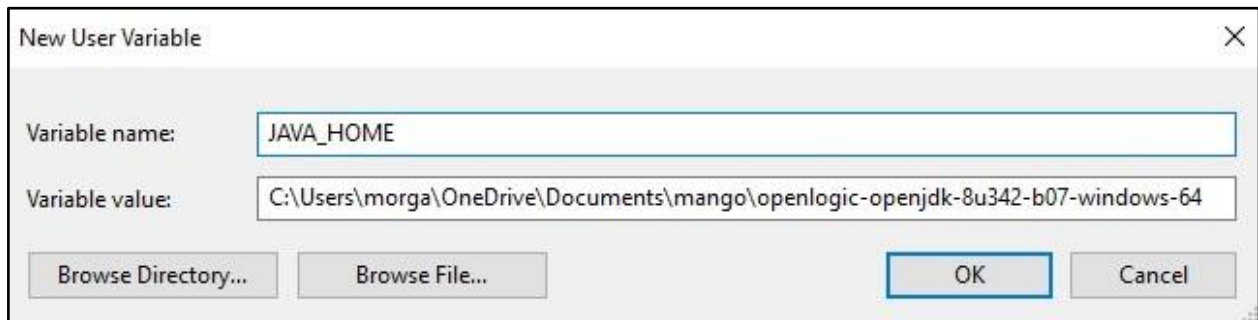


Click **OK**, then look for a **JAVA_HOME** entry in the lower section (System variables). If one already exists, delete it by clicking it, then clicking the **Delete** button.

Now, in the upper section (User variables):

- Click the lower **New...** button
- Enter **JAVA_HOME** into the **Variable name:** field
- Enter your java folder's path into the **Variable value:** field • Click OK

Before you click OK, you should see something similar to the following:



You may now close everything.

Tomcat Configuration

Next, we need to configure tomcat. Edit the [conf/tomcat-users.xml](#) file in the tomcat directory, and add the following lines:

```
<role rolename="manager-gui"/>
<user username="admin" password="admin" roles="manager-gui,manager-script"/>
```

Ex:



Configuring mango's build.properties

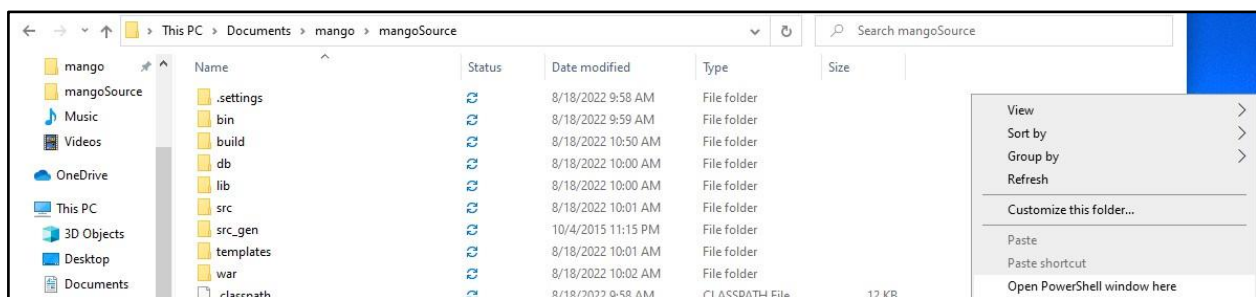
Open [mangoSource/build.properties](#), and change the tomcat.home and db.url fields to the corresponding paths. If you copied and pasted these paths, remove the **C:** prefix, and **make sure you change your forward slashes to backslashes**. If you use forward slashes (even if

you escape the forward slashes by replacing them with “\\”), the database will fail to load. Your file should look something like this:

```
C: > Users > morga > OneDrive > Documents > mango > mangoSource > J build.properties
22
23 tomcat.home=/Users/morga/OneDrive/Documents/mango/apache-tomcat-9.0.65
24 #Ex: tomcat.home=/home/morgan/Documents/mango/apache-tomcat-9.0.65
25
26 tomcat.manager.url=http://localhost:8080/manager/text
27 tomcat.manager.username=admin
28 tomcat.manager.password=admin
29 tomcat.hostname=webapps
30
31 # App name and app path are separated to accomodate root deployments. (
32 tomcat.appdir=test
33 tomcat.apppath=/test
34
35 log4j.xml.logThreshold=warn
36
37 db.type=derby
38
39 db.url=/Users/morga/OneDrive/Documents/mango/mangoDB
```

Quickstart

To run mango, first navigate to tomcat's bin folder and run the **startup.bat** file. There may be some “failed to load image” errors, but that doesn't mean that it isn't working. Next, navigate to the mangoSource folder, hold the “Shift” key, and right-click on empty space as if you were creating a new folder. You should see an **Open PowerShell window here** option. Click it.



Run the following commands:

ant fullDeploy

ant reload.

```

PS C:\Users\morga\OneDrive\Documents\mango\mangoSource> ant fullDeploy
Buildfile: C:\Users\morga\OneDrive\Documents\mango\mangoSource\build.xml

compile:
[javac] Compiling 1 source file to C:\Users\morga\OneDrive\Documents\mango\mangoSource\build\WEB-INF\classes
static:
build:
createConfigFiles:
[copy] Copying 1 file to C:\Users\morga\OneDrive\Documents\mango\mangoSource\build\WEB-INF\classes
[copy] Copying 1 file to C:\Users\morga\OneDrive\Documents\mango\mangoSource\build\WEB-INF\classes
fullBuild:
copy:
[copy] Copying 3 files to C:\Users\morga\OneDrive\Documents\mango\apache-tomcat-9.0.65\webapps\test
fullDeploy:
BUILD SUCCESSFUL
Total time: 2 seconds
PS C:\Users\morga\OneDrive\Documents\mango\mangoSource> ant reload
Buildfile: C:\Users\morga\OneDrive\Documents\mango\mangoSource\build.xml

reload:
[reload] OK - Reloaded application at context path [/test]

BUILD SUCCESSFUL
Total time: 8 minutes 6 seconds
PS C:\Users\morga\OneDrive\Documents\mango\mangoSource>

```

You should now be able to open a web browser and log into mango by navigating to <http://localhost:8080/test>. The username and password are both **admin**.



Note that once tomcat's [startup.sh](#) script has been run, enacting any code changes made to mango only requires running the two ant commands.