















Rain water catchment system: prototype routing board after a year of weathering















 **revision history**




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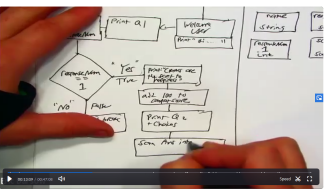








## CIT-111: Introduction to Programming
















The following table maps course session dates, lesson topics, LIANG9 references, and content links for all three Java courses in the series.

Course	FA20 Section	Wk.	Sess.	Session description	Resources	Learning Objectives	Out-of-class work
CIT-111	wk. of Monday 1-FEB'21	1	n/a	Setting up Java, choosing identifiers, course flow  <a href="#">Session Recording 1-FEB'21</a>	 <a href="#">Syllabus: Spring '21: Zoom &amp; Async</a>  You'll be asked in the out-of-class work to choose a public name, and a codename. Those names are described in this diagram	Students will register their coding environment and setup their identifiers	Step 1: Order a used copy of the LIANG-9  <a href="#">Unified textbook: the LIANG9</a>  Step 2: Forms and such  <a href="#">Name registration form</a>  <a href="#">Java student background survey</a>
CIT-111			2	 <a href="#">Session Recording 3-FEB'21</a>  We worked through <a href="#">exercise A of Chunk 1, Module 3</a> and uploaded screen shots of our work to OneDrive <a href="#">ONE DRIVE DIRECTORY</a>	 <a href="#">Naming Triumvirate Guide</a>  <a href="#">Grading guide</a>  <a href="#">Flow diagram of learning Chunks</a> <i>Do module 1 with netbeans</i>  <a href="#">Module 1: Essential Elements</a> <i>Can be completed in repl.it</i>  <a href="#">Module 3: Variables, Operators, and If{...}</a>		
CIT-111	wk. of Monday 8-FEB'21	2	1	Setting up netbeans!  <a href="#">Session Recording 8-FEB'21</a>	<i>Variables and operators</i>  <b>archive</b>  <b>archive</b>		

Course	FA20 Section	Wk.	Sess.	Session description	Resources	Learning Objectives	Out-of-class work
CIT-111			2	Creating projects, packages, and source files in NetBeans Copying pre-written code and tweaking text output and variable types  <a href="#">Session Recording 10-FEB'21</a>			
CIT-111	wk. of 15-FEB'21	3	1	Variables, operators, expressions	 <a href="#">Module 2: Loading External Classes</a>  <a href="#">Module 3: Variables, Operators, and If{...}</a>  <b>Liang9 Resources</b>  <a href="#">LIANG9: Chapter 1</a>  <a href="#">LIANG9: Chapter 2</a>  <a href="#">LIANG9: Chapter 3 - selections</a>  <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <b>archive</b></div>	<b>TR.111.3.L.1:</b> Branch execution flow of a simple program using <code>if()</code> controlled blocks  <b>TR.111.3.L.2:</b> Implement several layers of decision logic using if-else controlled blocks  <b>TR.111.3.E.1:</b> Create a graphical flow-chart of decision logic by designating unique shapes for: a) Flow beginnings and endings, b) general program events, and c) branching points (a.k.a. decision points or choices)	 <a href="#">Weekly work form</a>
CIT-111			2	- Implementing Might We Be Friends? flow chart - Logic testing: verifying flow chart logic of peer programs			
CIT-111	wk. of Monday 22-FEB-21	4	1	Orienting to user input facilities	 <a href="#">Paper compiling practice Worksheet</a>  <a href="#">Paper compiling practice - KEY</a>  <a href="#">LIANG9: Chapter 2 - Elementary</a>  <a href="#">LIANG9: Chapter 3 - selections</a>  <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <b>archive</b></div>	<b>Exercise 1:</b> Tweaking a pre-written Java console-only program  <b>Exercise 2:</b> Tweaking a pre-written Java program that includes a Graphical User Interface (GUI)  <b>Exercise 3:</b> Dissecting Java code by extracting blocks  <b>Exercise 4:</b> Building your own Java blocks from actual blocks  <b>TR.111.1.L.2:</b> Classify Java code into categories: A) block structure formation B) keywords C) identifiers D) operators E) Method calls	 <a href="#">Weekly work form</a>
CIT-111			2	Finish up Might We Be Friends? and then start in on Module 4			


















