



2.1: Installing and setting the Java environment

IT1406 - Introduction to Programming

Level I - Semester 1

2.1 How to Install Java

The screenshot shows the Oracle Technology Network website. At the top, there is a navigation bar with the Oracle logo, a menu icon, a search bar, and links for 'Sign In', 'Country/Region', and 'Contact'. Below this is a breadcrumb trail: 'Oracle Technology Network / Java / Java SE / Downloads'. The main content area has a sidebar on the left with a list of links: 'Java SE', 'Java EE', 'Java ME', 'Java SE Subscription', 'Java Embedded', 'Java Card', and 'Java TV'. The central part of the page features a tabbed interface with tabs for 'Overview', 'Downloads', 'Documentation', 'Community', 'Technologies', and 'Training'. The 'Downloads' tab is active, displaying the title 'Java SE Development Kit 8 Downloads'. Below the title, there is a paragraph of text: 'Thank you for downloading this release of the Java™ Platform, Standard Edition Development Kit (JDK™). The JDK is a development environment for building applications, applets, and components using the Java programming language.' followed by another paragraph: 'The JDK includes tools useful for developing and testing programs written in the Java programming language and running on the Java platform.' To the right of the main content, there is a section titled 'Java SDKs and Tools' which contains a list of links: 'Java SE', 'Java EE and Glassfish', 'Java ME', 'Java Card', 'NetBeans IDE', and 'Java Mission Control'. Each link in this list is preceded by a small red download icon.

Oracle Technology Network / Java / Java SE / Downloads

Java SE
Java EE
Java ME
Java SE Subscription
Java Embedded
Java Card
Java TV

Overview Downloads Documentation Community Technologies Training

Java SE Development Kit 8 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, applets, and components using the Java programming language.

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

Java SDKs and Tools

- Java SE
- Java EE and Glassfish
- Java ME
- Java Card
- NetBeans IDE
- Java Mission Control

2.1 How to Install Java

- **Let us consider the operating systems windows and Linux**

Windows Operating System

2.1 How to Install Java

- Let us consider the operating system windows
- When installing Java Development Kit one has to consider the word size of the given computer whether it is 32 bits or 64 bits

Java SE Development Kit 8u241		
You must accept the Oracle Technology Network License Agreement for Oracle Java SE to download this software.		
<input type="radio"/> Accept License Agreement <input checked="" type="radio"/> Decline License Agreement		
Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	72.94 MB	jdk-8u241-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	69.83 MB	jdk-8u241-linux-arm64-vfp-hflt.tar.gz
Linux x86	171.28 MB	jdk-8u241-linux-i586.rpm
Linux x86	186.1 MB	jdk-8u241-linux-i586.tar.gz
Linux x64	170.65 MB	jdk-8u241-linux-x64.rpm
Linux x64	185.53 MB	jdk-8u241-linux-x64.tar.gz
Mac OS X x64	254.06 MB	jdk-8u241-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	133.01 MB	jdk-8u241-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	94.24 MB	jdk-8u241-solaris-sparcv9.tar.gz

2.1 How to Install Java

Java SE Development Kit 8u241

You must accept the [Oracle Technology Network License Agreement for Oracle Java SE](#) to download this software.

☐ Accept License Agreement ☒ Decline License Agreement

Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	72.94 MB	jdk-8u241-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	69.83 MB	jdk-8u241-linux-arm64-vfp-hflt.tar.gz
Linux x86	171.28 MB	jdk-8u241-linux-i586.rpm
Linux x86	186.1 MB	jdk-8u241-linux-i586.tar.gz
Linux x64	170.65 MB	jdk-8u241-linux-x64.rpm
Linux x64	185.53 MB	jdk-8u241-linux-x64.tar.gz
Mac OS X x64	254.06 MB	jdk-8u241-macosx-x64.dmg
Solaris SPARC 64-bit (64 package)	133.01 MB	jdk-8u241-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	94.24 MB	jdk-8u241-solaris-sparcv9.tar.gz

64 bits ????

2.1 How to Install Java

- **What is the word size of a computer?**
- **word size definition-**The number of bits that a CPU can process at one time. Processors with many different word sizes have existed though powers of two (8, 16, 32, 64) have predominated for many years. A processor's word size is often equal to the width of its external data bus though sometimes the bus is made narrower than the CPU to economize on packaging and circuit board costs.

2.1 How to Install Java

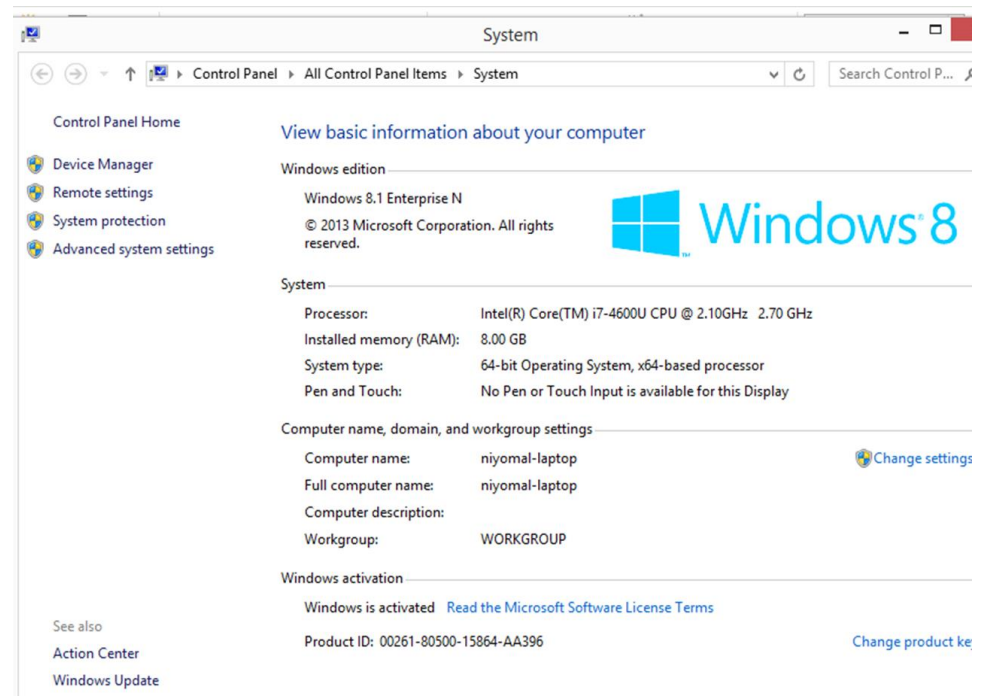
- How to check the word size of your computer(Windows)?

Select This PC → right
click → select
properties

**Microsoft Windows XP
Professional Version [year]** means
you're running Windows XP 32-bit.
**Microsoft Windows XP
Professional x64 Edition Version
[year]** means you're running
Windows XP 64-bit.

2.1 How to Install Java

- How to check the word size of your computer(Windows)?



2.1 How to Install Java

- One can use the following site and get the JDK installed in one's computer



2.1 How to Install Java

- Download Folder in one's windows computer



2.1 How to Install Java

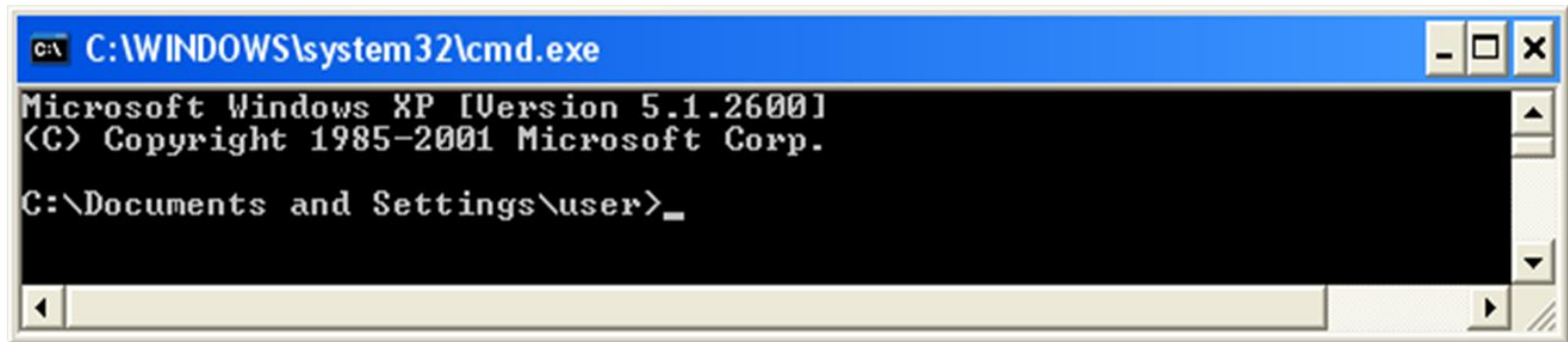
- After installing one can see the following in your computer
- Java 2 Platform is now installed
 - Java Virtual Environment (JVM)/ Java Run Time

A software implementation of a hypothetical computer(a computer within a computer)

- Java Application Programming Interface (Java API)
 - A set of software components which facilitate to write your programs.

