BMS\_MCA\_2023 \_Scheme\_and\_Syllabus.pdf

• Introduction  
 o Implication and Scope of Java and Advanced Java Programming concepts and its Importance in Economic growth of Nation  
 o Impact of the course on Societal Problems / Sustainable Solutions / National Economy  
 o Career Perspective  
 o Overview of the course in current Innovations and Research Trends  
• Java Programming Fundamentals  
 o Introducing Data Types and Operators  
 o Program Control Statements  
 o Introducing Classes, Objects and Methods  
• Methods, Classes and Inheritance  
 o Controlling Access to Class Members  
 o Pass Objects to Methods  
 o How Arguments are passed  
 o Returning Objects  
 o Method Overloading  
 o Overloading Constructors  
 o Recursion  
 o Constructors and Inheritance  
 o using super to Call Superclass constructors  
 o using super to Access Superclass Members  
 o creating a Multilevel Hierarchy  
 o Superclass References and Subclass Objects  
 o Method Overriding  
 o Overridden Methods  
 o Polymorphism  
 o Using Abstract Classes  
 o Using final  
• Interfaces, Packages, and Exception Handling  
 o Interface Fundamentals  
 o Creating an Interface  
 o Implementing an Interface  
 o Using Interface References  
 o Implementing Multiple Interfaces  
 o Constants in Interfaces  
 o Interfaces can be extended  
 o Nested Interfaces  
 o Package Fundamentals  
 o Packages and Member Access  
 o Importing Packages  
 o The Exception Hierarchy  
 o Exception Handling Fundamentals  
 o The Consequences of an Uncaught Exception  
 o Exceptions Enable you to handle errors gracefully  
 o using Multiple catch clauses  
 o Catching subclass Exceptions  
 o Throwing an Exception  
 o Throwable  
 o using finally  
 o using throws  
• Multithreaded Programming and Enumerations  
 o Multithreading fundamentals  
 o The Thread Class and Runnable Interface  
 o Creating Thread  
 o Creating Multiple Threads  
 o Determining When a Thread Ends  
 o Thread Priorities  
 o Synchronization  
 o using Synchronization Methods  
 o The Synchronized Statement  
 o Thread Communication using notify(), wait() and notify All()  
 o suspending, Resuming and stopping Threads  
 o Enumerations  
 o The Values() and Valueof() Methods  
 o Instance variables and enumerations  
• Servlets  
 o Servlet Structure  
 o Packaging  
 o Lifecycle  
 o HTTP Request and response  
 o Handling client request  
 o Form data  
 o HTTP status request headers  
 o HTTP Status codes  
 o HTTP response headers  
 o Handling cookies  
 o Session tracking  
• Java Server Pages  
 o Need of JSP  
 o Basic syntax  
 o Scripting elements  
 o Limiting Java code in JSP  
 o JSP expression  
 o JSP directives  
 o JSP attributes  
• JDBC  
 o Steps to connect to the database  
 o Connectivity with Oracle or MySQL  
 o DriverManager  
 o Connection  
 o Statement  
 o ResultSet interfaces  
 o PreparedStatement  
 o ResultSetMetaData  
 o DatabaseMetaData  
• Server Side Component Types  
 o The Stateless Session Bean  
 o the Stateful Session Bean  
 o the Singleton Session Bean  
 o Message Driven Bean  
 o Entity Bean  
• Recap  
 o Summary of Java and Advanced Java Programming concepts