JCreator

JCreator is a commercial Java environment available from <u>http://www.jcreator.com</u>. Inexpensive academic licenses and a free "limited edition" are available. JCreator runs only on Microsoft Windows.

This document describes JCreator 2.50.

Starting JCreator

When you start JCreator, you get a screen such as this one:

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No workspace loaded	
ClassView not available	
For Help, press F1	

Before going any further, it is a good idea to set preferences for the Java editor that match the conventions of the textbook. Select **Configure->Options** from the menu. Select **Documents->Java** from the tree in the left panel.

Option s			x
General Editor Documents Documents Dava Default Directories JDK Profiles JDK Tools Workspace Code Insertion Code Completion Code Templates Tools File Associations	JAVA Tabs ○ Insert tabs ○ Insert spaces Sjze: 3 ○ Show tabs Compatibility ✓ Show line numbers ✓ Show selection marge Extensions: java Encoding: No encodi	Option	End of line Auto DDS UNIX MAC t start of line baces
	OK Ca	ancel Apply	Help

Then check the radio button Inserts spaces and set the Tab Size to 3. (The JCreator default is 4.)

Next, choose **Workspace->Code Insertion** from the tree.

Options		×
General Editor Documents Documents Documents Default Default Directories JDK Profiles JDK Tools Workspace Code Insertion Code Completion Code Completion Code Templates Tools File Associations	Code Insertion Space before left parentheses ✓ Start open brace on new line. ✓ Insert TODO text	
	OK Cancel Apply Help	

Check the box Start open brace on new line.

Finally, click **Ok** to save your settings.

Loading an existing program

If you already have your program in a Java file (or a directory containing multiple Java files), then you need to make a *project* that contains the file. Follow these steps.

Select **Project->New Project** from the menu. You will get the following dialog.

New				×	4
Files	Projects	Workspaces	1	 	
Baa	J _{jc} sic Java olication	Jjc Basic Java Applet	Empty Project	Project name: purse Location: C:\bigjava\ch03\purse	
				OK Cancel Help	

Give a name to the project. The best choice for the name is the name of the directory that contains the files. For example, if Purse. java and PurseTest. java are located inside a directory purse, call the project purse.

Edit the **Location** field so that it contains the full directory path of your program files, such as c:\bigjava\ch03\purse. Click on the **Ok** button.

CAUTION: When creating a new project, JCreator wants to create a file with the same name as the project name (such as Purse.java). However, if you load an existing set of files, chances are good that there is already a file with that name. In that case, you get a dialog such as the following.

Confirm	File Overwrite		×
	Replace File:	C:\bigjava\ch03\purse\Purse.java 1KB 04/08/0316:49:44	
\bigcirc	New File :	Purse.java	
[Yes	Yes to <u>A</u> ll <u>N</u> o Cancel	

Be sure to choose No! You don't want the existing file replaced with an empty file.

Usually, the project directory contains other useful files (such as PurseTest.java) that need to become part of the project as well.

To include these files, select **Project->Add files** from the menu. Locate the files that you want to add.

(You can select multiple files in the file dialog with the CTRL+Click combination, or you can repeat this process multiple times.)

The files are added to the project window. Double-click on a file to bring up an editor window.



Starting a new program

If you write a program from scratch, then you can start your work in JCreator. It is always best to place each of your programs into a separate directory. JCreator will create the directory for you.

Select Project->New Project from

In the dialog, give a name to the project. The best choice for the name is the name of the directory that contains the files. For example, if your homework files are contained inside a directory hw1, call the project hw1.

Edit the Location field so that it contains the full directory path of your program files, such as c:\homework\hw1.

New					×
Fil	es Projects	Workspaces	Empty Project	Project name: hw1	
	Application	Applet		Location: c:\homework\hw1	
				 Create new workspace Add to current workspace 	

 ОК	Cancel	Help

Click on the **Ok** button.

Your project is opened. JCreator adds a Java file with the same name as the project, such as Hw1.java. If you don't need that file, click on it in the project window and select **Edit->Delete** from the menu.

