# Introduction to Computer Science | Programming Methodology

# http://see.stanford.edu/see/lecturelist.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111

Instructor: Sahami, Mehran

Course Meetings: 28

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| [Lecture 1    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=4806d30b-e7f1-460a-b84f-e7c683262698&sl=true');) |
| 50 min   * **Topics:** Welcome to CS106A, Course Staff, Why is the class called Programming Methodology?, Are you in the right class?, Class Logistics, Assignments and Grading, Extensions, Midterm and Final, Grade Breakdown, The Honor Code, Why Karel? * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture01.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture01.pdf)   [YouTube](http://www.youtube.com/watch?v=KkMDCCdjyW8&feature=PlayList&p=84A56BC7F4A1F852&index=0) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1611703847?i=1348717488) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture01.wmv.torrent?5F7D43E489E20F816740E7CE8BF7554ACD09AD16) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture01.mp4.torrent?FC70D4D40F781ECFBAF3D3FDE7BB75416106EB32) |
| [Lecture 2    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=1684986e-7a15-49ae-92c3-1e24fd5acd22&sl=true');) |
| 48 min   * **Topics:** Handout Information, Section Sign-up, Karel Commands, An Algorithm vs Program, Syntax of a Karel Program, Running a Karel Program, Creating Methods, SuperKarel, A for Loop, A While Loop, Karel Conditions, If Statement, Putting it All Together * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture02.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture02.pdf)   [YouTube](http://www.youtube.com/watch?v=0LoKDDRlfZc&feature=PlayList&p=84A56BC7F4A1F852&index=1) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1609069167?i=1405676960) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture02.wmv.torrent?A22B80C117CD2FAE194B3F305EA529624F48B491) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture02.mp4.torrent?2901C02F880A8E00D36F87AA24F1601A4B77C35E) |
| [Lecture 3    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=7233fe64-e417-4608-ae78-cd065569b807&sl=true');) |
| 51 min   * **Topics:** Karel and Java, Common Errors, Comments, Pre-conditions and Post-conditions, Decomposition, The DoubleBeepers Example, Importance of Good Software Engineering, The Right Decomposition, The CleanUpKarel Example * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture03.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture03.pdf)   [YouTube](http://www.youtube.com/watch?v=C5HeRliZ0Ns&feature=PlayList&p=84A56BC7F4A1F852&index=2) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1612064353?i=1848226632) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture03.wmv.torrent?B73C80E39A78DCC240E6FA56832B1AD50F0E19AD) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture03.mp4.torrent?5C0D8CF221FC0676C68478B9CD4C95B12D2B3F1A) |
| [Lecture 4    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=25fa6d99-eb9d-41e6-bccc-ea4211dc0810&sl=true');) |
| 48 min   * **Topics:** The History of Computing, Computer Science vs Programming, What Does the Computer Understand?, The Compilation Process, Java is an Object Oriented Language, Inheritance, Instance of a Class, The acm.program Hierarchy, Your First Java Program, A ConsoleProgram Example, The Graphics Window, The Sending-Messages-to-a-GLabel Example * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture04.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture04.pdf)   [YouTube](http://www.youtube.com/watch?v=nWheM30THaY&feature=PlayList&p=84A56BC7F4A1F852&index=3) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1608200489?i=1208128554) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture04.wmv.torrent?284A0121577DE4F22A11F6EACE77CF0789E1F471) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture04.mp4.torrent?241FDD49D893DE4D293AE9B14D76758503CC0397) |
| [Lecture 5    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=94c77788-9105-4eb2-9fc5-72eb4d654369&sl=true');) |
| 49 min   * **Topics:** Variables, Data Types for Variables, Syntax for Using Variables, Classes as Types, Objects as Variables, Invoking Methods on Objects, Graphics Coordinates, Operations on the GObject Class and its Subclasses, Drawing Geometrical Objects, A FunGraphics Example, Expressions and Operators * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture05.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture05.pdf)   [YouTube](http://www.youtube.com/watch?v=NPzPnycCFuE&feature=PlayList&p=84A56BC7F4A1F852&index=4) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607233825?i=1227984355) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture05.wmv.torrent?D7C3BB6FFEF14D123CFF1476A7E030D87FC77284) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture05.mp4.torrent?792FEFF8EC38CD41BE5DF7A698AD55649BF161B6) |
| [Lecture 6    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=f820d56c-3ab5-4cf8-ad8b-8fcae39053ec&sl=true');) |
