

CENG/BILM 217 Java and Object Oriented Basics Training

Fundamentals of Object Oriented (mainly Based) Programming and Java			
Lecture	Date	Topics Covered	Resources
1	17-11-05 Thursday	<p>Introduction to Training and Java Programming: Overview of the training program, Java Technology, your first cup of Java, Java Applications and Applets, I/O statements, Java's primitive types, basic memory concepts, arithmetic operators, decision-making statements, relational and equality operators.</p> <p>Introduction to Classes and Objects: Classes, objects, methods, instance and local variables, object creation and constructor, primitive and reference types.</p>	JT, JHTP2, JHTP3
2	17-11-05 Thursday	<p>Control Statements I: Control structures, if, if...else selection statements, while repetition statement, formulating algorithms, compound assignment operators, increment and decrement operators, primitive types</p> <p>Control Statements II: Counter-controlled repetition, for and do while repetition statements, multiple selection using the switch selection statement, break and continue program control statements to alter the flow of control, logical operators to form complex conditional expressions in control statements.</p>	JHTP4, JHTP5
3	19-11-05 Saturday	<p>Methods: A Deeper Look: Static methods and fields, common Math methods available in the Java API, passing information between methods, call/return mechanism supported by the method call stack and activation records, grouping related classes by packages, random-number generation, visibility of declarations, method overloading.</p>	JHTP6
4	19-11-05 Saturday	<p>Arrays: Use arrays to store data in and retrieve data from lists and tables of values, declaring, initializing an array, and referring to individual elements of an array, iteration through arrays, passing arrays to methods, multidimensional arrays, writing methods that use variable-length argument lists, reading command-line arguments into a program.</p>	JHTP7
5	22-11-05 Tuesday	<p>Classes and Objects: A Deeper Look: Encapsulation and data hiding, data abstraction and abstract data types (ADTs), keyword this, use static variables and methods, importing static members of a class, enum type.</p>	JHTP8
6	23-11-05 Wednesday	<p>Object-Oriented Programming: Inheritance: Inheritance and software reusability, superclasses and subclasses, Using keyword extends to create a class that inherits attributes and behaviors from another class, using access modifier protected to give subclass methods access to superclass members, accessing superclass members with super, how constructors are used in inheritance hierarchies, the methods of class Object, the direct or indirect superclass of all classes in Java.</p>	JHTP9
7	26-11-05 Saturday	<p>Object-Oriented Programming: Polymorphism: The concept of polymorphism, using overridden methods to effect polymorphism, abstract and concrete classes, declaring abstract methods to create abstract classes, how polymorphism makes systems extensible and maintainable, determining an object's type at execution time, declaring and implementing interfaces.</p>	JHTP10

8	29-11-05 Tuesday	GUI Components I: The design principles of graphical user interfaces (GUIs), build GUIs and handle events generated by user interactions with GUIs, packages containing GUI components, event-handling classes and interfaces, buttons, labels, lists, text fields and panels, handling mouse events and keyboard events, using layout managers to arrange GUI components	JHTP11
9		Exception Handling: Exception and error handling, using try, throw and catch to detect, indicate and handle exceptions, using the finally block to release resources, stack traces in debugging, exception class hierarchy, declaring new exception classes, create chained exceptions.	JHTP13
10		Files and Streams: Creating, reading, writing and updating files, using class File to retrieve information about files and directories, Java input/output stream class hierarchy, text files and binary files, Sequential-access and random-access file processing, using classes Scanner and Formatter to process text files, using the FileInputStream and FileOutputStream classes, using a JFileChooser dialog, using the ObjectInputStream and ObjectOutputStream classes, using class RandomAccessFile.	JHTP14

Place: E-210

Student Group: CENG 217 (Students in English Section)

Resources

Required

1. *Java How to Program (JHTP)*, H. M. Deitel, P. J. Deitel, Prentice Hall, 6th Edition, 2005.
2. *Object Oriented Design and Patterns (OODP)*, 2nd Edition, Cay Horstmann, John Wiley, ISBN: 0-471-74487-5, 2005.

Recommended

1. Sun's Official *Java Tutorial (JT)*: <http://java.sun.com/tutorial/index.html>
2. *Java How to Program, Multimedia Cyber Classroom*. (2 CDs).
3. *Objects First with Java, A Practical Introduction Using BlueJ*, 2nd Edition, D. J. Barnes, M. Kölling, Prentice Hall, 2005.
4. *Java Software Solutions*, 4th Edition, Lewis & Loftus, Addison-Wesley, 2005.
5. *Object-Oriented Software Development Using Java, Principles, Patterns, and Frameworks*, 2nd Edition, X. Jia, Addison Wesley, 2003.
6. *Thinking in Java*, Bruce Eckel. Lots of Java coverage in one free online book.
7. *Core Java Vol 1(basic) & Vol 2 (advanced)*, by Horstmann. These volumes give a good, standard coverage of Java
8. *UML Distilled*, 3rd edition, Martin Fowler, Addison-Wesley, 2004.
9. *UML for Java Programmers*, Robert C. Martin, Prentice Hall, 2003.
10. *Applying UML and Patterns - An Introduction to Object-Oriented Analysis and Design and Iterative Development*, C. Larman, Prentice Hall, 2004.