Course	FA20 Section	Wk.	Sess.	Session description	Resources	Learning Objectives	Out-of-class work
						<p><b>CCAC.111.LT.1:</b> Computer systems and environments including computer org., langs, and object programming</p> <p><b>TR.111.1.E.1:</b> Interpret the use of block-delimiting characters to create structural relationships inside a computer program</p> <p><b>TR.111.1.E.2:</b> Encode a nested-block structure in a linear sequence of computer instructions</p> <p><b>TR.111.1.E.3:</b> Create a rough draft of a code organization schema inside Netbeans for storing Java files related to this course</p> <p><b>TR.111.1.P.0:</b> Classify job postings related to Java programming: level, application type, etc.</p> <p><b>TR.111.1.P.1:</b> Diagram the relationship between the Java Virtual Machine (JVM), the NetBeans Integrated Development Environment(IDE), and a program's source and class file set</p> <p><b>CCAC.111.LT.2:</b> Executing java programs using and IDE</p> <p><b>Compute the value of primitive type variables</b> in simple programs by hand and check those answers using a compiler</p> <p><b>Use a Scanner object to gather input from a user and use those values to control if-statement selections</b></p>	
CIT-111	wk. of Monday 1-MAR'21	5	1	Counting loop time & starting module 5	<p><b>Looping fundamentals: the while() and for() blocks</b></p> <p> <a href="#">Module 5: While() and for() loops</a></p> <p> <a href="#">LIANG9 Textbook: Chapter 4</a></p> <p><b>Setting up github</b></p> <p> <a href="#">Setting up GitHub for your programs</a></p>	<p><b>java.core.if.3:</b> Create variable requirements and flow charts to implement a given problem constraint</p> <p><b>TR.111.1.P.1:</b> Clone a git repository from a remote system into a sensible location on a local system.</p> <p><b>TR.111.1.P.2:</b> Create a local git repository, add files to the working directory, stage files for commit, commit files</p>	<p> <a href="#">Weekly work form</a></p>

Course	FA20 Section	Wk.	Sess.	Session description	Resources	Learning Objectives	Out-of-class work
CIT-111			2	Module 5 mini-projects: authentication etc.	<p>When your repo is setup, link to it in our tracker with your repl.it link</p> <p> <a href="#">Fall 2020 repl and work tracker</a></p>	<p>TR.111.1.P.2: Initialize an online repository with a readme.md</p> <p></p>	
CIT-111	wk. of Monday 8-MAR'21	6	1	Project	<p> <a href="#">Chunk 1 Project: Might we be friends?</a></p> <p></p>	<p>Java.Looping.1: Use while() structures to implement looping behavior based on simple boolean condition comparison</p>	<p> <a href="#">Weekly work form</a></p>
CIT-111			2				
CIT-111	wk. of Monday 15-MAR'21	7	1	Looping review exercise	<p> <a href="#">Flow diagram of learning Chunks</a></p> <p><i>Friends tutorial</i></p> <p></p>	<p>7.L.1: Organize code into simple methods</p> <p>7.L.2: Execute methods by calling their name</p>	<p><i>Finish, upload, and post your Might We Be Friends? project</i></p> <p>Make an entry in the appropriate tab in our tracker when your MightWeBeFriends? project is complete.</p> <p>DUE: Sunday, 18 October at morning light</p> <p> <a href="#">Fall 2020 repl and work tracker</a></p> <p><i>Weekly work reporting form</i></p> <p> <a href="#">Weekly work form</a></p>
CIT-111			2	Continue work on either 1) The quality control checker or 2) the math quiz program	<p><b>Methods, Finally!</b></p> <p> <a href="#">Module 1: Simple Methods and switch</a></p> <p> <a href="#">LIANG9 Textbook: Chapter 4</a></p> <p></p>		
CIT-111	wk. of Monday 22-MAR'21	8	1		<p><b>1: Check your friend compatability</b></p> <p>Choose a project in our friends tracker, load it in NetBeans, and run it! When done, make a note in the "Find A Friend" column of our tracker</p> <p> <a href="#">Fall 2020 repl and work tracker</a></p> <p><b>2: Finish Chunk 2, Mod 1</b></p> <p> <a href="#">Module 1: Simple Methods and switch</a></p> <p><b>3: Start Chunk 2, Mod 2</b></p>		<p> <a href="#">Weekly work form</a></p>