| 56 min   * **Topics:** readInt() and readDouble(), The Division Operator w.r.t ints and Doubles, Order of Precedence for Operators, Type Casting, Shorthands, Constants, The Boolean Data Type, Value Comparisons, Boolean Expressions, Short Circuit Evaluation, Statement Blocks, Scope of Variables, Cascading if, The Switch Statement, The For Loop, The While Loop * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture06.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture06.pdf)   [YouTube](http://www.youtube.com/watch?v=GPWah4wbwYs&feature=PlayList&p=84A56BC7F4A1F852&index=5) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607366481?i=1899298131) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture06.wmv.torrent?9BCD71F9B2B3529A5F27C4FBA1CD97BB83CD98B7) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture06.mp4.torrent?84D688F1C29F1D36940E65269B93A862987734BF) |
| [Lecture 7    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=d5e7ad9a-7af5-454e-aeb2-0bbcc61ff5f3&sl=true');) |
| 51 min   * **Topics:** The Loop and a Half Problem, For Versus While Loop, The CheckerBoard Program Example, Methods in Java, Examples of Methods, The FactorialExample Program, Returning Objects from Methods * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture07.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture07.pdf)   [YouTube](http://www.youtube.com/watch?v=3oM9yT9kBBc&feature=PlayList&p=84A56BC7F4A1F852&index=6) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607381307?i=1088851638) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture07.wmv.torrent?87B8DAB733C8289B4CC295631B00585AF2DBFE45) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture07.mp4.torrent?7A8EFE5764AD3F1D06F2B3B79F3DB27E03535AF4) |
| [Lecture 8    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=9bf65b6e-9c8e-4cf2-a47f-f15587742aef&sl=true');) |
| 49 min   * **Topics:** Information Hiding, The Void Return Type, Parameter Passing Between Methods, Bad Times with Methods, Using Classes, Instance variables vs Local Variables, The RandomGenerator Program Example, The RollDice Program Example, The setSeed() Method * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture08.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture08.pdf)   [YouTube](http://www.youtube.com/watch?v=W2ysz_6AyJE&feature=PlayList&p=84A56BC7F4A1F852&index=7) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607986655?i=1416866561) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture08.wmv.torrent?0B045AB18342D51EF65A355589B6520754AEA65E) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture08.mp4.torrent?1E1DBCC61610B971808E630F3F8EE689DB34BF49) |
| [Lecture 9    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=9e375f3a-68d3-4c2f-ac82-8470cf4177bd&sl=true');) |
| 52 min   * **Topics:** Strings, Writing Your Own Class, Public and Private Visibility, Creating a New Class, The Constructor Method, Shadowing of Variables and the 'this' Keyword, Using the Created Class, Objects are Called by Reference not Called by Value, Class Variables, The JavaDoc, The Student Program Example * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture09.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture09.pdf)   [YouTube](http://www.youtube.com/watch?v=iYtri45lhtc&feature=PlayList&p=84A56BC7F4A1F852&index=8) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1611688234?i=2130448051) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture09.wmv.torrent?12D9C1ED17CD8967BED23FBBA3FF5AFD482B75D2) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture09.mp4.torrent?856A22A0F17CDF7CBB2D08AB3DA8CE5BB0133B19) |
| [Lecture 10    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=39df2249-b6a7-47d2-9622-967cdeb254be&sl=true');) |
| 47 min   * **Topics:** Importance of Private Variables, Extending the Student Class, Overriding Methods, The acm.graphics Package, GCanvas, Methods Common to All GObjects, Interfaces and Methods Defined by Them, The BouncingBall Program Example, The Geometry of the GLabel Class, The GArc Class * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture10.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture10.pdf)   [YouTube](http://www.youtube.com/watch?v=YpZCKVG4s5k&feature=PlayList&p=84A56BC7F4A1F852&index=9) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1612047308?i=2036112279) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture10.wmv.torrent?131EABABE3D9AB0E066EBFDFFCCF6AE78753DC4C) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture10.mp4.torrent?5F8EDAB31A195B50BD56517BD60AF084DEFA71B4) |
| [Lecture 11    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=a2170fc0-ec13-47ee-a6a8-7f47c3ffece7&sl=true');) |
| 50 min   * **Topics:** The GImage Class, The GPolygon Class, The GCompound Class, Event Driven Programs, The ClickForFace Program Example, Responding to Mouse Events, Responding to Keyboard Events, The UFO program Example * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture11.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture11.pdf)   [YouTube](http://www.youtube.com/watch?v=Iua9Klr0lfo&feature=PlayList&p=84A56BC7F4A1F852&index=10) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1611703798?i=1762503146) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture11.wmv.torrent?13E2817F0FA90C6ADDC425FE0CF6ECE13C4F1B8C) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture11.mp4.torrent?C2BF0741BFC9F4EE1A8E3A38808541F4F017E8D8) |