2.1 How to Install Java

- How to check whether Java is installed?
 - Go to the command prompt – how?
- Start → run (type cmd)



2.1 How to Install Java

- How to check whether Java is installed?
- Switch to a working folder after creating it
- Lets assume new folder name is JAVA/BIT in drive F:
- Follow the following DOS(disk operating commands)

F:

`cd java`

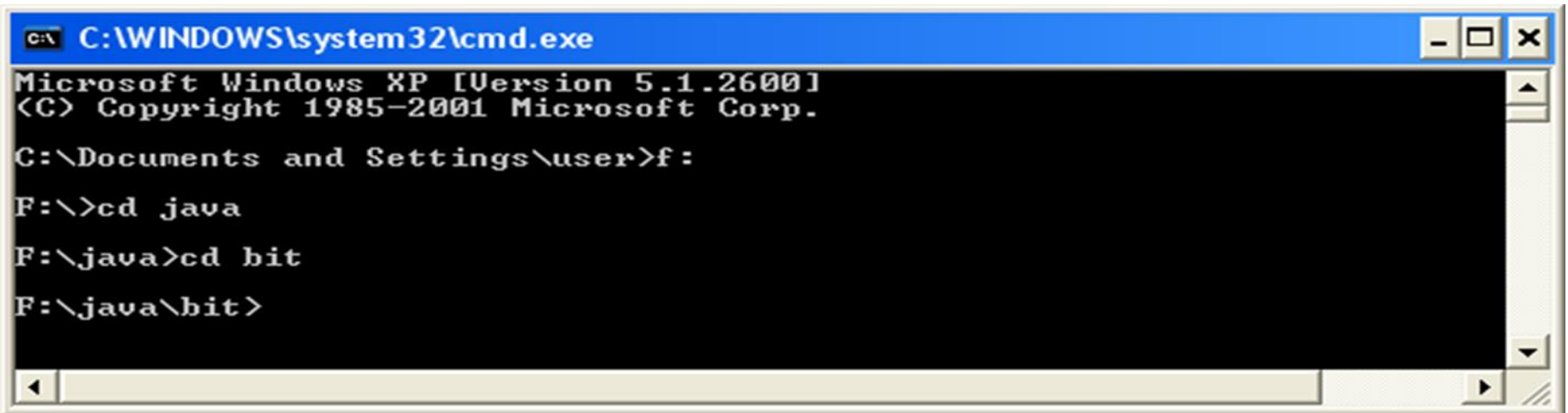
`cd bit`

Now one can see that he or she has jumped to that folder

Eg: → `f:\java\bit`

2.1 How to Install Java

- How to check whether Java is installed?



A screenshot of a Windows XP command prompt window. The title bar is blue and reads "C:\WINDOWS\system32\cmd.exe". The window contains the following text:

```
Microsoft Windows XP [Version 5.1.2600]  
<C> Copyright 1985-2001 Microsoft Corp.  
  
C:\Documents and Settings\user>f:  
F:\>cd java  
F:\java>cd bit  
F:\java\bit>
```

2.1 How to Install Java

- **How to check whether Java is installed?**

In the command prompt type the following command
java -version



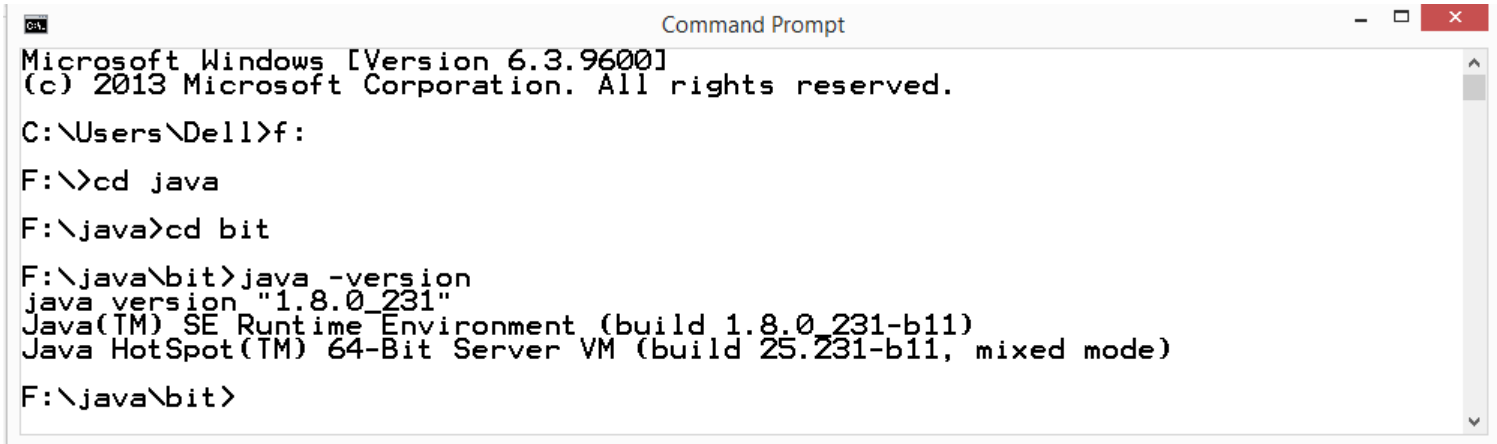
A screenshot of a Windows Command Prompt window. The title bar is blue and contains the text 'C:\WINDOWS\system32\cmd.exe' and standard window control buttons (minimize, maximize, close). The command prompt area is black with white text. The current directory is 'F:\java\bit' and the command 'java -version' is being entered at the prompt.

```
C:\WINDOWS\system32\cmd.exe
F:\java\bit>java -version
```


2.1 How to Install Java

- How to check whether Java is installed?

In the command prompt type the following command
java -version

A screenshot of a Windows Command Prompt window. The title bar reads "Command Prompt". The text inside the window shows the following sequence of commands and their output:

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

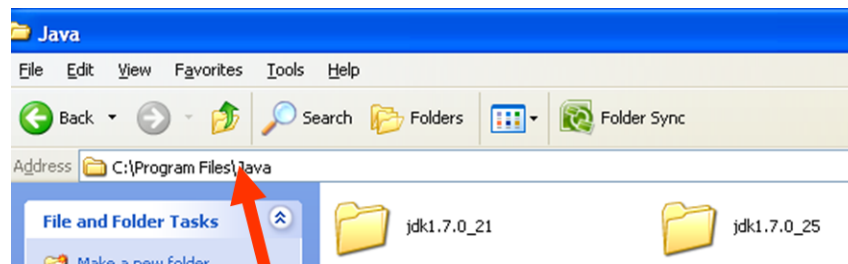
C:\Users\Dell>f:
F:\>cd java
F:\java>cd bit
F:\java\bit>java -version
java version "1.8.0_231"
Java(TM) SE Runtime Environment (build 1.8.0_231-b11)
Java HotSpot(TM) 64-Bit Server VM (build 25.231-b11, mixed mode)