Course	FA20 Section	Wk.	Sess.	Session description	Resources	Learning Objectives	Out-of-class work
CIT-111			2		 <a href="#">Module 2: Fully-baked Methods</a>  <b>archive</b>		
CIT-111	wk. of Monday 29-MAR'21	-	-	nope!	Spring break; zero class!	nada!	zilch!
CIT-111			-	naught!			
CIT-111	wk. of Monday 5-APR'21	9	1		<b>Finish Chunk 2, Mod 2</b>  <a href="#">Module 2: Fully-baked Methods</a>  <a href="#">LIANG9 Textbook: Chapter 5 - Methods</a>  <b>archive</b>		 <a href="#">Weekly work form</a>
CIT-111			2				
CIT-111	wk. of Monday 12-APR'21	10	1		 <a href="#">Scope concept map</a>  <a href="#">Module 3: Methods and Class Structure</a>  <b>archive</b>		 <a href="#">Weekly work form</a>
CIT-111			2				
CIT-111	wk. of Monday 19-APR'21	11	1		<b>Fundamentals project</b> Design and implement a novel project in Java, from scratch or building upon other students' past work  <a href="#">Shared directory of student project code</a> <i>Choice 1: Kennywood Ride Tracker</i>  <a href="#">Module 3: Methods and Class Structure</a> <i>Choice 2: Order Tabulator</i>  <a href="#">Module 3: Methods and Class Structure</a> <i>Choice 2: Design your own project</i>	11.L.1: 11.L.2:	<i>Step 1: Upload your .java file containing your fund. project</i>  <a href="#">Shared directory of student project code</a> <i>Step 2: Work form</i>  <a href="#">Weekly work form</a>
CIT-111			2				

 **archive**
















CIT-111	wk. of Monday	12	1		 <a href="#">Screen cast of class on 20-APR-2020</a>		
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Course	26 APR '21	Wk.	Sess.	Session description	Resources	12.L.1: Learning Objectives	 Weekly work form
					<p><b>Java Object 1: Creating object blueprint classes</b></p> <ul style="list-style-type: none"> <li> Module 1: Java Modeling in class DonutLand</li> <li> Explore photos of our Donut objects</li> <li> Module 4: Car Modeling in Back To The Future</li> <li> Spring 2020: Object planning GDoc</li> </ul> <p> archive</p>	12.L.1: 12.L.2:	 Weekly work form
CIT-111			2				
CIT-111	wk. of Monday 3-MAY'21	13	1		<ul style="list-style-type: none"> <li> Module 1: Arrays</li> <li> Array Models Shared Google Doc</li> <li> LIANG9 Textbook: Chapter 6 - Arrays</li> <li> LIANG9 Textbook: Chapter 9 - Objects</li> </ul>	13.L.1: 13.L.2:	 Weekly work form
CIT-111			2		<ul style="list-style-type: none"> <li> Object Project Guide</li> <li> Object Project Examples &amp; Starter Seeds</li> <li> LIANG9 Textbook: Chapter 10 - Thinking in Objects</li> </ul> <p> archive</p>		
CIT-111	wk. of Monday day 10-MAY'21	14	1	Final project sharing	 archive		
CIT-111			2	Final object project	<b>Submit your final object project</b>		