| [Lecture 12    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=d6ba3d2a-e2cb-40a4-a891-23d141e17365&sl=true');) |
| 49 min   * **Topics:** Enumeration, Characters, The ASCII Subset of Unicode, Reading Characters, Math on Characters, char as a Primitive Type; the Character Class, Strings and Their Manipulations * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture12.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture12.pdf)   [YouTube](http://www.youtube.com/watch?v=GIP9MPFJmhI&feature=PlayList&p=84A56BC7F4A1F852&index=11) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1609069120?i=1613367393) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture12.wmv.torrent?05B0416FCAFDA791DBB590FF5FDB994FCF0E6600) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture12.mp4.torrent?A3CF0EC9A091206ECDD23BA73D16CEF080F9B290) |
| [Lecture 13    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=706edf14-e1a8-441c-b5c8-2372fe8bd023&sl=true');) |
| 47 min   * **Topics:** String Processing, Tokenizers, Encryption * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture13.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture13.pdf)   [YouTube](http://www.youtube.com/watch?v=QUrz8-Ltc-s&feature=PlayList&p=84A56BC7F4A1F852&index=12) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1612064308?i=1641923892) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture13.wmv.torrent?6181F661F9C9386F51E836A0B9668BEC903363C5) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture13.mp4.torrent?F378CE55F83196A06217C77EF85C78C68BFEBFF3) |
| [Lecture 14    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=4dd3589d-59ab-47e4-a18b-cc89c3fb396c&sl=true');) |
| 46 min   * **Topics:** Memory, Different Sections of Memory for Different Types of Variables, Memory Allocation Mechanics, The Pointer Viewpoint, The Binky Pointer Fun Video * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture14.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture14.pdf)   [YouTube](http://www.youtube.com/watch?v=W8nNdNZ40EQ&feature=PlayList&p=84A56BC7F4A1F852&index=13) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1608200445?i=1437634620) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture14.wmv.torrent?680C5C3D92A6A0EA55A48FA5CB1E73B5F099F9A0) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture14.mp4.torrent?3B6856B0A109E1A56672CBB5ABF011FCC5F01438) |
| [Lecture 15    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=2cd28dd6-b67d-4eae-872a-c5bcfb98ad1c&sl=true');) |
| 48 min   * **Topics:** Pointer Recap, Why are Objects 'Call by Reference' Instead of 'Call of Value'?, Wrapper Classes for Primitive Types, Files, Code for Opening, Reading and Closing Files, Exceptions, Code for Writing Files * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture15.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture15.pdf)   [YouTube](http://www.youtube.com/watch?v=ttbu9L4RdYs&feature=PlayList&p=84A56BC7F4A1F852&index=14) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607233783?i=1212577615) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture15.wmv.torrent?9729E5631AB5A60991890FC77A3A2461DF70C514) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture15.mp4.torrent?F554CC00AB84340BD095AB2AA5362DDA98C2C2C1) |
| [Lecture 16    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=b39fe309-6f97-4c71-9426-9714a2c94f2f&sl=true');) |
| 50 min   * **Topics:** Array, Creating a New Array, The ++ Operator, Actual Size / Effective Size of the Array, An Array as a Parameter, Initialize an Array During Creation, An ArrayList * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture16.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture16.pdf)   [YouTube](http://www.youtube.com/watch?v=FUO3XEUVydk&feature=PlayList&p=84A56BC7F4A1F852&index=15) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607366441?i=1331090762) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture16.wmv.torrent?3FB6FC7ECFB8395A0A40286F76E02FC9C1172E38) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture16.mp4.torrent?C20FAA910158013E739909AB9802FDE041D4BBDB) |
| [Lecture 17    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=bd76c176-43c5-4220-8ed4-b88731da4d1f&sl=true');) |
| 50 min   * **Topics:** Multi-dimensional Arrays, An ArrayList, The Template Class, Methods in the ArrayList Class, An Example Program Using ArrayList, ArrayLists Hold Objects, An Example Program with an ArrayList of Glabels, The GrayImage Example Program * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture17.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture17.pdf)   [YouTube](http://www.youtube.com/watch?v=YJ9FlCFi3c8&feature=PlayList&p=84A56BC7F4A1F852&index=16) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607381269?i=1347182284) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture17.wmv.torrent?5D5BFC561090A10731183D844EC819ECEF92A8E7) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture17.mp4.torrent?9C5F805FEDB43AA261C15742BFC4BB9D0C7F4B0E) |
