Space Visions Congress

Seminar: Seminar: Java Programming Language When: Friday April 27, 2007 1:00 a.m. to 5:00 p.m.

Where: University of Central Florida Solar Energy Center (FSEC), 1519

Clearlake Road, Cocoa, Florida

Instructor: Ali Shaykhian

Space Visions Congress is sponsored by the Canaveral Council of Technical Societies (CCTS). CCTS is a voluntary, not-for-profit association of engineering, technical, and scientific societies that support memberships who live and work along Florida's Space Coast.

Java Programming Language: The Java seminar covers the fundamentals of Java programming language. No prior programming experience is required for participation in the seminar. The first part of the seminar covers introductory concepts in Java programming including data types (integer, character, ..), operators, functions and constants, casts, input, output, control flow, scope, conditional statements, and arrays. Furthermore, introduction to Object-Oriented programming in Java, relationships between classes, using packages, constructors, private data and methods, final instance fields, static fields and methods, and overloading are explained.

The second part of the seminar covers extending classes, inheritance hierarchies, polymorphism, dynamic binding, abstract classes, protected access. The seminar conclude by introducing interfaces, properties of interfaces, interfaces and abstract classes, interfaces and callbacks, basics of event handling, user interface components with swing, applet basics, converting applications to applets, the applet HTML tags and attributes, exceptions and debugging.

Specific expectations are:

- o Show how to create, compile and run Java applet and application
- o Read, recognize, and describe Java syntax
- o Recognize methods, decisions, loops and exceptions
- o Learn how to declare, define and use variables, final, arrays, and references
- o Show how to implement classes representing real objects
- o Learn to implement object-oriented designs, emphasize on encapsulation, inheritance and polymorphism
- o Group classes into a package
- o Understand inner classes and the concept of nameless object
- o Use Java Graphical User Interface components
- o Recognize events and event handling techniques

Detail Outline

An overview of Java, Java Applets and Applications
Object-Oriented Programming
A first simple program, entering the program, compiling the program
The Java class libraries

Data types, variables, and arrays

Control statements, Java's selection statements, if, switch

Iteration statements, while, do-while, for

Class fundamentals, the general form of a class

Introducing methods

Constructors, parameterized constructors, the this keyword

Overloading methods, overloading constructors

Using Objects as Parameters, returning objects

Introducing access control

Introducing final, static

Introducing Nested and Inner Classes

Inheritance, member access and inheritance

Abstract classes, final classes

Inner classes, anonymous inner classes

AWT classes, window fundamentals

Component, container, panel

Handling events in a frame window

Labels, Using Buttons, Applying Check Boxes, CheckboxGroup

Layout Managers, FlowLayout, BorderLayout

GridLayout, CardLayout

Exploring Swing

Check Boxes, Radio Buttons, Combo Boxes

Events, Event Sources, Event Listeners, Event Classes

The ActionEvent Class, The ActionListener Interface

The ComponentEvent Class, The ComponentListener Interface

The ContainerEvent Class, The ContainerListener Interface

The FocusEvent Class, The FocusListener Interface

The InputEvent Class,

The WindowEvent Class, The WindowFocusListener Interface, The WindowListener

Interface

Event Listener Interfaces

Using the Delegation Event Model

Handling Mouse Events

Handling Keyboard Events

Adapter Classes

Exception-Handling Fundamentals