Course	FA20 Section	Wk.	Sess.	submission session description	Resources	Learning Objectives	Out-of-class work
					<a href="#">Object Project Guide</a> <a href="#">Object Project Examples &amp; Starter Seeds</a> <b>Email Eric a Final Grade Proposal Card</b> <i>All work and grade proposals due @ morning light on Monday, 17-MAY'21</i> <a href="#">Grading guide</a> <b>Submit last work form</b> <a href="#">FINAL Weekly work form</a>		













## CIT-130: Object-oriented design in Java










The following table maps course session dates, lesson topics, LIANG9 references, and content links for all three Java courses in the series.





Course	SP21 Est.	Wk.	Sess.	Session description	Resources	Learning objectives	Out-of-class work
CIT-130	TUE 19-JAN-21	-1	1	Introduction to course  <a href="#">Session Recording 19-JAN-2021</a>	 <a href="#">CIT-130: SP21 Syllabus</a>  <a href="#">NetBeans and Java Install guide</a> <i>Review material: from CIT-111</i>  <a href="#">Module 1: Java Modeling in class DonutLand</a>  <a href="#">Module 2: Creatures eat SizedDonuts</a>  <a href="#">Module 3: Disaster recovery simulation</a>  <a href="#">Module 4: Car Modeling in Back To The Future</a> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <b>archive</b></div>	Create a simple Java program that demonstrates your abilities in the language at the start of our course	Install your favorite JVM and IDE: Suggested to use NetBeans 11
CIT-130	THU 21-JAN-21		2	 <a href="#">Session Recording 21-JAN-2021</a>			
CIT-130	TUE 26-JAN-21	0	1	TUE-26-JAN Java array manipulation  <a href="#">Session Recording 26-JAN-2021</a>	 <a href="#">Arrays code written in class TUE-26-JAN</a>  <a href="#">CIT-111: Arrays Module</a>  <a href="#">Array Models Shared Google Doc</a>  <a href="#">LIANG9 Chapter 6</a>  <a href="#">LIANG9 Chapter 9</a>	Create and manipulate single and multi-dimensional arrays using object-oriented design techniques of an object class and a client class.	<i>Tuesday's TODO for Thursday</i> 1) Populate our collected item array and demonstrate the methods on CollectedItems 2) Create a second instance of CollectedItems and load it up with the titles of a few of your favorite songs <i>Thursday's TODO for next week</i>















Course	SP21 Est.	Wk.	Sess.	Session description	Resources 	Learning objectives	Out-of-class work
CIT-130	THU 28-JAN-21		2	User-input groupwork  <a href="#">Session Recording Part 1 28-JAN'21</a>  <a href="#">After group work</a>			<ol style="list-style-type: none"> <li>1. Create a user interface that allows them to create a list of a desired size, with a desired name, and add elements to that list, and display its contents.</li> <li>2. Optional Extensions: Create additional methods on CollectedItems such as clearList(), randomlyOrderItems(), or an appropriately named method to rename a given item and show that the change took effect in memory.</li> </ol>
CIT-130	TUE 2-FEB-21	1	1	 <a href="#">Session Recording 2-FEB'21</a>	<b>Collected items code submission</b> <a href="#">Code submission form</a>	Create multi-dimensional arrays and access their elements with nested for-loops	TODO for Thursday 4-FEB-21: Create a more useful output as you loop over the multi-dimensional arrays. See comments in the <a href="#">code posted on github from class</a> . Optional: Create a grid-based layout for a multi-dimensional array of your own creation.
CIT-130	THU 4-FEB-21		2	Applying multi-dimensional arrays to song lyrics  <a href="#">Session Recording Pt.1: 4-FEB'21</a>  <a href="#">Session Recording Pt.2: 4-FEB'21</a>	<b>Multi-Dimensional Arrays in-class code</b> <a href="#">&lt;&gt; Class MultiDimensionalArrays on github</a> <b>Applying multi-dimensional arrays</b>  <a href="#">Song Arrays Specs</a> <a href="#">&lt;&gt; LyricMachine.java</a> <a href="#">&lt;&gt; SongLand.java</a>		<b>TODO for Tuesday, 9-FEB:</b> Begin work on our LyricMachine using our sample LyricMachine and SongLand as a guide. Links are two columns left <--
CIT-130	TUE 9-FEB-21	2	1	Multi-dimensional array project work  <a href="#">Session Recording 9-FEB'21: Karaoke Machine Test!</a>	<i>Building out Multi-Dim Array Project with Objects</i>  LIANG-9, Chapter 7: Multi-Dim Arrays (11ed:ch.8)  <b>Applying multi-dimensional arrays</b>  <a href="#">Song Arrays Specs</a> <a href="#">&lt;&gt; LyricLine.java</a>	Create and Manipulate Multi-Dimensional Arrays	<i>Submit your project</i>  Submission target: Tue-16-FEB'21 at morning light   <a href="#">Spring 21 Work Tracker</a>








