DEPARTMENT OF COMPUTER SCIENCE AND Business Systems

Report on

Value added course on "Core JAVA"

Date: 09.09.2024 to 16.09.2024

Venue: CSE Lab 1 & Lab 2

Time: 8.30am-04.30pm

Introduction:

Java is a programming language that is class-based and object-oriented. It is designed to be general-purpose and aims to have fewer implementation dependencies, and serves as a computing platform for application development. Object-oriented programming is a way of solving a complex problem by breaking them into a small sub-problem. An object is a real-world entity. It is easier to develop a program by using an object. In OOPs, we create programs using class and object in a structured manner.

Day 1:

The Course was structured to offer a comprehensive understanding of the topic.

The agenda included:

1. Overview of Software Testing

2. Importance of Testing in SDLC

3. Types of Testing: Manual vs Automated
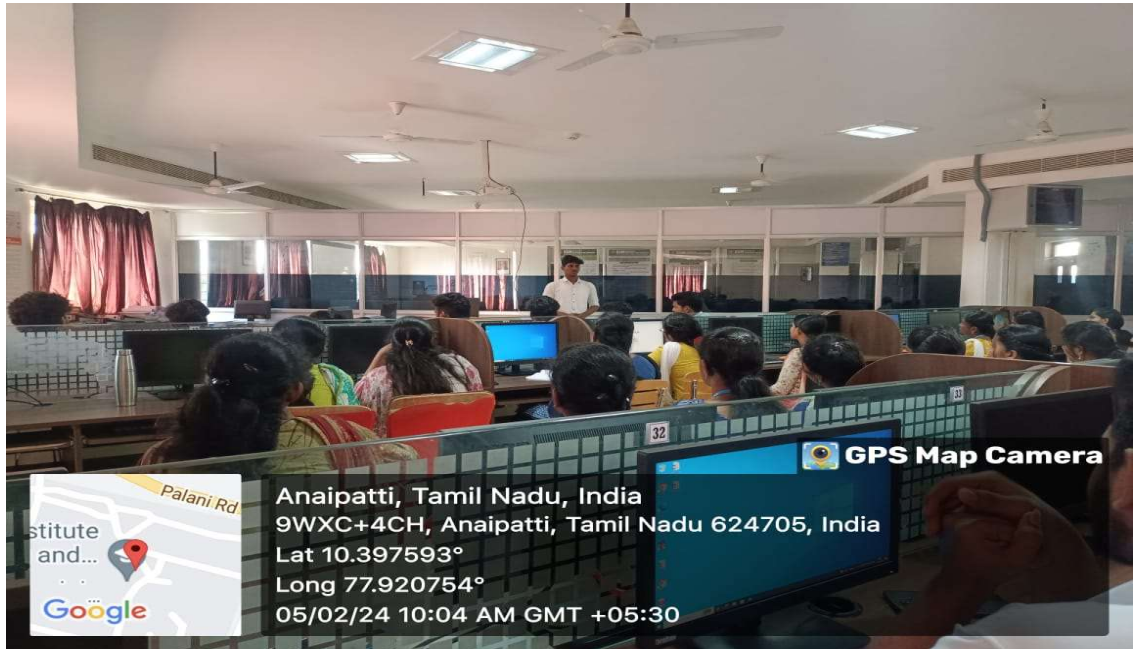
4. Testing Life Cycle

5. Hands on Practice.

Impact**:**

1. Testing mainly aims at measuring the specification, functionality, and performance of a software program or application. .

2. Software Testing uncovers the defects in the software, and fixing them improves the quality of the software

3. After the application is launched it will be very difficult to trace and resolve the issues, as performing this activity will incur more costs and time. Thus, it is better to conduct software testing at regular intervals during software development.

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Day 2:

The Importance of Automated Testing and Test case Design strategies were covered.

The agenda included:

1. Test Planning and Strategy

2. Test Design Techniques

3. Test Case Design

4. Traceability Matrix

5. Hands on Practice

Impact:

1. A test plan is a formal document that serves as a comprehensive and structured description of the testing activities and strategies that will be employed to check the quality of the software system under test.

