# Topics

*Note : This is a short summary of the content.*

**Abstraction**
- Encapsulation
- Classes and Objects
    - Class creation
    - Object creation
- Access Modifiers
- Constructors
    - Default Constructor
    - Copy Constructor
    - Constructor Overloading
- Deep copy vs Shallow copy
- Pass by Reference vs Pass by Value
- Inheritance
    - Constructor chaining
- Polymorphism
    - Runtime Polymorphism
    - Compile Time polymorphism
    - Method overloading
    - Method overriding
- Interfaces
- Abstract class
- Static
    - Static methods
- Final
    - Final method
    - Final Variable
    - Final class
- Process Vs Thread
- Multicore systems
- Concurrency vs Parallelism
- Context switching
- Coding a Multi threaded program
    - Thread creation
        - start()
        - wait()
        - sleep()
    - Thread pool
    - Thread lifecycle
    - Executors
    - Runnable and Callables

- Futures
- Volatile keyword
- **Synchronization**
    - Synchronization Issue (Adder / Subtractor Example)
    - Reasons of Issue
    - Properties of Best solution
    - Mutex
    - Synchronized keyword
    - Synchronized methods
    - Semaphores
    - Concurrent Data Structures
    - Atomic data types
- **Collections**
    - Collection framework
    - Hierarchy of Collection Framework
        - List
        - Set
        - Queue
    - HashSet vs HashMap
    - TreeMap
    - LinkedHashMap
    - Vector
    - ConcurrentHashmap
- **Generics**
- **Function Interface**
- **Lambda Functions**
- **Streams**
    - Terminal vs Intermediate methods
    - Parallel Streams
- **Functional Programming using Java**
- **Exception Handling**
- **Strings in Java**
- **Garbage collection**
- **Memory Management in Java**