F:\java\bit>
```

2.1 How to Install Java

- How to check whether Java is installed?

If you cannot see the version?- the reason = the PATH is not set



Java software

Our working folder

f:\java\bit

2.1 How to Install Java

- **How to check whether Java is installed?**

If you cannot see the version?-

If you cannot see the Java version? – the solution

Set environment variables in your computer – two alternatives (path)

- **Temporarily setting the path in the command prompt**
- **Permanently setting the path**

2.1 How to Install Java

- **How to check whether Java is installed?**

If you cannot see the version?-

If you cannot see the Java version? – the solution

Set environment variables in your computer – two alternatives (path)

- **Temporarily setting the path in the command prompt**
- **Permanently setting the path**

2.1 How to Install Java

- **How to check whether Java is installed?**

If you cannot see the version?-

If you cannot see the Java version? – the solution

Set environment variables in your computer – two alternatives (path)

- **Temporarily setting the path in the command prompt**
- **Permanently setting the path**

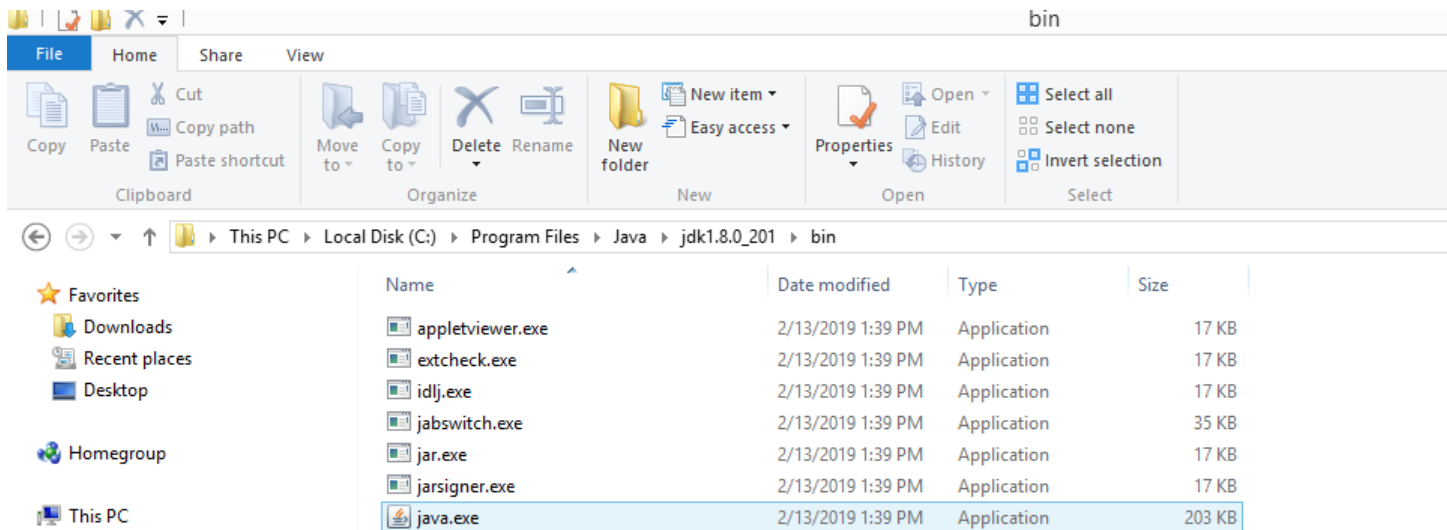
2.1 How to Install Java

Set environment variables in your computer – two alternatives (path)

- **Temporarily setting the path in the command prompt**
- **Permanently setting the path**


2.1 How to Install Java

First step is to locate the path of the Java software installed in C: drive



2.1 How to Install Java

Setting the path of Java in the computer temporarily
In the command prompt one has to type the following:

A screenshot of a Windows Command Prompt window. The title bar at the top says "Command Prompt". The command prompt shows the current directory as "F:\java\bit". The user has entered the command "set path=C:\Program Files\Java\jdk1.8.0_201\bin;%path%". The prompt is now waiting for the next command.

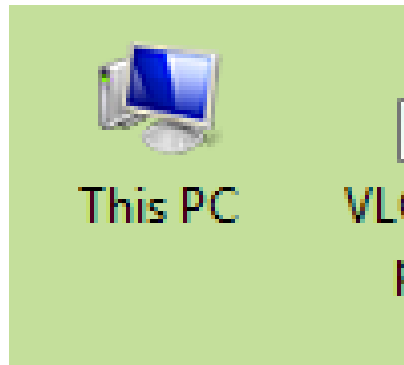
```
C:\> Command Prompt
F:\java\bit>set path=C:\Program Files\Java\jdk1.8.0_201\bin;%path%
F:\java\bit>_
```

the setting will be reset.

2.1 How to Install Java

So that one need to set the path of Java in the computer Permanently:

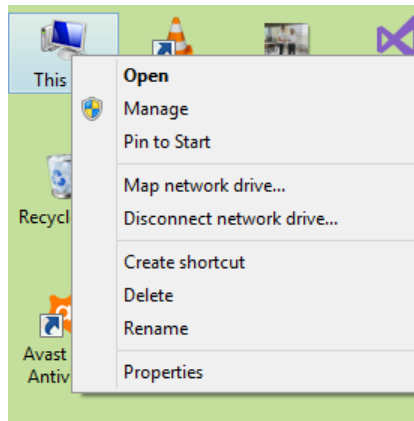
In the desk top select the icon of:



2.1 How to Install Java

So that one need to set the path of Java in the computer Permanently:

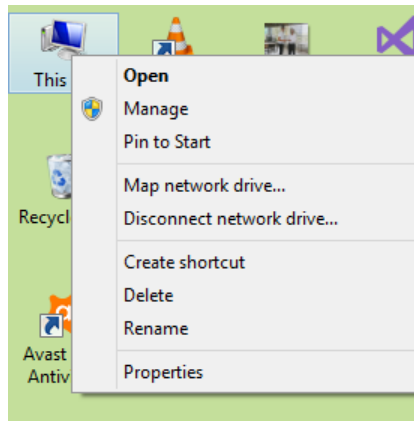
Right click and get the properties list



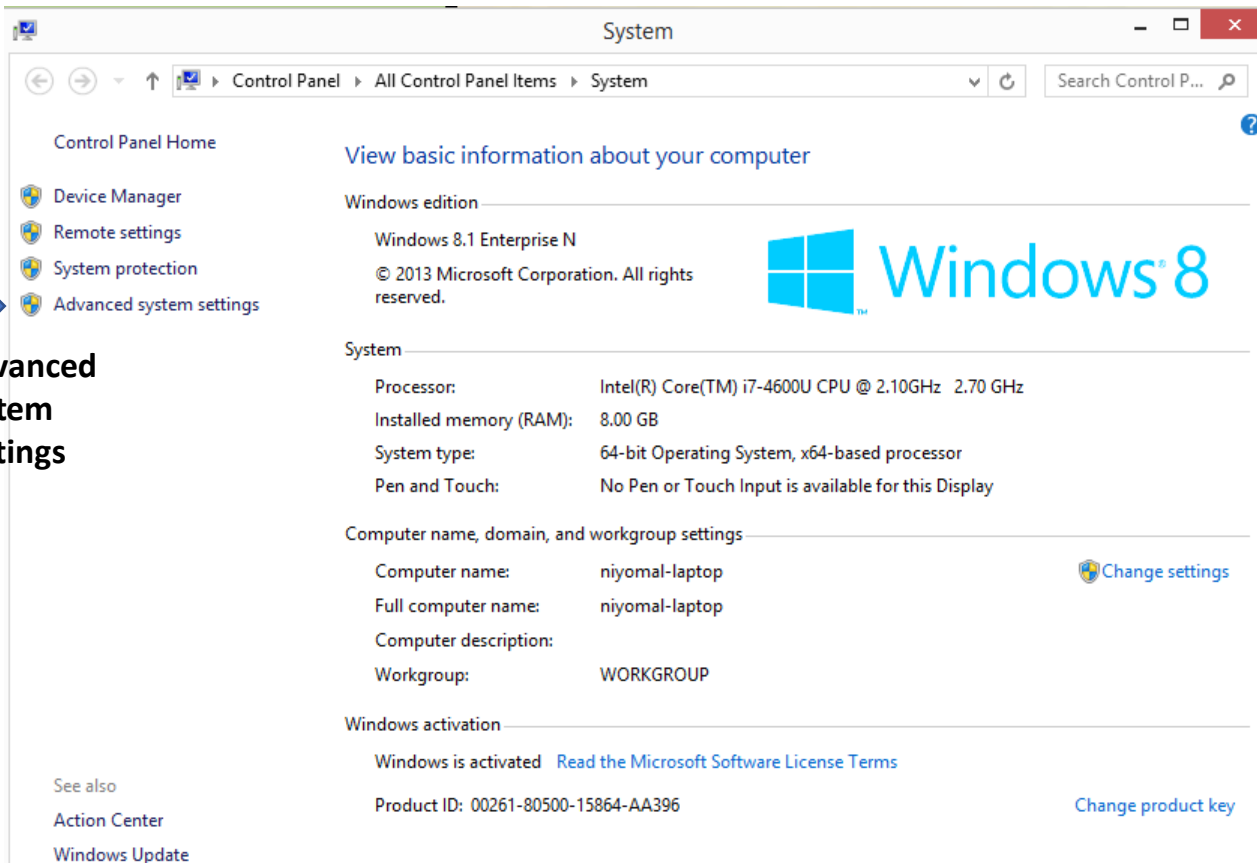
2.1 How to Install Java

So that one need to see the path of Java in the computer Permanently:

Select the last option properties



2.1 How to Install Java



The screenshot shows the Windows Control Panel window titled "System". The left sidebar contains links to "Control Panel Home", "Device Manager", "Remote settings", "System protection", and "Advanced system settings". A blue arrow points from the left towards the "Advanced system settings" link. The main content area is titled "View basic information about your computer" and displays system information for Windows 8.1 Enterprise N. The information is organized into sections: "Windows edition", "System", "Computer name, domain, and workgroup settings", and "Windows activation".