| [Lecture 18    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=8c8fa29a-fc2d-4b80-914b-d9da39ca16fc&sl=true');) |
| 47 min   * **Topics:** A Wrap Up of Multi-dimensional Arrays, The ArrayList Way, Pros and Cons : ArrayList vs. Array, Debugging, Approaches to Debugging, The Debugger in Eclipse * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture18.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture18.pdf)   [YouTube](http://www.youtube.com/watch?v=9xnLnDa04dM&feature=PlayList&p=84A56BC7F4A1F852&index=17) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607184674?i=1582499320) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture18.wmv.torrent?AED48BBF1664119BAC5D067D5B19AB228886A0D7) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture18.mp4.torrent?992203C22A77F5B3BCF900861306BFE6E085637D) |
| [Lecture 19    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=178dcdb2-2c86-4116-b0de-b2667782bb85&sl=true');) |
| 50 min   * **Topics:** An Interface, How are Interfaces Implemented, A Map, The HashMap Class, Methods of the HashMap, The Collection Hierarchy, The Map Hierarchy, An Iterator, A HashMap Example * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture19.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture19.pdf)   [YouTube](http://www.youtube.com/watch?v=MxBx1km7WNk&feature=PlayList&p=84A56BC7F4A1F852&index=18) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1608134491?i=1422206512) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture19.wmv.torrent?B4F6B2C4FDC061807FB38C49E4C88BA87CB11BA1) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture19.mp4.torrent?4762B7E056DA37D583D11D7EFE1A8E1F55B86963) |
| [Lecture 20    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=483a3d58-f422-4700-b4d9-d22d7c764a0b&sl=true');) |
| 45 min   * **Topics:** GUI, Interactors in the Context of a Java Program, The Swing Interactor Hierarchy, Window Regions, Creating Interactors, Example Programs, Exploring More Interactors, The InteractiveDrawFace Program Example * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture20.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture20.pdf)   [YouTube](http://www.youtube.com/watch?v=b8OLOWWxvx0&feature=PlayList&p=84A56BC7F4A1F852&index=19) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607201405?i=1194655081) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture20.wmv.torrent?CECBD49AF13CFE7C52A856862540B2738C2AC8F7) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture20.mp4.torrent?9DA969D3B4C75D203C71D2868D593E915E3EC71F) |
| [Lecture 21    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=12980b28-35b7-4753-979d-7b2a835e6175&sl=true');) |
| 48 min   * **Topics:** Review of Interactors and Listeners, Example Programs, The Use of the Two Ways Shown in the Examples - Using getSouce and getActionCommand, TextField Example, Layouts, The Temperature Conversion Example, The TextAndGraphics Example * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture21.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture21.pdf)   [YouTube](http://www.youtube.com/watch?v=RJfQK6iAN4M&feature=PlayList&p=84A56BC7F4A1F852&index=20) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607986624?i=2125904996) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture21.wmv.torrent?5CAC5F3BDE29E7BCA6D280BBA771A698DAC67734) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture21.mp4.torrent?993A54C3A20264F451DC8B655538B37B982D9FAF) |
| [Lecture 22    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=e47db631-3365-4147-b56d-05adb9bbfe9f&sl=true');) |
| 46 min   * **Topics:** Overview of NameSurfer - The Next Assignment, Components and Containers, Listeners for Components, Create a Program Which Extends Program, The ComponentListener Interface, The MusicShop Example Program, The MusicShopDisplay Example Program * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture22.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture22.pdf)   [YouTube](http://www.youtube.com/watch?v=AGUUQXO8eXk&feature=PlayList&p=84A56BC7F4A1F852&index=21) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1611688205?i=2142590141) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture22.wmv.torrent?69CF0659B27126F88D92001BC41321EA40F07ECD) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture22.mp4.torrent?A1CE84BAC477E1290F0766010D832199F827429D) |
| [Lecture 23    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=9f661d5f-aefd-4abe-ab52-371d781a5dfe&sl=true');) |