Course	SP21 Est.	Wk.	Sess.	Session description	Resources	Learning objectives	Out-of-class work
CIT-130	THU 11-FEB-2021		2	First implementation of the <b>Student</b> class hierarchy	<a href="#">&lt;&gt; SongWorld.java</a>  archive		
CIT-130	TUE 16-FEB-2021	3	1		 <a href="#">Collections classsds practice</a>  archive		
CIT-130	THU 18-FEB-2021		2				
CIT-130	TUE 23-FEB-2021	4	1		<b>Inheritance Pt.1: Create a class hierarchy (a tree) by giving a class a parent with extends</b>  <a href="#">LIANG9: Chapter 11 - Inheritance</a>	CCAC.130.LO.5: Apply Java language elements to create programs utilizing inheritance   archive	Study the <a href="#">Liang9 chapter 11</a> - inheritance and complete the two practice questions and the mini-project
CIT-130	THU 25-FEB-2021		2	Print and include in your folder your Student[] array class	<b>Inheritance Pt.2: Modeling computer timelines</b>  <a href="#">Timeline project specs</a>  <a href="#">LIANG9: Chapter 11 - Inheritance</a>  Create a Java-based representation of the computer history timeline hanging in the hall outside of S21133   <a href="#">Computing power timeline</a>		
CIT-130	TUE 2-MAR-2021	5	1		 <a href="#">Timeline project specs</a>  <a href="#">LIANG9: Chapter 11 - Inheritance</a>  Create a Java-based representation of the computer history timeline hanging in the hall outside of S21133	TR.130.5.L.1: Create a class hierarchy diagram by hand of your chosen API classes including all relevant interfaces and super-classes  5.L.2:	
CIT-130	THU 4-MAR-2021		2	Worktime on timeline modeling	 <a href="#">Computing power timeline</a>  archive		
CIT-130	TUE 9-MAR-2021	6	1	Begin API project	<b>Inheritance &amp; Collections</b>	<b>Java.collections.1:</b> Convert array-based data structures into LinkedList structures	Completely digest Liang Chapter 22 & attempt at least one exercise and one

Course	SP21 Est.	Wk.	Sess.	Session description	Resources	Learning objectives	Out-of-class work
					<b>project design; software engineering techniques</b> <a href="#">↗ API Inheritance project</a>  LIANG9 Textbook: Chapter 22: Lists, stacks, etc. 	<b>Java.collections.2:</b> Implement all major methods on LinkedList class	mini-project from the suggested list for Chapter 22
CIT-130	THY 11-MAR-2021		2		 LIANG9 Textbook: Chapter 22: Lists, stacks, etc. 		
CIT-130	TUE 19-MAR-2021	7	1		<b>Inheritance &amp; Collection: Map-based data structures</b>  Mission Impossible maps  LIANG9 Textbook: Chapter 23: Sets and maps 	7.L.1: 7.L.2:	
CIT-130	THU 18-MAR-2021		2	Sharing inheritance & Collection projects	 LIANG9 Textbook: Chapter 23: Sets and maps 		
CIT-130	TUE 23-MAR-2020	8	1				