Select this option

Advanced system settings

Control Panel Home

- Device Manager
- Remote settings
- System protection
- Advanced system settings

View basic information about your computer

Windows edition

Windows 8.1 Enterprise N

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System

Processor:	Intel(R) Core(TM) i7-4600U CPU @ 2.10GHz 2.70 GHz
Installed memory (RAM):	8.00 GB
System type:	64-bit Operating System, x64-based processor
Pen and Touch:	No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

Computer name:	niyomal-laptop	Change settings
Full computer name:	niyomal-laptop	
Computer description:		
Workgroup:	WORKGROUP	

Windows activation

Windows is activated [Read the Microsoft Software License Terms](#)

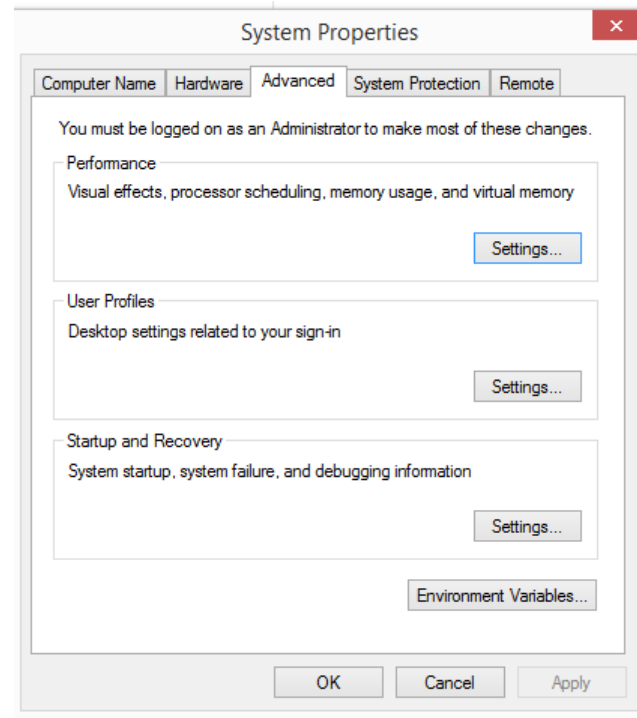
Product ID: 00261-80500-15864-AA396 [Change product key](#)

See also

- Action Center
- Windows Update

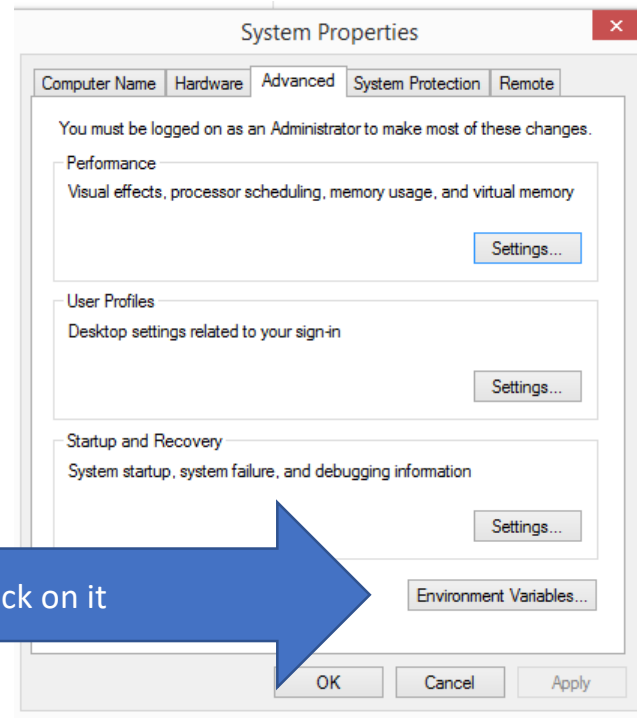
2.1 How to Install Java

Then system properties dialog will be opened



2.1 How to Install Java

Then system properties dialog will be opened

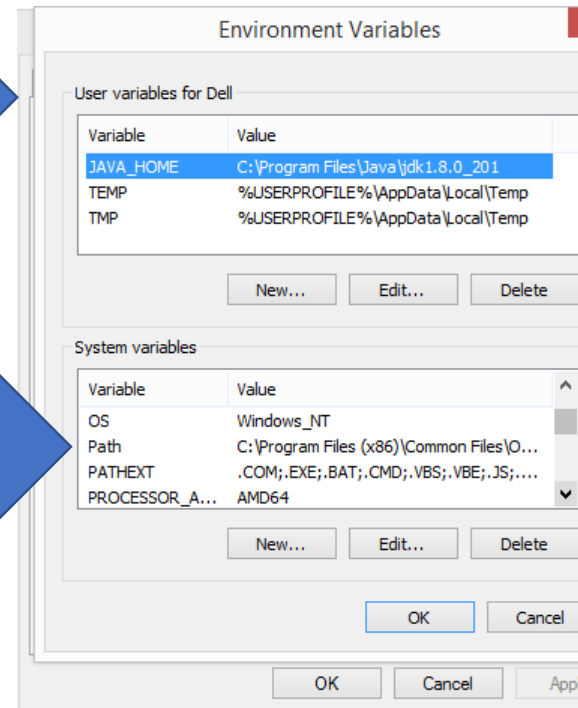


Select environment variable button and click on it

2.1 How to Install Java

After opening environment variable dialog box

Select Path property in the systems variable tab and the select Edit.. Button and click on it



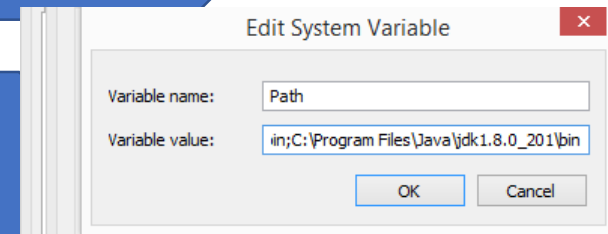
2.1 How to Install Java

After opening edit system variable dialog box

Insert a ; mark to the end of the existing entries and copy and past the Java path into the variable value input box

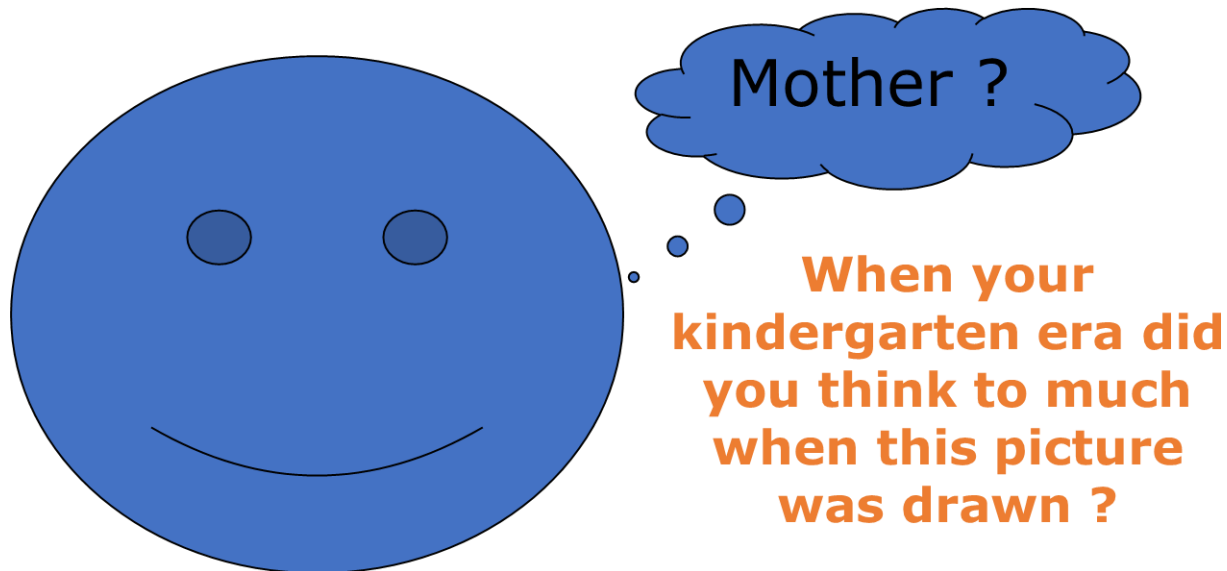
Example

C:\Program Files\Java\jdk1.8.0_201\bin



2.1 How to Install Java

Shall we write a Java program as a beginner ???



2.1 How to Install Java

Shall we write a Java program as a beginner ???



Java.....?

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2.1 How to Install Java

A simple Java Console Program to say *Hello*

Steps

1. Enter the program using an editor
2. Save the file
3. Compile the file
4. Run or interpret

2.1 How to Install Java

- Steps
 - Enter the Java program using an editor
 - Notepad
 - MS word
 - Linux

Ability to save the content in plain text

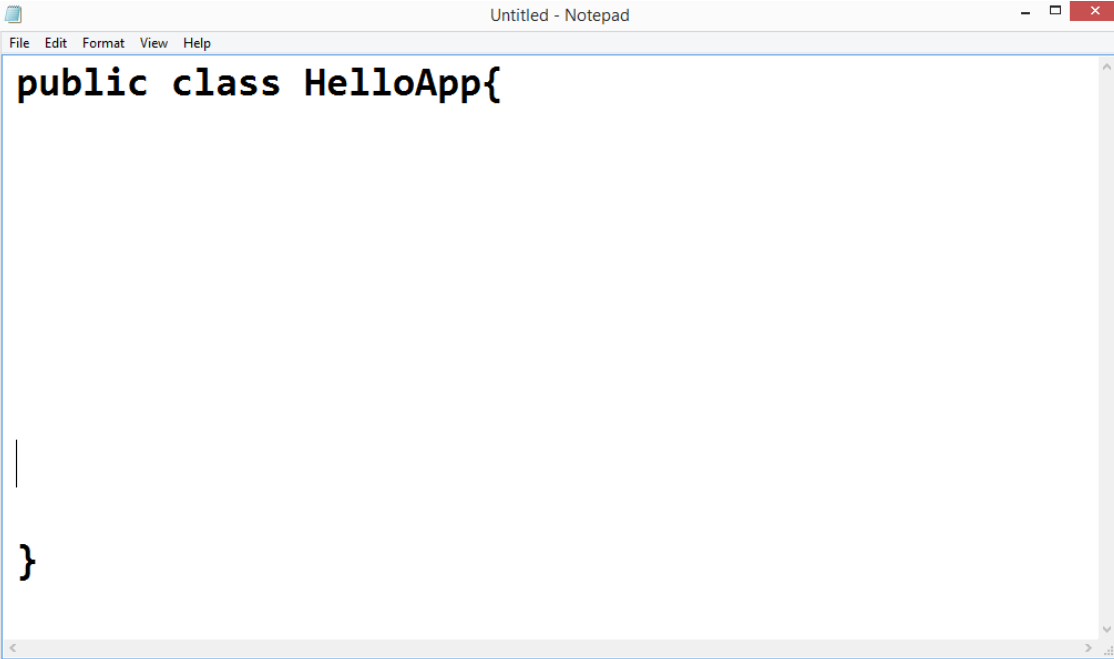
2.1 How to Install Java

- Steps
 - Enter the Java program using an editor
 - Notepad
 - MS word
 - Linux

Ability to save the content in plain text

2.1 How to Install Java

- Enter the file giving a Class name

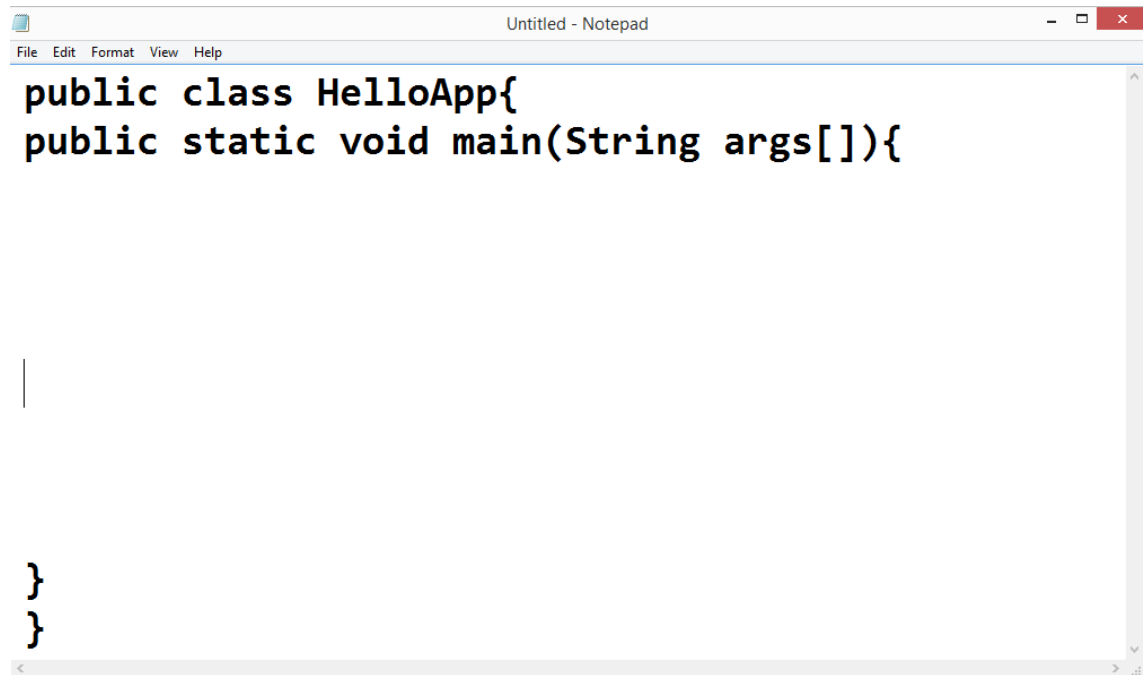
A screenshot of a Notepad window titled "Untitled - Notepad". The window has a menu bar with "File", "Edit", "Format", "View", and "Help". The text area contains the following code:

```
public class HelloApp{  
  
|  
  
}
```

The cursor is positioned on the line between the opening curly brace and the closing curly brace. The window has standard Windows window controls (minimize, maximize, close) in the top right corner.

2.1 How to Install Java

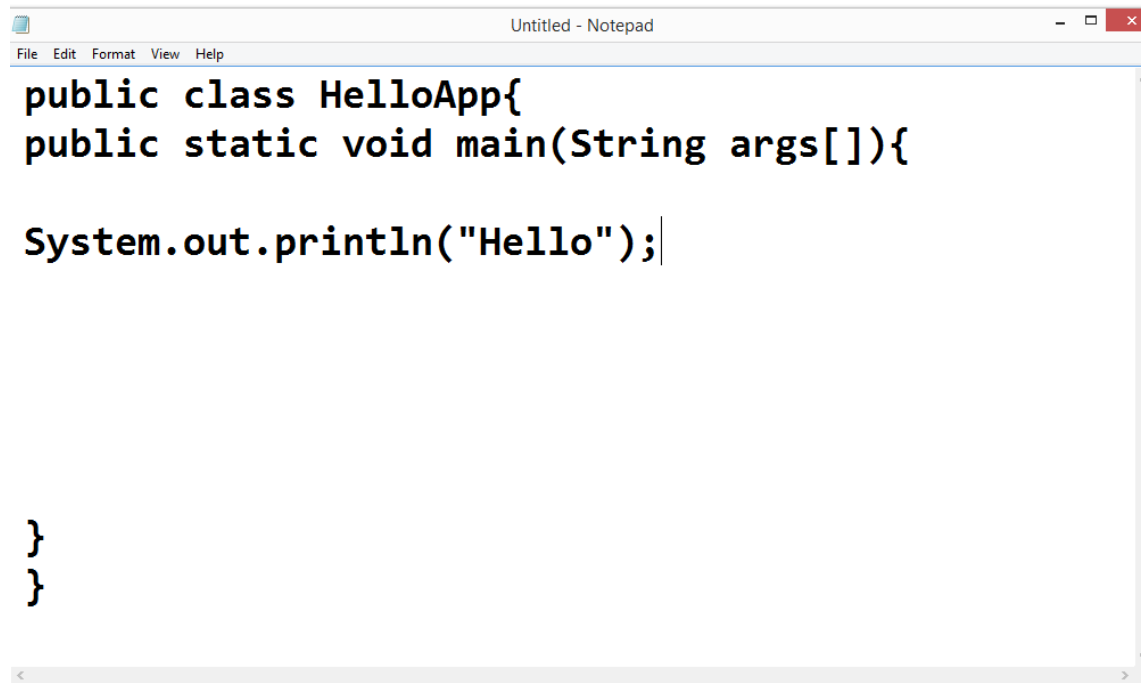
- **Include the main() method**

A screenshot of a Notepad window titled "Untitled - Notepad". The window has a menu bar with "File", "Edit", "Format", "View", and "Help". The text area contains the following Java code:

```
public class HelloApp{  
    public static void main(String args[]){  
  
    }  
}
```

2.1 How to Install Java

- Enter the output statement

A screenshot of a Notepad window titled "Untitled - Notepad". The window has a menu bar with "File", "Edit", "Format", "View", and "Help". The text area contains the following Java code:

```
public class HelloApp{  
    public static void main(String args[]){  
  
        System.out.println("Hello");  
  
    }  
}
```

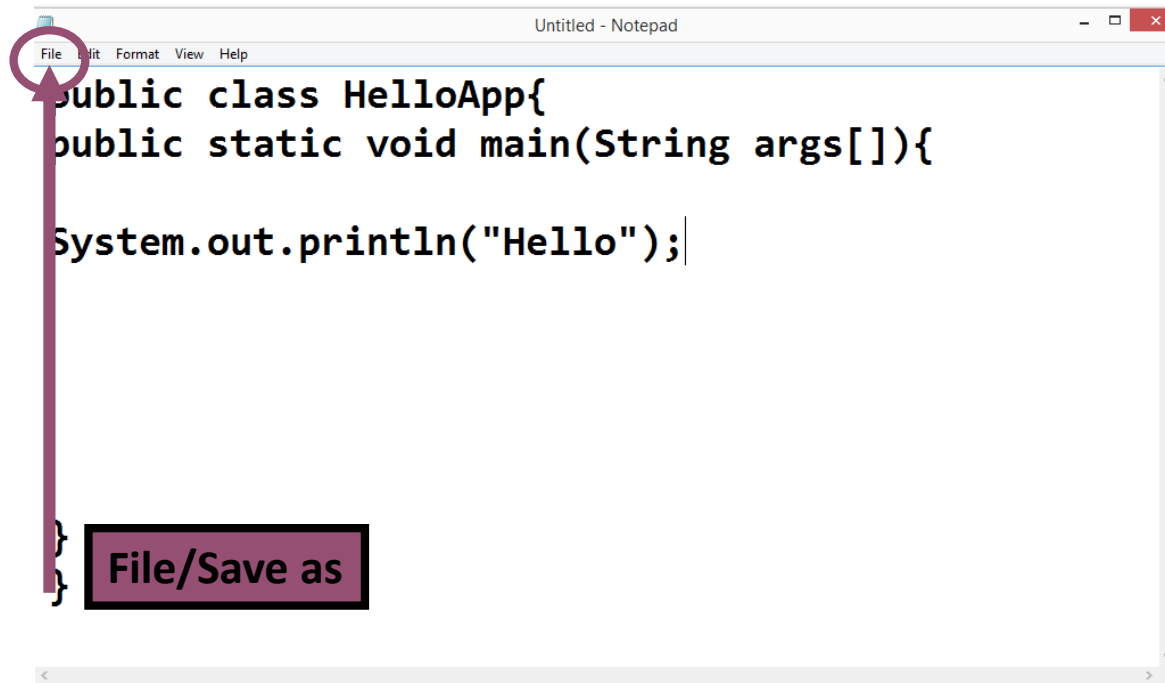
The cursor is positioned at the end of the line containing "System.out.println("Hello");".

2.1 How to Install Java

Save the file
giving class name as the file name
with .java file extension
HelloApp.java

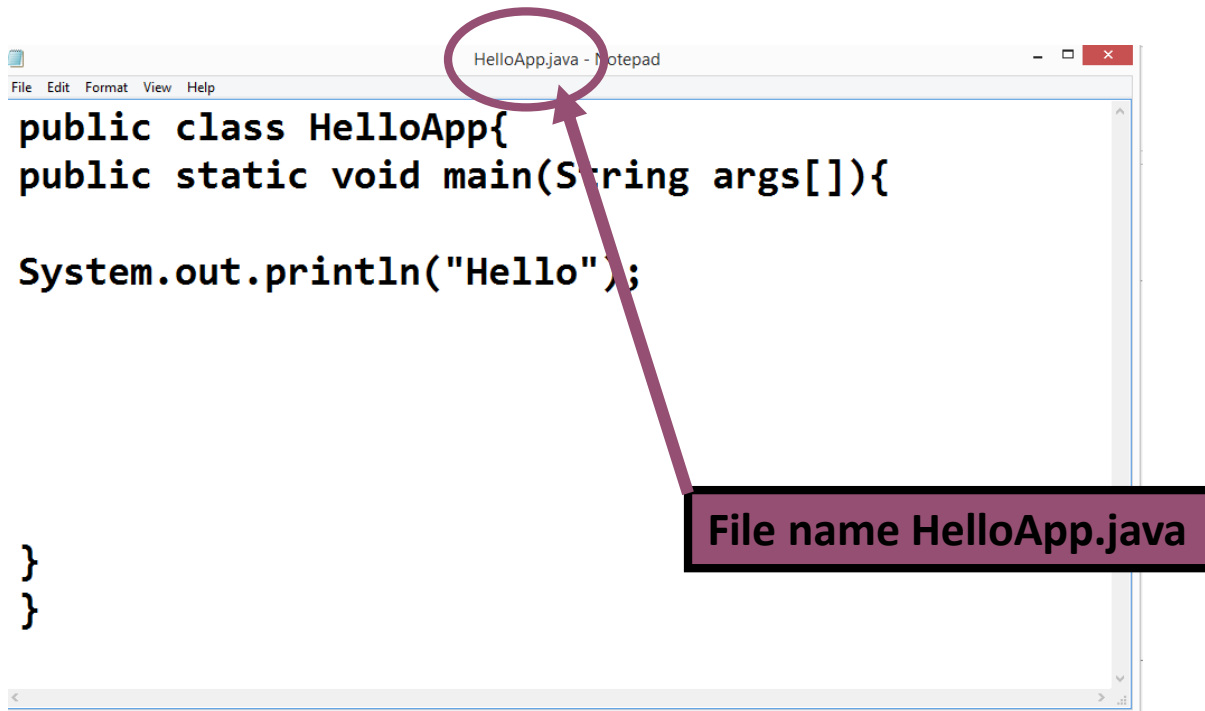
2.1 How to Install Java

- Save the file as HelloApp.java



2.1 How to Install Java

Save the File as *HelloApp.java*



2.1 How to Install Java

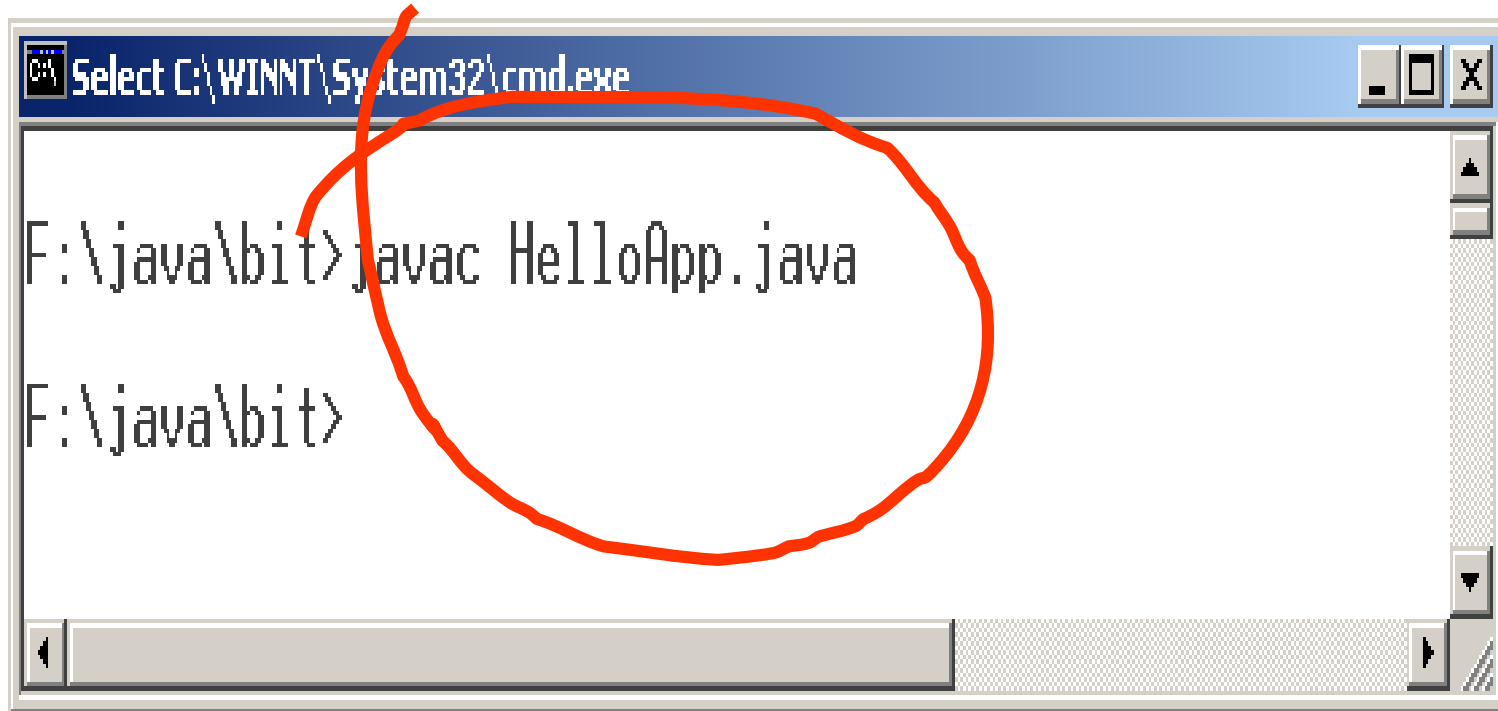
Compile the java program

