Post Graduate Program in Software Engineering - Java Specialization

Introduction
The large demand in development of business applications across the globe has helped in identifying Java as an ideal technology to create versatile, efficient, platform portable, and secure applications. In addition, the world is changing rapidly and the new generation of computing devices offers us an opportunity to conceive products and services that might never have been possible before. Advanced technologies have revolutionized the way applications are used to accomplish day-to-day activities. Modern day applications must be quickly build, easy to maintain, and easy to scale as your traffic and data storage needs change. Google App Engine is a Platform as a Service (PaaS) offering that lets you build and run cloud-based applications on Google’s infrastructure.

IT professionals aspiring to become developers in the Java space need to be equipped with skills to develop Web, distributed, or cloud-based applications using Java technology. The program is meant for the segment that is keen to gain skills on application development using Java technology. This program focuses on imparting in-depth skills to develop Web applications on Java EE platform and cloud-based applications.

For the Diploma program, the courses will be executed in the following sequence:
1. Logic Building and Effective Problem Solving
2. RDBMS Essentials & T-SQL Programming
3. HTML5 Programming
4. Programming in Java
5. Developing Web Applications Using Servlets and JSP
6. Professional Skills I
7. Developing Cloud Apps Using Google App Engine

Logic Building and Effective Problem Solving
After completing the “Logic Building and Effective Problem Solving” course, a learner will be able to:
- Identify the input and output requirements of a computer problem
- Explain programs and programming languages
- Identify the various tools for problem solving
- Solve problems using flowcharts and pseudocode
- Represent decisions and repetitive processes in a flowchart
- Use variables and constants
- Identify data types and operators
- Perform the conditional execution
- Implement iterative processes and modular programming
- Work with arrays

RDBMS Essentials and T-SQL Programming
After completing the “RDBMS Essentials & T-SQL Programming” course, a learner will be able to:
- Identify the SQL Server tools
- Retrieve, summarize, and group data
- Use functions to customize the result set
- Query data by using joins and subqueries
- Manage databases, tables, and result sets
- Manipulate data by using DML statements
- Create and manage indexes and views
Manipulate XML data and implement a full-text search
Implement batches, stored procedures, functions, triggers, and transactions
Monitor and optimize database performance

Programming in Java
After completing the “Programming in Java” course, a learner will be able to:
- Identify the features of object orientation
- Create object-oriented Java applications
- Use decision-making constructs and loop constructs
- Implement collection framework
- Implement error handling and IO functionality
- Manipulate files, directories and file system
- Create data-centric applications using JDBC
- Process strings using regular expressions
- Implement multi-threading and localization

HTML5 Programming
After completing the “HTML5 Programming” course, a learner will be able to:
- Create an HTML Web page
- Enhance Web pages
- Work with tables and frames
- Add interactivity to Web pages
- Create dynamic Web pages
- Work with graphics
- Add visual effects to Web pages
- Implement geolocation and offline support for data

Professional Skills I
After completing the “Professional Skills I” course, a learner will be able to:
- Improve communication skills
- Improve self-presentation skills
- Work effectively in a team environment
- Demonstrate critical thinking
- Understand concepts of health, safety and security
- Understand methods of planning and prioritizing
- Understand the need for values and ethics at the workplace
- Demonstrate capability in basic aptitude tests – verbal, numerical, and logic

Developing Web Applications Using Servlets and JSP
After completing the “Developing Web Applications Using Servlets and JSP” course, a learner will be able to:
- Understand HTTP request/response cycle and servlet lifecycle
- Identify services provided by the Web container
- Implement the MVC design pattern
- Implement servlet request dispatcher, filters and servlet listeners
Handle errors and exceptions
Develop JSP pages using EL and JSTL
Implement JDBC, Java persistence API and session management
Create asynchronous Web applications
Implement security: Role based security, encryption and JAAS
Implement the Struts framework and Java EE design patterns

Developing Cloud Apps Using Google App Engine
After completing the “Developing Cloud Apps Using Google App Engine” course, a learner will be able to:

- Identify fundamentals of Cloud Computing and Google Cloud Platform
- Build an App Engine application using Google Plugin and Maven
- Build backend APIs using Cloud Endpoints
- Handle user authentication and forms
- Use App Engine Datastore to store data
- Query, filter, and sort data from Google Datastore
- Implement datastore transactions
- Automatically scale, deploy, and secure applications
- Fetch URL and manipulate images
- Schedule tasks for triggering events at specified times or regular intervals
- Manage request logs

The Program will have eKit and Personalized Courseware for courses.
Apart from the eKit for the courses, students will also earn a subscription to the NIIT’s Online e-Library. The e-Library will have reference courseware for the following courses:

- Professional Skills II
- Object-Oriented Design Using UML
- Software Development (SWEBOK based)

Certification Mapping
- The RDBMS Essentials & T-SQL Programming course is mapped with Microsoft Exam 70-461 (Microsoft SQL Server 2012, Database Development)
- The Programming in Java course is mapped with Oracle Certified Professional, Java SE 7 Programmer- 1Z0 – 804. In addition, A student needs to appear for Oracle Certified Associate, Java SE 7 Programmer – 1Z0 – 803 certification
- The Developing Web Applications Using Servlets and JSP course is mapped with Oracle Certified Expert (OCE): Java EE 6 Web Component Developer

Exit Profile
At the end of this program, the learner will be able to:

- Develop Web Applications using Java Technologies
- Develop Enterprise Applications using Java Technologies

Certificate Title: Post Graduate Program in Software Engineering (Java Specialization)
Note: Students will be awarded a Participation E-Certificate signed by Oracle on successful completion of the following courses:

- Programming in Java
- Developing Web Applications using Servlets and JSP

Program Eligibility
Completed Class XII with >= 50% and Graduation studies with Score >=50%
- Able to interact in English in a classroom environment
- Age <24.5 years
- Comfortable working in the Windows environment