To add a new class to the project, choose **Project->New class** from the menu. You get a dialog such as the following:

Class₩izard			×
	Class name :	Hello	
	Source location :	: C:\homework\hw1\	
Class	Class Properties	Methods Variables	
	Base class :	java.lang.Object	.
	Package :	[.
	Class options :	<u>.</u>	
1000		Dverride abstract methods	
	Abstract	Generate <u>d</u> efault construct	tor
No.	🗖 <u>F</u> inal	Generate <u>m</u> ain method	
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		OK Cancel	<u>H</u> elp

Fill in the name of the class (such as Hello). A new file (such as Hello.java) is added to the project.

Now you can type your program into the source window. Note the code completion feature that suggests how to complete partially typed expressions.

1 2 class Hello			4
4 public static 5 {	<pre>void main(String[] </pre>	args)	
6 System.out	•		
7 }	checkError ()	boolean 🔺	
8 }	<pre>\$ close ()</pre>	void	
9	equals (Object)	boolean	
	💊 flush ()	void	
	♦ getClass ()	Class	
	♦ hashCode ()	int	
	💊 notify ()	void	
	💊 notifyAll ()	void	
	💊 print (char[])	void	
🚺 WordTest.java 🚺 Purse.ja	💊 print (double)	void 💌 p.jav	a* 🚺 🕨

Compiling a program

You will usually have multiple projects open in JCreator. When you are ready to compile and run a program, make sure that the project on which you are working is the active project. Select **Project->Active Project**, and then select your current project from the submenu.

To compile a program, select **Build->Compile Project** or hit the F7 key.

Compilation errors are displayed in a separate window.

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<pre> Workspace 'purse': 2 Projects Hello.java Hello.java Hw1.java purse Jublic static S { system.out. 7 } 8 } Hello Hello</pre>	void main(Strings[] args) println("Hello, World!");	×
<pre>Configuration: hw1 - j2so C:\homework\hw1\Hello.java:4: cannot resolve symbol : class Strings location: class Hello public static void main(Strings[] args) Build Output Debug Find in Files 1 Find in Files 2</pre>	lk1.4.0 <default> symbol</default>	• •
For Help, press F1	Ln 6, Col 43, Char 43 MAC	

Running a program

When the program compiles successfully, you can run it. Select **Build->Execute Project** or hit the F5 key. The program executes in a separate console window.

🔩 hw1 - JCreator - [Hello.java]	<u>_ × ×</u>
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Press any key to continue	
Prc Build Output Debug Find in Files 1 Find in Files 2	
For Help, press F1	Ln 9, Col 1, Char 1 MAC

Running applets

To run an applet, you must select **Basic Java applet** in the project dialog when you first create the project. As with applications, you add files or classes to your project.

JCreator produces an HTML file for your applet. You should use that file (with extension .htm), and not the HTML file that may be provided with an existing project.

Sometimes, JCreator guesses the wrong name for the applet class, and you need to fix it in the HTML file. For example, here we change the class to CarApplet.class. (JCreator guessed Car.class.)

car - JCreator - [Car.htm]	. 🗆 🗵
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<pre></pre>	
<pre>*Configuration: car - j2sdk1.4.0 <default>Configuration: car - j2sdk1.4.0 <default></default></default></pre>	

Process completed.				
Build Output Debug Find in Files 1 Find in Files 2				
	Ln 7, Col 25, Char 19	DOS		_ //.

After compiling the project, select the menu option **Build->Execute Project**. JCreator will launch the applet viewer.

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Applet Viewer: CarApplet.class			2 2 .
- Applet		É	
Applet started.			
Build Output Debug > Find in Files 1 > Find in Files 2			•
For Help, press F1	Ln 7, Col 25, Char 19	DOS	

Running the debugger

To use the debugger, you first need to change a compiler setting. Select **Configure->Options** from the menu and select **Documents->JDK Tools** from the tree selector in the left of the dialog.