```
javac HelloApp.java
```

Java compiler 

2.1 How to Install Java

Compile the java program



A screenshot of a Windows command prompt window. The title bar reads "Select C:\WINNT\System32\cmd.exe". The command prompt shows the directory "F:\java\bit" and the command "javac HelloApp.java" being entered. A red circle is drawn around the command "javac HelloApp.java".

```
Select C:\WINNT\System32\cmd.exe

F:\java\bit>javac HelloApp.java

F:\java\bit>
```

2.1 How to Install Java

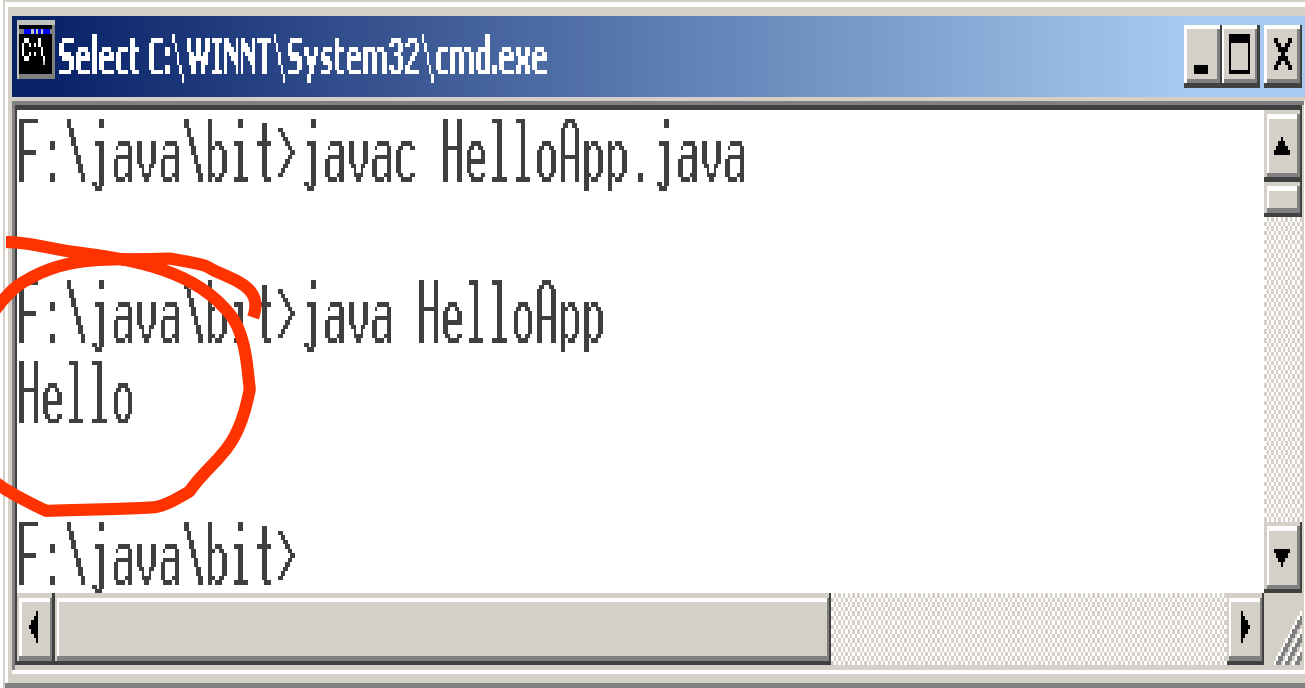
Run the program

```
java HelloApp
```

Java interpretor 

2.1 How to Install Java

Run the program



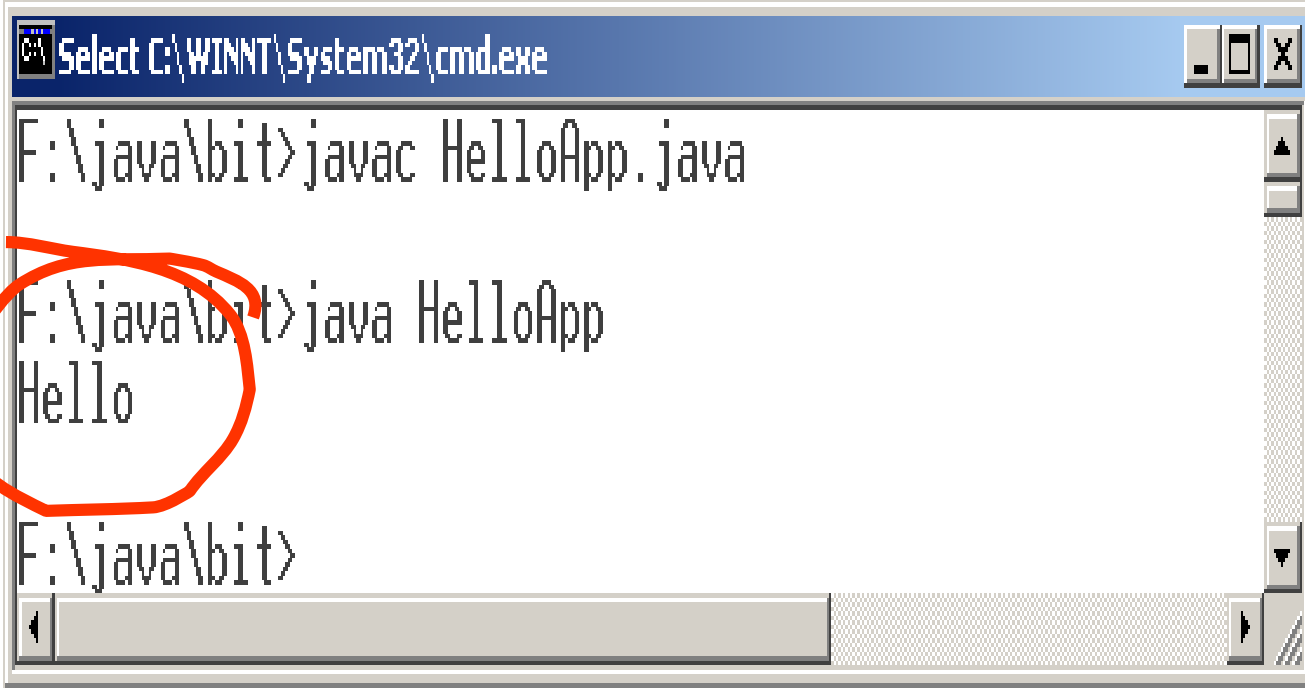
The screenshot shows a Windows command prompt window with the title bar "Select C:\WINNT\System32\cmd.exe". The command prompt displays the following sequence of commands and output:

```
F:\java\bit>javac HelloApp.java
F:\java\bit>java HelloApp
Hello
F:\java\bit>
```

A red circle is drawn around the command `java HelloApp` and its output `Hello`.

2.1 How to Install Java

Run the program

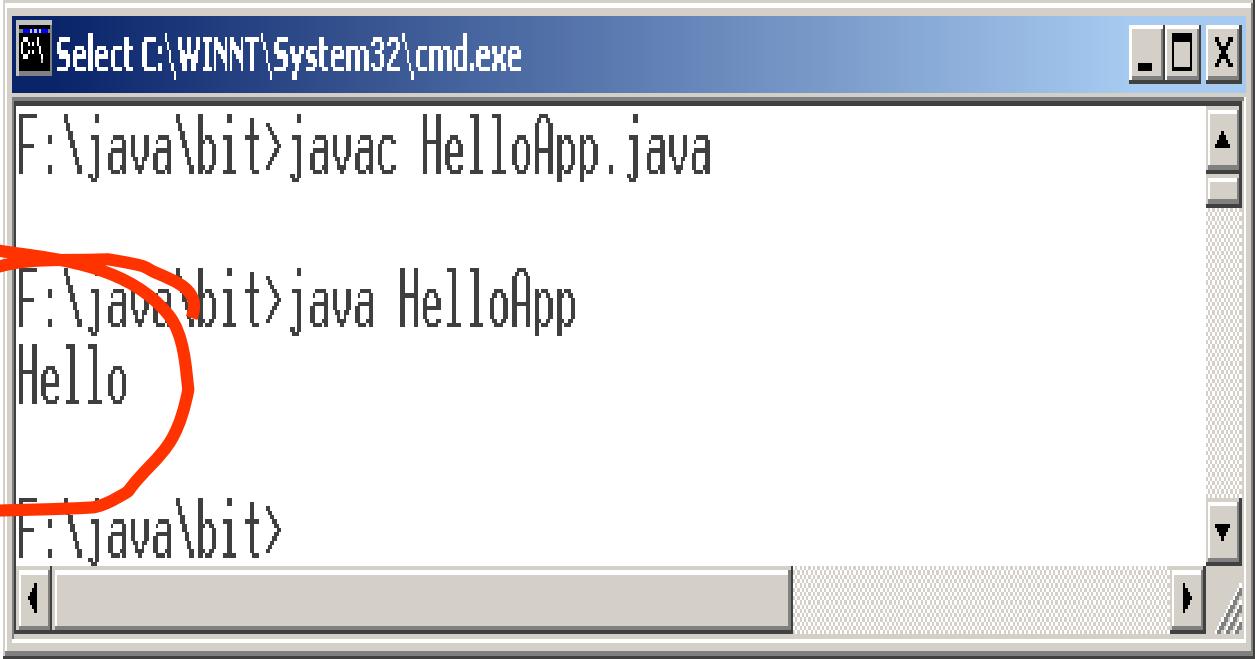


The screenshot shows a Windows command prompt window with the title bar "Select C:\WINNT\System32\cmd.exe". The command prompt displays the following sequence of commands and output:

```
F:\java\bit>javac HelloApp.java  
F:\java\bit>java HelloApp  
Hello  
F:\java\bit>
```

A red circle is drawn around the command `java HelloApp` and its output `Hello`.

How to Compile and Run



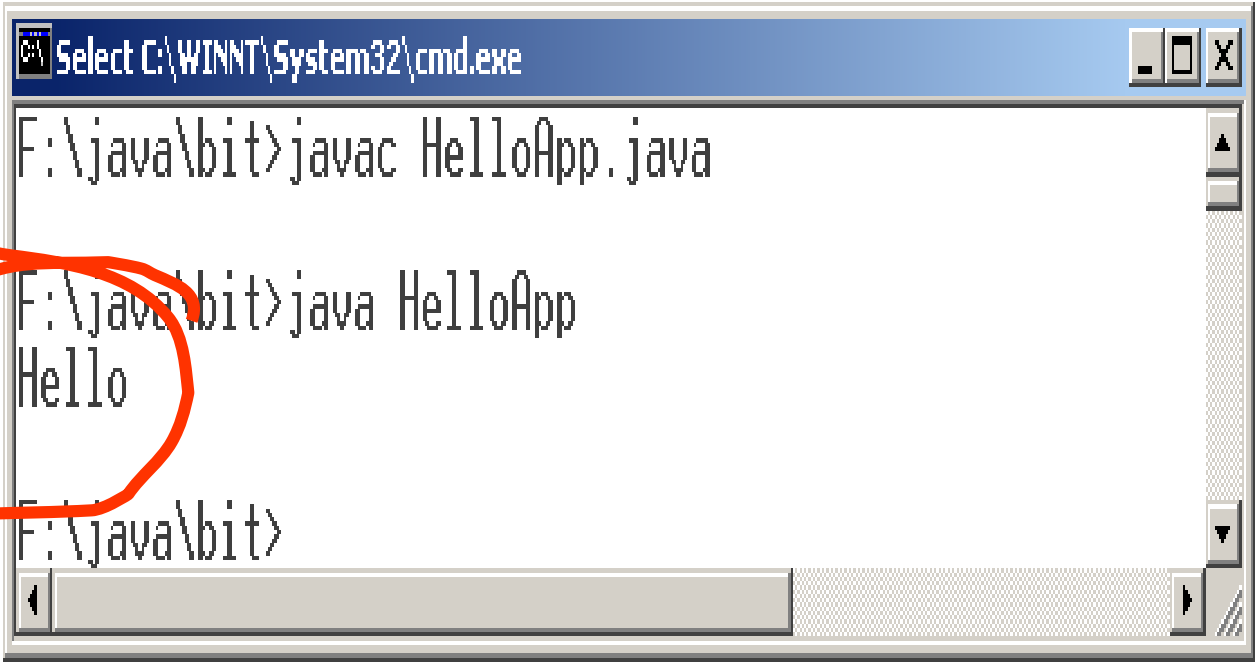
The screenshot shows a Windows command prompt window titled "Select C:\WINNT\System32\cmd.exe". The command prompt is at the directory `F:\java\bit`. The first command entered is `javac HelloApp.java`. The second command is `java HelloApp`, which is circled in red. The output of the second command is `Hello`. The prompt then returns to `F:\java\bit>`.

```
Select C:\WINNT\System32\cmd.exe
F:\java\bit>javac HelloApp.java
F:\java\bit>java HelloApp
Hello
F:\java\bit>
```

How to Compile and Run

It says hello...!!!

How to Compile and Run



The screenshot shows a Windows command prompt window titled "Select C:\WINNT\System32\cmd.exe". The command prompt is at the directory `F:\java\bit`. The first command entered is `javac HelloApp.java`. The second command is `java HelloApp`, which is circled in red. The output of the second command is `Hello`. The prompt then returns to `F:\java\bit>`.

```
Select C:\WINNT\System32\cmd.exe
F:\java\bit>javac HelloApp.java
F:\java\bit>java HelloApp
Hello
F:\java\bit>
```

Linux Operating System

How do you get the software

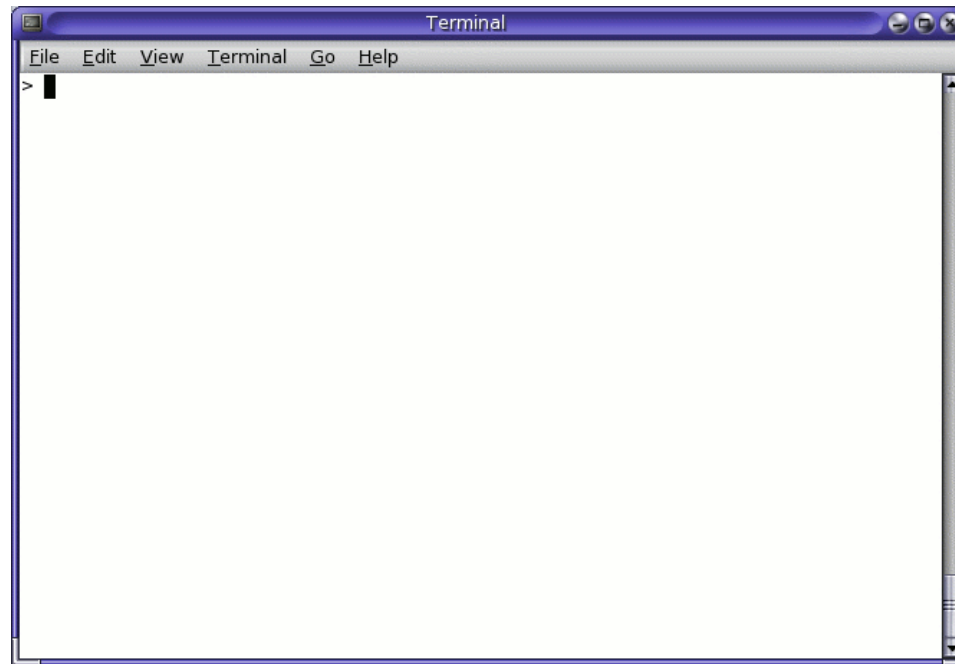
- To write your first program, you'll need:
 - **The Java SE Development Kit 6 (JDK 6)**
 - You can [download the Solaris OS or Linux version](#) and make sure you download the **JDK**, *not* the JRE
 - **A text editor**
 - In this example, we'll use Pico, an editor available for many UNIX-based platforms. You can easily adapt these instructions if you use a different text editor, such as vi or emacs.

Creating Your First Application

- Your first application, HelloWorldApp, will simply display the greeting "Hello world!". To create this program, you will:
 - **Create a source file**
 - **Compile the source file into a .class file**
 - **Run the program**

Create a source file

- First, open a shell, or "terminal," window.



Create a source file

- When you first bring up the prompt, your *current directory* will usually be your *home directory*. You can change your current directory to your home directory at any time by typing `cd` at the prompt and then pressing **Return**.
- The source files you create should be kept in a separate directory. You can create a directory by using the command `mkdir`.

Create a source file

- For example, to create the directory java in your home directory, use the following commands:
`cdmkdir java`
- To change your current directory to this new directory, you then enter:
`cd java`
- Now you can start creating your source file.
- Start the Pico editor by typing pico at the prompt and pressing **Return**. If the system responds with the message pico: command not found, then Pico is most likely unavailable. Consult your system administrator for more information, or use another editor.

Create a source file

- When you start Pico, it'll display a new, blank *buffer*. This is the area in which you will type your code.
- Type the following code into the new buffer:

```
/** * The HelloWorldApp class implements an application that * simply prints "Hello  
World!" to standard output. */  
class HelloWorldApp {  
    public static void main(String[] args) {  
        System.out.println("Hello World!");  
        // Display the string.    }}
```

Create a source file

- Save the code in a file with the name HelloWorldApp.java
- In the Pico editor, you do this by typing **Ctrl-O** and then, at the bottom where you see the prompt File Name to write:, entering the directory in which you wish to create the file, followed by HelloWorldApp.java.
- For example, if you wish to save HelloWorldApp.java in the directory /home/jdoe/java, then you type /home/jdoe/java/HelloWorldApp.java and press **Return**.
- You can type **Ctrl-X** to exit Pico.

Compile the Source File into a .class File

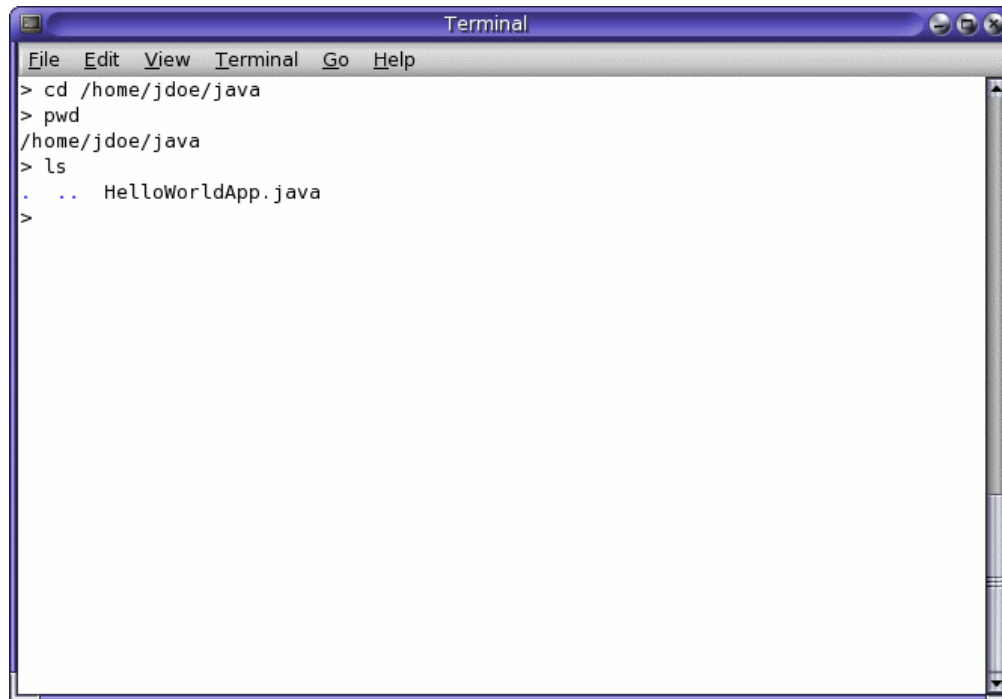
- Bring up another shell window. To compile your source file, change your current directory to the directory where your file is located. For example, if your source directory is /home/jdoe/java, type the following command at the prompt and press **Return**:

```
cd /home/jdoe/java
```

- If you enter pwd at the prompt, you should see the current directory, which in this example has been changed to /home/jdoe/java.

Compile the Source File into a .class File

- If you enter ls at the prompt, you should see your file.

A screenshot of a terminal window titled "Terminal". The window has a menu bar with "File", "Edit", "View", "Terminal", "Go", and "Help". The terminal content shows a series of commands and their outputs: a prompt ">" followed by "cd /home/jdoe/java", another prompt ">" followed by "pwd", the output "/home/jdoe/java", a prompt ">" followed by "ls", and the output ". .. HelloWorldApp.java". The terminal has a vertical scrollbar on the right side.

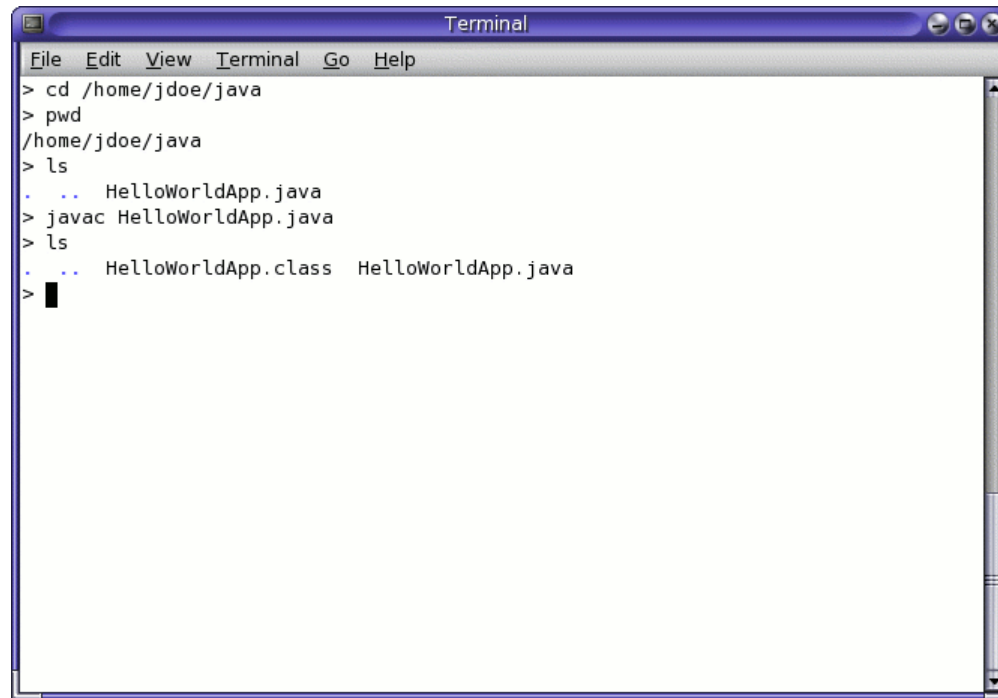
```
Terminal
File Edit View Terminal Go Help
> cd /home/jdoe/java
> pwd
/home/jdoe/java
> ls
. .. HelloWorldApp.java
>
```

Compile the Source File into a .class File

- Now are ready to compile the source file. At the prompt, type the following command and press **Return**.
 `javac HelloWorldApp.java`
- The compiler has generated a bytecode file, HelloWorldApp.class.

Compile the Source File into a .class File

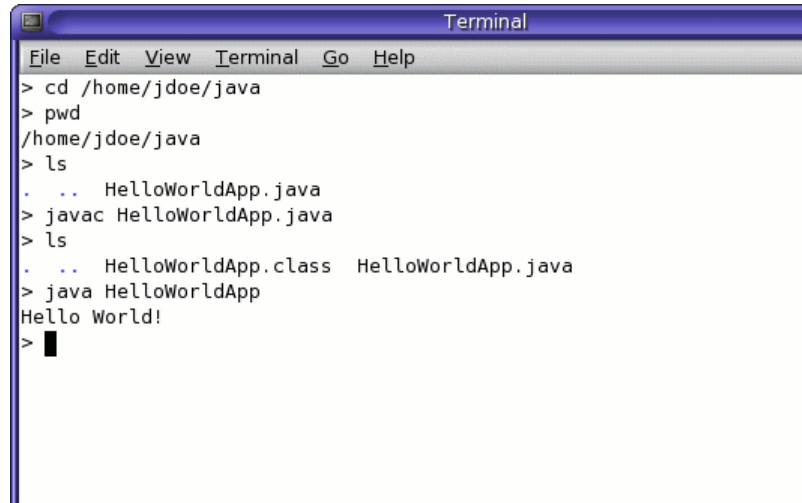
- At the prompt, type ls to see the new file that was generated: the following figure.



```
Terminal
File Edit View Terminal Go Help
> cd /home/jdoe/java
> pwd
/home/jdoe/java
> ls
.  ..  HelloWorldApp.java
> javac HelloWorldApp.java
> ls
.  ..  HelloWorldApp.class  HelloWorldApp.java
> 
```

Run the Program

- In the same directory, enter at the prompt:
 `java HelloWorldApp`
- The following figure shows what you should now see.

A screenshot of a terminal window titled "Terminal". The window has a menu bar with "File", "Edit", "View", "Terminal", "Go", and "Help". The terminal shows the following commands and output:

```
> cd /home/jdoe/java
> pwd
/home/jdoe/java
> ls
.  ..  HelloWorldApp.java
> javac HelloWorldApp.java
> ls
.  ..  HelloWorldApp.class  HelloWorldApp.java
> java HelloWorldApp
Hello World!
> █
```