2. Test approach is a high-level overview of how the testing will be conducted, including the types of tests that will be executed and the testing methodology that will be followed

3. Before creating a test plan, make sure that you have involved all the necessary stakeholders. The QAs should not be the only one doing this. Developers should

provide technical input on the system architecture, software design, and coding standards to inform the testing approach
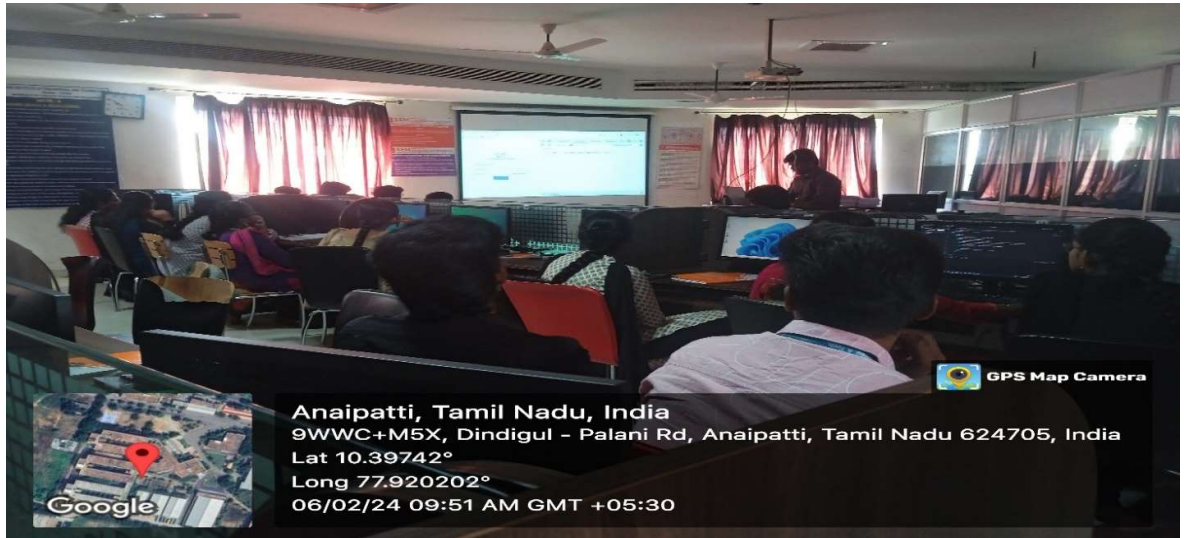
Day 3:

This session covered the testing techniques, tools, and success metrics.

The agenda included:

1. Test Data Creation
2. Test Execution and Logging Defect
3. Regression Testing
4. Exploratory Testing
5. Introduction to Automated Testing
6. Hands on Practice

Impact**:**

1. Automation Testing is a software testing technique that performs tests using special automated testing software tools

2. Automation testing uses specific tools to implement software testing with less time, more efficiency, and effectiveness

3.The demand for delivering quality products faster is satisfied by the use of automation testing tools

4. Selenium is considered the industry standard for automation testing for web applications. It is an open-source testing tool and can execute multiple browsers and operating systems.

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Day 4:

In this session the role of selenium server and the web drivers were clearly explained
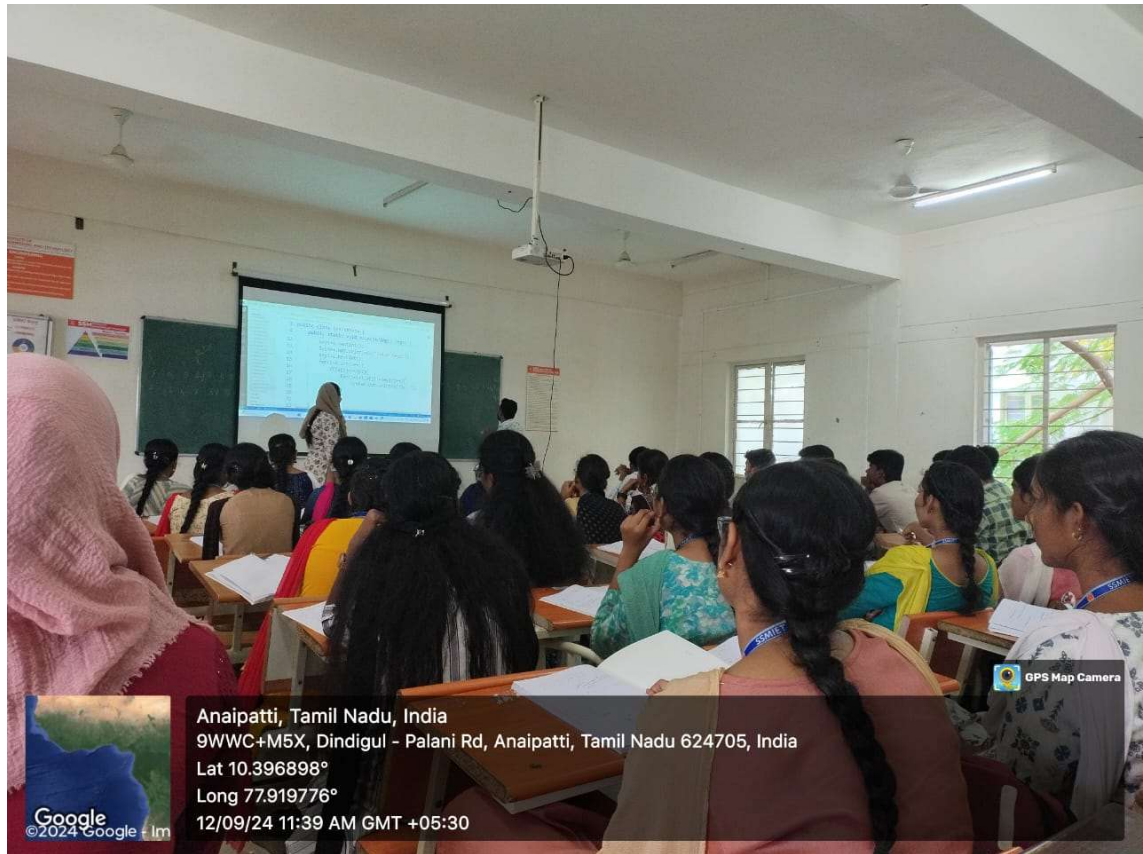
The agenda included:

1. Java Basics

2. Benefits and Challenges of Automated Testing

3. Overview of Selenium WebDriver

4. Setting up Selenium WebDriver

5. Creating and Running Simple Selenium Test

6. Hands on Practice

Impact:

1. Selenium WebDriver refers to both the language bindings and the implementations of the individual browser controlling code. This is commonly referred to as just *WebDriver*

2. WebDriver drives a browser natively, as a user would, either locally or on a remote machine using the Selenium server, marks a leap forward in terms of browser automation

Day 5:

The concept of Data Driven testing and Dynamic web elements were handled in this session

The agenda included:

1. Selenium WebDriver Concepts

2. Handling Dynamic Web Elements

3. Synchronization Strategies

4. Page Object Model (POM)

5. Data-Driven Testing

6. Hands on Practice

Impact:

1. The data is what drives the test, henceforth, why it is called data-driven testing

2. Framework is a library or set of libraries that contain reusable code. In the case of test automation, we refer to this framework as our test automation framework

3. In DDT, the use of frameworks allows us to quickly grab code that has already been written instead of writing it from scratch. Whether it be the ability to pull a script from a framework or the software's ability to easily find and fix errors within a script, you don't need to be an able programmer.

4.

Day 6:

Explained how to gather all behaviors into one set of documentation so it is accessible for all developers, testers and stakeholders.

The agenda included:

1. Introduction to Behavior-Driven Development (BDD)

2. Introduction to Performance Testing

3. Types of Performance Testing

4. Tools for Performance Testing

5. Hands on Practice

6. Test Execution and Results Analysis

7. Recap of Key Concepts

8. Q&A and Open Discussion

Impact:

1. Behavior-driven development (BDD) is an Agile software development methodology in which an application is documented and designed around the behavior a user expects to experience when interacting with it
2. A typical project using behavior-driven development would begin with a conversation between the developers, managers and customer to form an overall picture of how a product is intended to work

Assessment:

Previously 7 teams were formed and a test case was given for each team. The students were evaluated based on the completion of their task.

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