| 51 min   * **Topics:** Introduction to Lecture's material - Searching, Sorting and Algorithmic Efficiency, Searching, Linear Search, Efficiency of Linear Search, Binary Search, Efficiency of Binary Search, Comparing Search Efficiencies, Sorting, The Selection Sort Algorithm, Efficiency of Selection Sort, The Radix Sort Algorithm * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture23.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture23.pdf)   [YouTube](http://www.youtube.com/watch?v=4ytrc3AsaHM&feature=PlayList&p=84A56BC7F4A1F852&index=22) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1612047281?i=1556558743) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture23.wmv.torrent?1F46E3DA678CFAF51765BAA2CE9BCE925B09A9F6) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture23.mp4.torrent?5796C2693FB24311B7554E9EA9F392BBEDEDFAC2) |
| [Lecture 24    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=34df4724-132a-4b30-90d8-e4001c467c14&sl=true');) |
| 47 min   * **Topics:** Principles of Good Software Engineering for Managing Large Amounts of Data, Principles of Design, The Collection Hierarchy, Useful Methods of Collection, The FlyTunes Example Program - An Online Music Store, Defining the Song Class, Defining the Album Class, Seeing the Program Run, Considering the Data Structures Needed, Reusing Data - Shallow Copy vs. Deep Copy, The FlyTunesStore Program Code * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture24.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture24.pdf)   [YouTube](http://www.youtube.com/watch?v=lYZwJ6xyGNc&feature=PlayList&p=84A56BC7F4A1F852&index=23) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1611703772?i=2070386613) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture24.wmv.torrent?DD88560F0AF83BE271E62F15330872E86D56B42C) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture24.mp4.torrent?95C41C59059291EED19C5A82D23A599C2A7CE7C1) |
| [Lecture 25    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=9d772e7a-4247-47ef-942b-ae2e9d68d722&sl=true');) |
| 47 min   * **Topics:** Defining a Social Network for Our Purposes, See What the Program Needs to Do, The Six Degrees of Separation Phenomenon, Concurrency, A Thread, The Runnable Interface, Creating a Thread, Example Program, Having Shared Data Between Your Threads * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture25.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture25.pdf)   [YouTube](http://www.youtube.com/watch?v=YuVrg0RiPmM&feature=PlayList&p=84A56BC7F4A1F852&index=24) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1609069097?i=1246032775) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture25.wmv.torrent?14F9039C678B78D8F0D3AE063294BA6DBCA88E48) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture25.mp4.torrent?0592943B36410FDA3C7855DCFD3E525D0624A695) |
| [Lecture 26    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=226fc93a-9d11-4536-960b-58ec6e7cdef1&sl=true');) |
| 42 min   * **Topics:** Introduction to the Standard Java Libraries, A JAR File, Creating a JAR File, Creating an Applet, Standard Java Programs Without Using the ACM Libraries, Other Resources - Learning More Java * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture26.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture26.pdf)   [YouTube](http://www.youtube.com/watch?v=Qi6L9lfbyyQ&feature=PlayList&p=84A56BC7F4A1F852&index=25) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1612064286?i=1263995056) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture26.wmv.torrent?9F399EE6936A4E8AAF3D728D116EDE504AEB84C2) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture26.mp4.torrent?EA7301A04CC2FFE8CE4BDD262398B393DEC7EEEC) |
| [Lecture 27    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=32872103-1f00-43d2-9cc1-a09d75a9331c&sl=true');) |
| 42 min   * **Topics:** Life After CS106A, The CS Major, Other Possible Majors * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture27.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture27.pdf)   [YouTube](http://www.youtube.com/watch?v=aIjM-UE1JDQ&feature=PlayList&p=84A56BC7F4A1F852&index=26) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1608200425?i=1921224927) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture27.wmv.torrent?ECBC0A7CF8A57CA4DC53F369FBA765AF41D2DEB8) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture27.mp4.torrent?D7DFE1132979FF33F0AE191DA997CFB0E482BA2A) |
| [Lecture 28    View Now >](javascript:popupVideo('http://see.stanford.edu/player/SEEslplayer.aspx?coll=824a47e1-135f-4508-a5aa-866adcae1111&co=4782aecb-cfbe-4c39-91f4-f69509d86b57&sl=true');) |
| 42 min   * **Topics:** The Graphics Contest Winners, Review for the Final, Example Question 1, Example Question 2, A Wrap-up * Transcript: [HTML](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture28.html) | [PDF](http://see.stanford.edu/materials/icspmcs106a/transcripts/ProgrammingMethodology-Lecture28.pdf)   [YouTube](http://www.youtube.com/watch?v=Kfc5O8hVzLQ&feature=PlayList&p=84A56BC7F4A1F852&index=27) | [iTunes](http://deimos3.apple.com/WebObjects/Core.woa/Browse/itunes.stanford.edu.1615329425.01615329428.1607233765?i=1161091899) | [WMV Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture28.wmv.torrent?FDD598630C0F1A4EF57FB641F9C7A34FF1B0CD80) | [MP4 Torrent](http://coursetorrent.stanford.edu:6969/torrents/cs106a-lecture28.mp4.torrent?CB499B2A31305C24840A6EE3A1BC20A428385AA8) |

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