

Internet of Things

Objective

The course aims to introduce students to the concepts underlying the Internet of Things (IoT) through a series of Lecture on the various topics that are important to understand the state-of-the-art

as well as the trends for IoT. In order to pass the course, the students should be able to know:

Introduction to Internet in general and Internet of Things: Introduction to Internet: layers, protocols, packets, services; Local Area Networks, MAC level, link protocols such as: point-to-point protocols, Ethernet, Wi-Fi 802.11, cellular Internet access, and Machine-to-Machine (M2M).

IoT Technology Fundamentals: IoT definitions: overview, applications, potential & challenges, and architecture; Devices and gateways, Local and wide area networking; Data management, Business processes in IoT, Everything as a Service (XaaS), IoT Analytics, Knowledge Management.

IoT-An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations. IoT examples: Case studies, e.g. sensor body-area-network and control of a smart home.



Java Essential – The Professional Module

Course Objective: The objective of this course is to make the students proficient in Java. This sort term course elaborates the entire details about java from beginning to advanced frame work. When this short term course is to be a completed student will be able to develop different projects.

Core Java: Operators, Data types, Variables, Arrays, Control Statements, Methods & Classes, Inheritance, Package and Interface, Exception Handling, Multithread programming, I/O, Java Applet, String handling, Networking, Event handling,

Swings-Swings Overview, Swing Components: JApplet, Icons, Labels, Text Fields, Buttons, Check Boxes, Radio Buttons, Toggle buttons, Lists, Combo Boxes, Toolbars, Tabbed Panes, Layered Panes, Scroll Panes, Split Panes, Trees, Tables, Progress Bar, menus, Swing and the Model- View- Controller Design Pattern, Dialog Boxes, Pluggable Look and feel,. Layouts, Windows, Dialog Boxes, Inner frame.

Java Database Connectivity- JDBC vs ODBC, Two – tier and Three –Tier Model, JDBC Package and Drivers, Driver Interface and Driver Manager Class, Connection Interface-Statement Interface, Prepared Statement, ResultSet, Result Set , Meta Data Interface, Database Meta Data Interface. JDBC Programming Concepts-Database URL, Making the Connection, Executing sql Commands, Managing Connections Statement, Populating a Database, Scrollable and Updateable Resultset, Row Sets, Transaction (Save Point, Batch Updates) Connectivity Model, JDBC/ODBC Bridge, java.sql package, Connectivity to remote database.

Java Beans: Application Builder tools, Bean developer kit (BDK), Introspection, Developing a simple bean, Using Bound properties, Java Beans API, Session Beans, Entity Beans, Enterprise Java beans (EJB), RMI (Remote Method Invocation), A simple client-server application using RMI.

Logging, Assertions and Debugging- Using Assertions, Loggingg, Debugging Tips Using a Debugger, **Generic Programming-**Need a Generic programming, Definition of a Simple Generic Class, Generic Methods, Bounds for Type Variable Generic Code and the Virtual Machine, Restrictions and Limitations, Inheritance Rules for Generic Types, Wildcard Types, Reflection and Generics ,**Collections-** Collection Interfaces, Concrete Collections, The Collections Framework Legacy Collections. **Utilities-** JAR Files, Java's Documentation Comments,