Course	SP21 Est.	Wk.	Sess.	Session description	Resources	Learning objectives	Out-of-class work
CIT-130	THU 25-MAR-2021		2		<p><b>GUIs with Swing</b></p> <ul style="list-style-type: none"> <li> <a href="#">Movie GUIs</a></li> <li> <a href="#">SP20 Work Tracking Spreadsheet</a></li> </ul> <p><b>Design Notes</b></p> <ul style="list-style-type: none"> <li>The Swing chapters in Liang9 are 12 (Basics), 13 (Graphics), 16 (Events), 17(Advanced components)</li> <li>If you have not thoroughly digested chapters 12 and 16, you'll have a hard time programming a custom GUI</li> <li>Layout managers are described in Section 12.5</li> <li>You can respond to mouse or key events with listeners, too. See Liang9 section 16.8 (Mouse Events) and 16.10 (Key Events)</li> <li>Using inner classes for listeners will be the most versatile (Liang9 16.4)</li> <li>If you want to draw custom shapes (squares, lines, ovals), see Liang9 Chapter 13: Graphics</li> </ul>		
CIT-130	TUE 30-MAR-2020	-	-	Spring break: No Class		<p>10.L.1:</p> <p>10.L.2:</p>	
CIT-130	THU 1-APR-2021		2	No Class		<p>CCAC.130.LO.2: Apply Java language elements to create Swing GUI components with event handling</p>	
CIT-130	TUE 6-APR-2021	9	1		<p><b>Design patterns: Model-View-controller structures</b></p> <ul style="list-style-type: none"> <li> <a href="#">Plane crash simulation MVC example</a></li> <li> <a href="#">Formative (1992) paper on Model-View-Controller by Steve Burbeck</a></li> </ul>		

Course	SP21 Est.	Wk.	Sess.	Session description	Resources	Learning objectives	Out-of-class work
CIT-130	THU 8-APR-2021		2		(PDF)  Student-generated MVC examples  archive		
CIT-130	TUE 13-APR-2021	10	1		<b>GUI &amp; Inheritance project workshop</b>  AWT GUI Intro packet  archive	11.L.1: 11.L.2:	
CIT-130	THU 15-APR-2021		2		 archive		
CIT-130	TUE 20-APR-2021	11	1		<b>GUI &amp; Inheritance project workshop</b>  Simulating secret agent missions  LIANG9 Textbook: Chapter 12: GUI basics	12.L.1: 12.L.2:	
CIT-130	THU 22-APR-2021		2		 LIANG9 Textbook: Chapter 16: Event-driven programming  LIANG9 Textbook: Chapter 17: GUI Components  archive		
CIT-130	TUE 27-APR-2021	12	1		<b>Exceptional term projects: design and workshop time</b> 	13.L.1: 13.L.2:	
CIT-130	THU 29-APR-2021		2	<b>Screencast of Git Workflow co-creation</b>  Git repo creation and pushing to remote	 archive		
CIT-130	TUE 4-MAY-2021	13	1		<b>Exceptional term projects: design and workshop time</b> 	13.L.1: 13.L.2:	

Course	SP21 Est.	Wk.	Sess.	Session description	Resources	Learning objectives	Out-of-class work
CIT-130	THU 6-MAY-2021		2	<b>Screencast of Git Workflow co-creation</b>  Git repo creation and pushing to remote	 <b>archive</b>		
CIT-130	THU 13-MAY-2021 8:00am!	14	1	* Bring fully-baked projects to share.	<b>Sharing term projects and final checkout</b>  Course planning survey  Final session checklist  <b>archive</b>	14.L.1:	

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