

ACES Learning Center
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Java 1 Summer Syllabus

Java I Summer Syllabus

Textbook:

Java Tutorials http://www.tutorialspoint.com/java/java_tutorial.pdf

Reference: [Introduction to Programming Using Java, Seventh Edition \(pdf\)](#)

Material Covered

The Java I is a beginner's Java programming class. We assume that the students have no previous knowledge of Java language and any other programming languages.

The course will cover (1) the Java basics such as data types, variables, functions/methods, logical/relation/assignment operations, if-else statements, for-and-while-loops; (2) important classes in java.lang such as String, Integer, Long, and Character; (3) online browsing, reading and understanding java docs/API; (4) important classes in java.io such as FileReader, FileWriter, BufferedReader, PrintWriter, and StirngTokenizer in java.util.

After successfully completing the **Java I** course, students should be able to reading data from an input file, parsing data elements inside the input file, manipulating the input data elements and writing the results based on the problem statements to an output file.

Class Structure

Except for the first day, the first hour is spent reviewing the previous day's homework, material, and quiz or exam. Over the next two hours we cover new material, with example problems solved by the students throughout. During the last 30 minutes there is a comprehensive quiz with an emphasis on that day's material and in-class problem solving exercise. On Fridays, there is only one hour of new material followed by the overview of the materials taught in the week, and then the students take an hour-long comprehensive exam. Each class will include three breaks of ten minutes each.



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Schedule:

Date	Topic	Objective
Week 1		
Monday	Introduction, IDE setup and Java Review	Introducing Java, compilation, JVM, Java bytecode. Installing/setting-up development environment, JDK. Showing students Linux/MacOS shell or windows cmd/powershell environment. Every student should select a text editor outside the IDE.
Tuesday	Java basic; first Java Program, static method, main method, compilation, execution.	Introducing Java source file, class file, compilation and execution from IDE and command lines. Understanding source file name conversion and class name, static method, main method, statement block and comment block and execution sequences. Noting compilation errors and solving/fixing errors. Chapter 2 and 3.
Wednesday	Variables, Data type and operations	Understanding byte, int, boolean and char. Local variable and the scope of variable, variable value assignment, +, -, *, /, %, ++, -- operations. The concepts of instance variables/class-member-fields will not be discussed. Chapters 4 and 6.
Thursday	Relation operations, logical operations, Assignment operations and Precedence of Java operations	Relation operations ==, !=, >, <, >=, <=, Logical operations , && and !. Assignment operations =, +=, -=, *=, /=, %=. Chapter 8.
Friday	Decision making	If statement, if-else statement, if-else-if statement, nested if statement, switch statement. The conditional operator ? will not be covered.



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		Chapter 10
Week 2		
Monday	Define loop (for loop and while loop)	Introducing while loop, for loop and do...while loop. Chapter 9.
Tuesday	Java String, Character class, and Java Number classes	Introducing Integer, Byte, Short, and Long classes. Understanding each number class' max/min values. How to convert string value to number value and common static methods. Focusing more on String class and String comparison, manipulation. Chapters 11, 12 and 13.
Wednesday	File IO, FileReader, FileWriter, buffered reader, Print writer	Introducing File Input and output and java.io package. Focusing on FileReader and BufferedReader for reading a character-input file. Focusing on FileWriter and PrintWriter for printing formatted representations of objects to a text-output file. Chapter 18
Thursday	Java.util.StringTokenizer	More File input and output. Reading data input file line by line by using BufferedReader.readLine() Understanding how to use StringTokenizer to break a string into tokens. Processing token strings.
Friday	String to Integer conversion, Integer.parseInt(). USACO File IO (test.in and test.out)	Reading and parsing input files which are commonly seen in USACO contests.

- Do the reading and the homework. I will go over the material in class beforehand. Programming, like mathematics, is comprehensive. You need a lot more practice, especially writing your own programs.
- Write comments for major blocks. The comments help your source code readers and help yourself when you read it in a late time.

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- Avoid cut/paste source code segments from somewhere else. Writing your own code helps in remembering the language, syntax and common class methods.
- Getting yourself familiar with online Java SE API
(<https://docs.oracle.com/javase/8/docs/api/index.html>)