Innovatus Technologies
Implementing Ideas...

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Week 03 Report

Day 08:
16th June 2025 - Monday

Session 01:- 9:30 AM to 11 AM

- **Overview of Topics Covered Till Date**: Revisited all the topics covered up to the last session, reflecting on the journey from the beginning of **Module 1: Java**

- Explored the two major types of programming errors with example:
    1. **Syntactical**
    2. **Logical**

- Learned the **concept of exception handling**: a mechanism that manages runtime errors to ensure the program runs smoothly without abrupt termination

- Gained a clear understanding of **what an exception is** and **how it is handled** using Java's exception handling constructs also Studied the use of **try, catch, and finally** blocks to detect and manage exceptions effectively

- **Detailed Program Analysis of Exception Handling:** Through a step-by-step breakdown of sample program, understood how exception handling works in practice. Learned how specific exceptions are caught, how control flows through the blocks, and how to implement clean error-handling logic

Session 02:- 11:30 AM to 1 PM

Learned the concept of **static data members** and **static member functions** in Java. Understood the **importance of the static** keyword, which allows variables and methods to belong to the class rather than any specific object. Practiced this concept through programs demonstrating how static members are shared among all instances and how static methods can be accessed without creating an object. Observed how static members help in memory efficiency and are commonly used for constants or utility functions

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Session 03:- 2 PM to 3:30 PM

- **JDK Installation:** Understood the detailed steps required to download, install, and configure the Java Development Kit (JDK) for setting up the Java programming environment.

- **NetBeans Installation:** Learned how to properly install NetBeans IDE, including system requirements, installation procedure, and integration with the JDK.

- **Understanding the NetBeans Environment:** Explored the features and interface of NetBeans, including how to create, run, and manage Java projects efficiently within the IDE.

- The first three programs from Pre-Project Java Set 1 were taught thoroughly, with a focus on understanding syntax, logic, and execution flow for building a strong Java foundation.

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Day 09:
17th June 2025 - Tuesday

Session 01:- 9:30 AM to 11 AM

- A brief recap of the previous session was conducted to ensure continuity.
- The concept of **Packages** was introduced to the class as the next key topic in Java Module.
- Two main types of Packages were covered:
    1. **Native Packages**
    2. **User-defined Packages**
- Each type was explained with relevant examples and use cases.
- Detailed discussion was held on Native Package including the types of Native Packages and their usage:
    1. **lang**
    2. **awt**
    3. **io**
    4. **util**
    5. **net**
    6. **Applet**
- The concept of **Wrapper Class** was introduced in detail along with example.

Session 02:- 11:30 AM to 1 PM

- The second session of the day commenced with a focus on practical implementation, allowing students to apply the theoretical concepts covered in previous sessions
- A **quick revision** of the first three programs from the **Pre-Project Java Set 1** was carried out.
- Subsequently, the **Pre-Project Java Set 2** was introduced. This marked the beginning of a new set of practical exercises

Session 03:- 2 PM to 3:30 PM

Session 3 focused on **practical implementation of Programming set**, where students independently coded all programs to strengthen their problem-solving skills and build confidence in self-learning.

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Day 10:
18th June 2025 - Wednesday

Session 01:- 10 AM to 11:30 AM

- The session began with the introduction of one of the crucial object-oriented programming concepts – **"Abstract Class".**

- A detailed implementation of Abstract Classes was demonstrated, covering:
  1. Declaration and structure
  2. Key properties and behaviors
  3. Use cases in real-world applications

- Various examples were shared to illustrate how abstract classes help in achieving partial abstraction and code reusability.

- Moving forward, the concept of **Interfaces** in Java was introduced also the Syntax and structure of interfaces were explained.

- An important theoretical discussion was conducted on **why Java does not support Multiple Inheritance** through classes. The limitations and ambiguity associated with multiple inheritance were explained this clarified how interfaces are Java's solution to implement multiple inheritance in a more controlled and safe manner

Session 02:- 11:45 AM to 1 PM

- The session began with an in-depth study of the **AWT (Abstract Window Toolkit) package**, which is a part of Java's GUI development toolkit.

- Following the AWT overview, the session proceeded with the introduction of **ActionEvents**, a key part of event handling in Java.

- A **simple UI design** was created using AWT components to demonstrate how ActionEvents work

Session 03:- 2 PM to 4:30 PM

- The final session of the day began with a quick recall of key concepts covered in the previous practical session

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- The session then moved forward with a detailed explanation and implementation of programs from:
    1. **Pre-Project Java Set 2**
    2. **Pre-Project Java Set 3**

- Each program was taken up systematically to ensure Clear understanding of logic and flow along with Correct usage of syntax and Java constructs.

- Students were encouraged to analyze, debug, and execute the programs to gain hands-on experience and improve coding confidence.

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Day 11:
19th June 2025 - Thursday

Session 01:- 10 AM to 11:30 AM

- The session focused on the detailed explanation and implementation of the first five programs from **Pre-Project Java Set 4**.

- Each program was taken up one by one with step-by-step walkthroughs to ensure Clear understanding of the problem statements with Logical structuring of the solution and Proper application of relevant Java concepts.

Session 02:- 11:45 AM to 1 PM

- The session began with the continuation of **Pre-Project Java Set** 4, where the remaining five programs (Program 6 to Program 10) were taught in detail

- Each program was explained thoroughly with a focus on building the correct logic and understanding the problem-solving approach.

Session 03:- 2 PM to 4:30 PM

- Session 3 was Dedicated to **hands-on practice**, where students independently implemented all 10 programs.
- Aimed to **boost confidence**, enhance **problem-solving** skills, and **encourage self-coding**.

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Day 12:
20th June 2025 - Friday

Session 01:- 10 AM to 11:30 AM

- The session began with the introduction of the project titled
  "Enhancing Database Security using Tiled Bitmap Algorithm."

- Initially, the two main types of data were discussed in detail to build foundational understanding.
  1. **Structured**
  2. **Unstructured**

- Emphasis was placed on the **importance of data protection** and the need for robust security mechanisms in modern systems.

- Commonly used databases in the industry were explored to highlight real-world relevance in terms of Types of Databases.
  1. **SQL**
  2. **NoSQL**

- A detailed overview of the project was provided, including:
  1. **Project objectives**
  2. **Project's GUI**
  3. **Key actors involved and their roles within the system**

Session 02:- 11:45 AM to 1 PM

- The session began with the introduction of **Pre-Project Java Set 5**, which consists of 10 programs in total.

- Each program was designed to focus on a specific concept, helping to strengthen both theoretical understanding and practical implementation.

- The key topics covered across these programs included:
  1. **Abstract Classes**
  2. **Interfaces**
  3. **Wrapper Classes (String to Integer, Double, Float, Long and vice versa)**
  4. **AWT Applications for basic GUI operations**
  5. **Swing Applications arithmetic operations**

- The session focused on detailed explanations, logic development, and live coding demonstrations for better understanding.

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Session 03:- 2 PM to 4:30 PM

Session 3 was dedicated to hands-on practice, where students independently implemented all 10 programs. This session aimed to:

1. Boost confidence in coding abilities.
2. Enhance problem-solving skills through practical application.
3. Encourage self-coding by minimizing guidance and fostering independent thinking.

The focus was on reinforcing learning by doing, ensuring students could apply concepts creatively and overcome challenges on their own.

END OF WEEK