

Programming Techniques (2)

Course Name: Programming Techniques (2)

Course Code: SFT102

Credit Hours: 3

Knowledge Domain: Software Engineering.

Prerequisite(s): Programming Techniques (1) (SFT101)

Learning Objectives:

In addition to those for Programming Techniques (1), the student will be able to:

1. Apply Data Structure and Algorithms by adding some basic materials.
2. Define the encapsulation concept for object-oriented programming and show how inheritance is used.
3. Add more constructs in the Java language.

Learning Outcomes

In addition to those given in Programming Techniques (1), the students will acquire:

1. Grasping some basic concepts in data structures and algorithms and applying them in object-oriented programming environments.
2. Some more aspects of Java will be included regarding lexical issues and class libraries.

Overview and Syllabus

Data structure elements. Basics of algorithms. Object-oriented programming elements. Java programming elements. Java Programming.

Course Outline

	Topic
1	<u>Module1: Java programming Basics</u> Topic1: Java Code Basics Topic2: Naming Conventions Topic3: Variables Declaration and Initialization Topic4: Operators Topic5: Expressions Quiz

2	<p><u>Module2: Object-Oriented Programming (OOP)</u> Topic1: Object-Oriented Programming Topic2: Classes Topic3: Encapsulation Topic4: Inheritance Topic5: Polymorphism Quiz</p>
3	<p><u>Module3: Arrays</u> Topic1: Introduction to Arrays Topic2: Multi-Dimensional Arrays Quiz</p>
4	<p><u>Module4: Strings</u> Topic1: Introduction to Strings Topic2: String's Operations Topic3: The StringBuffer Class Quiz</p>
5	<p><u>Module5: Control Statements</u> Topic1: Java Program Topic2: Conditional Statements Topic3: Loop statements Topic4: Transfer Statements Quiz</p>
6	<p><u>Module6: Linked Lists</u> Topic1: Introduction to Linked Lists Topic2: Creating Linked Lists Topic3: Linked Lists Operations Quiz</p>
7	<p><u>Module7: Stacks and Queues</u> Topic1: Stacks Topic2: Queues Quiz</p>
8	<p><u>Module8 : Maps and Dictionaries</u> Topic1: Introduction to Collections Topic2: Maps Topic3: Dictionaries Quiz</p>
9	<p><u>Module9 : Recursion</u> Topic 1: Recursion Topic 2: Examples for Recursion function</p>

	Quiz
10	<u>Module10: Sorting</u> Topic1: Introduction to Sorting Topic2: Bubble Sort Topic3: Insertion Sort Topic4: Selection Sort Quiz
11	<u>Module11: Trees and Search Trees</u> Topic1: Trees Topic2: Binary Search Trees (BST) Quiz