

Programming Concepts Using Java

Course outline

Week 1

1.Introduction to programming

2.Types

3.Memory management

4.Abstraction and Modularity

5.Object Oriented Programming

6.Classes and Objects

Week 2

- 1.Introduction to Java
- 2.Basic data types in java
- 3.Control flow in java
- 4.Defining classes and objects in java
- 5.Basic input and output in java

Week 3

- 1.Object oriented programming
- 2.Subclasses and Inheritance
- 3.Dynamic dispatch and polymorphism
- 4.Class Hierarchy

Week 4

1. Abstract classes

2. Interfaces

3. Private classes

4. Controlled interaction with objects

5. Callbacks

6. Iterators

Week 5

1. Polymorphism

2. Generic programming

3. Java Generics and Subtyping

4. Reflection

Week 6

- 1. Indirection
- 2. Collection
- 3. MAP

Week 7

- 1. Errors and Exceptions
- 2. Packages
- 3. Assertions
- 4. Logging

Week 8

1. Cloning

2. Type interface

3. Higher order functions

4. Streams

Week 9

- 1.Optional types
- 2.Collecting Results from Streams
- 3.Input output streams
- 4.Serialisation

Week 10

1. Concurrency: Threads and processes
2. Race conditions
3. Mutual Exclusion
4. Test and Set
5. Monitors

Week 11

1. Monitoring

2. Thread

3. Concurrent Programming

4. Thread safe collection

Week 12

1. Graphical interface and event driven programming

2. Swing toolkit

- 1.Activity questions(after each lecture)

- 2.Practice questions

- 3.Graded questions

Programming practice

- 1.Replit

- 2.Eclipse

Final exam:

- 1.MCQ,MSQ,NAT

- 2.OPPE