Options		x
General Editor ⊡- Documents ⊕- Java	JDK Tools Select Tool Type: Compiler	
E Hann E Html □ Default	<default> New</default>	
	Сору	
JDK Profiles	Edit	
Workspace Code Insettion Code Completion Code Templates Tools File Associations	Delete	
	OK Cancel Apply Help	
Workspace Code Insettion Code Completion Code Templates Tools File Associations	Delete OK Cancel Apply Help	

Highlight **<Default>** and click the **Edit** button. You get the following dialog:

Tool Configuration : Compiler	×
Name : <pre> <default></default></pre>	
Command Parameters	
Parameters : _g -classpath ''\$[Clas	ssPath]'' -d ''\$[OutputPath]'' \$[JavaF] 🕨
Show <u>a</u> dditional compiler info	☑ Use <u>c</u> lass-path
✓ Show <u>w</u> arnings	Include debug info
Show <u>d</u> eprecations	Dptimize code
Vse output path	Compile all <u>fi</u> les
ОК	Cancel Help

Click the checkbox Include debug info and click the Ok button. Recompile your project.

Select the menu option **Build->Start Debugger**. The debugger starts the program and pauses at the first line in main.



Whenever you select the menu option **Build->Step** (or the F10 keyboard shortcut), then the debugger executes one line of the program, *without stepping inside method calls*. For example, tracing over the call

```
Word w = new Word(token);
```

will not trace inside the word constructor but simply run the program to the next line of the main method.

Contrast that with the menu option **Build->Step Into** (or the F11 keyboard shortcut). This command traces inside method calls. For example, tracing into the line

int syllables = w.countSyllables();

stops at the first line of the countSyllables method:

😼 debugger - JCreator - [Word.java]		_ 🗆 ×
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Workspace 'purse': 4 Projects A G Car Car G debugger Word.java WordTest.java WordTest.java WordTest.java S	<pre>/** Counts the syllables in the word. @return the syllable count */ public int countSyllables() { int count = 0; int end = text.length() - 1; }</pre>	

x	40 if (end < 0) return 0; // the empty string has no-
Word South String s) South Syllables () South	<pre>41 42 41 42 41 42 41 42 43 43 43 43 44 44 45 45 45 45 Car.htm Car.java CarApplet.html Purse.java WordTest.java Word.java </pre>
<pre>main[1] step > Step completed: "thread main[1] </pre> Build Output Debug	d=main", Word.countSyllables(), line=38 bci=0 Find in Files 1 Find in Files 2 /
For Help, press F1	Ln 38, Col 1, Char 1 DOS 2

Often, it is tedious to step through the program a line at a time. In that case, set breakpoints at interesting program locations. To set a breakpoint at a line, move the cursor into the line and select the menu option **Build->Debugger->Toggle breakpoint**, or hit the F9 key. A red dot indicates the breakpoint.

50	<pre>String vowels = "aeiouy";</pre>
51	<pre>if (vowels.indexOf(ch) >= 0)</pre>
52	{
53	// ch is a vowel
54	if (!insideVowelGroup)
55	{
56	<pre>// start of new vowel group</pre>
97	count++;
58	insideVowelGroup = true;
59	}
60	}
61	}
62	
63	// every word has at least one syllable
Ш•Ц	
💽 C	ar.htm 🛃 Car.java 💽 CarApplet.html 🛃 Purse.java 🛃 WordTest.java 💽 Word.java 🔳

You can set as many breakpoints as you like.

Then select **Build->Continue** from the menu. The program runs at full speed and stops at any breakpoints that it encounters.

Watching values

If you select the menu option **Build->Debugger->Dump**, then the current settings of the local variables are displayed in the debug window.



Unfortunately, there seems to be no mechanism for inspecting instance fields.

If you select the menu option **Build->Debugger->Where**, the debug window shows the call stack. For example, the following call stack shows that the WordTest.main method called the Word.countSyllables method.



Stopping the debugger

When the program has completed, the debugger stops automatically. When you want to terminate a debugging session without running the program to the end, select the menu option **Tools->Stop tool**.