PGSc IT S4 01
Exam. Code: M4PIJ

Programming in Java

SEMESTER- IV

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

BLOCK-1

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

Subject Experts

Prof. Anjana Kakati Mahanta, Gauhati University
Prof. (Retd.) Pranhari Talukdar, Gauhati University
Prof. Shikhar Kumar Sarma, Gauhati University
Dr. Jyotiprokash Goswami, Assam Engineering College

Programme Coordinator : Dr. Ridip Dev Choudhury, KKHSOU

Course Coordinators:

Dr. Ridip Dev Choudhury, KKHSOU
Dr. Tapashi Kashyap Das, KKHSOU
Dr. Sruti Sruba Bharali, KKHSOU

SLM Preparation Team

UNITS	CONTRIBUTORS
1,2,3,4,5,8	Dr. Utpal Barman, Kaziranga University
6	Dr. Swapnanil Gogoi, GUIDOL
7	Dr. Gautam Chakraborty, NERIM

Editorial Team

Content & Language: Dr. Ridip Dev Choudhury, KKHSOU

Structure, Format & Graphics: Dr. Sruti Sruba Bharali, KKHSOU (Unit 4,5)
Dr. Tapashi Kashyap Das, KKHSOU (Unit 1,2,3,6,7,8)

September, 2022 **ISBN:**

This Self Learning Material (SLM) of the Krishna Kanta Handiqui State Open University is made available under a Creative Commons Attribution-NonCommercial-ShareAlike4.0 License (international): http://creativecommons.org/licenses/by-nc-sa/4.0/

Printed and published by Registrar on behalf of the Krishna Kanta Handiqui State Open University

Headquarters: Patgaon, Rani Gate, Guwahati 781017; Web : www.kkhsou.in/web/
City Campus : NH 37, Resham Nagar, Khanapara, Guwahati-781022, Assam, India

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY
Programming in Java
Block-1
DETAILED SYLLABUS

		Page No.
UNIT 1:	**Introduction to Java** An overview of Java, Basic features of Java, JavaEnvironment, Installing the Java SDK, Writing Java Programs	**7-16**
UNIT 2:	**Operators and Assignments** Introduction, Assignment operator, Comparison Operators, Instance of Comparison, Arithmetic operators, Shift operator, Bitwise operator, Logical operator, bitwise operator, conditional operator, casting.	**17-30**
UNIT 3:	**Programming Basic** Java Token and Keywords, Constants, Data types; Declaring a variable, The scope and lifetime of variable, Various Operators, Input/Output statements Decision Making and Control Statements : if statement, If-else, else-if, switch statement; for, while, do-while statements	**31-44**
UNIT 4:	**Class in Java** Class fundamentals: Defining class, Accessing class members, Declaring objects, Passing Arguments to Methods, Returning Multiple Values from methods, Modifiers	**45-57**
UNIT 5:	**OOP in Java** Class fundamentals: Defining class, Accessing class members, Declaring objects, Constructors, copy constructor; Passing Arguments to Methods, modifiers, Inheritance: the super class, Multilevel Inheritance, Final and abstract keyword, Static Members	**58-68**
UNIT 6:	**Arrays, Strings and Vectors** Declaring Arrays, Creating Arrays, Initializing Arrays, Multi-Dimensional Arrays, Strings: string arrays, string methods, String Buffer class, Vectors	**69-108**
UNIT 7:	**Interfaces and Packages** Interfaces: Defining an Interface, Implementing interfaces, Applying Interfaces, Packages: Defining a package, Accessing and Importing Packages	**109-134**
UNIT 8:	**Threads** Introduction, new threads, creating new threads by extending the thread class, creating a thread by implementing Runnable Interface, Threads in the Running State, Sleeping and Interruptions, Signaling with wait, notify	**135-144**

COURSE INTRODUCTION

This is a course on Programming in Java. Java is a multi-platform, object-oriented language that can be used as a platform in itself. It has been a popular choice among developers for over two decades, with millions of Java applications in use today.

The course consists of two blocks.

Block 1 deals with the basic concepts of the Java programming language. The operators and assignments used in Java are discussed with examples. The concept of Object Oriented Programming is also explained in this block. The uses of arrays, strings and vectors in Java are explained. At the end, this block introduces the concepts of interfaces, packages and threads.

Block 2 discusses about the uses of Java.lang.Math class at the beginning. It also discusses the process of exception and file handling mechanism used in Java, how to use applets, AWT and swings. In the last part of this block, the concept of JDBC and database programming are explained.

BLOCK INTRODUCTION

This is the first block of the course ***Programming in Java.*** This block contains eight units.

Unit 1 describes the features of Java, Java environment and installation process of Java SDK.

Unit 2 discusses about the tokens, keywords, constants, data types, uses of variables, and various decision and loop statements used in Java.

Unit 3 discusses the role of system analyst in the design and development process of a system.

Unit 4 describes the uses of classes in Java.

Unit 5 describes various types of inheritance, super class and static members used in Java.

Unit 6 discusses the uses of arrays, strings and vectors.

Unit 7 discusses the concept and uses of interfaces and packages.

Unit 8 deals with the various topics related to threads.

Each unit of these blocks includes "CHECK YOUR PROGRESS" questions. These have been designed to self-check your progress of study. It will be helpful for you if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with "ANSWERS TO CHECK YOUR PROGRESS" given at the end of each unit.