CORE JAVA

MANUAL V8.3

MODULE CODE:

ANUDIP FOUNDATION


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Module 1: Java Fundamental and Programming Concepts

Chapter 3

Objective: After completing this lesson you will be able to : * Get familiar with Eclipse and NetBeans Java IDEs Understand some basic syntax rules of Java	**Materials Required:** 1. Computer 2. Internet access
Theory Duration: 90 minutes	**Practical Duration:** 30 minutes
Total Duration: 120 minutes	

Chapter 3

3.1 IDE (Eclipse/NetBeans)

What is a Java IDE?

A Java Integrated Development Environment, abbreviated as Java IDE, is an environment for Java programming. It is a software application consisting of a code editor, an interpreter or compiler, and a debugger. All components and features of IDEs are accessed by programmers through a GUI (graphical user interface).

IDEs are preferred by programmers as they –

* Enable programmers to collaborate on development projects
* Facilitate faster and more organized coding
* Make it easier to manage development projects with the GUI
* Simplify repetitive tasks through automation and code completion features

Two popularly used Java integrated development environments (IDEs) are –

i) Eclipse

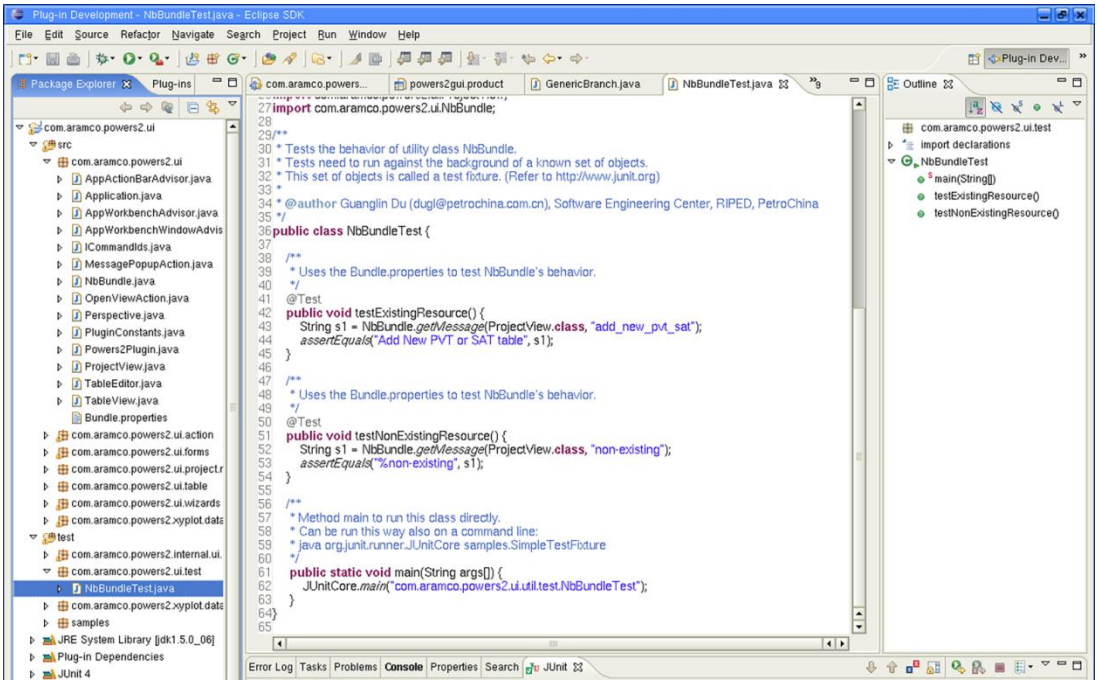
ii) NetBeans

Both of these IDEs offer the fundamental features and functionalities required for developing Java applications. Take a look at some information regarding these two Java IDEs below.

i) Eclipse IDE

Eclipse is the most widely used Java IDE. It is an open source and free development environment that also supports several other programming languages. Eclipse can be installed on the 32-bit and 64-bit versions of Windows, macOS and Linux operating systems. It is available for free download at **eclipse.org**. Programs created on the Eclipse IDE are licensed to the Eclipse Public License (EPL).

The GUI (graphical user interface of Eclipse IDE) –



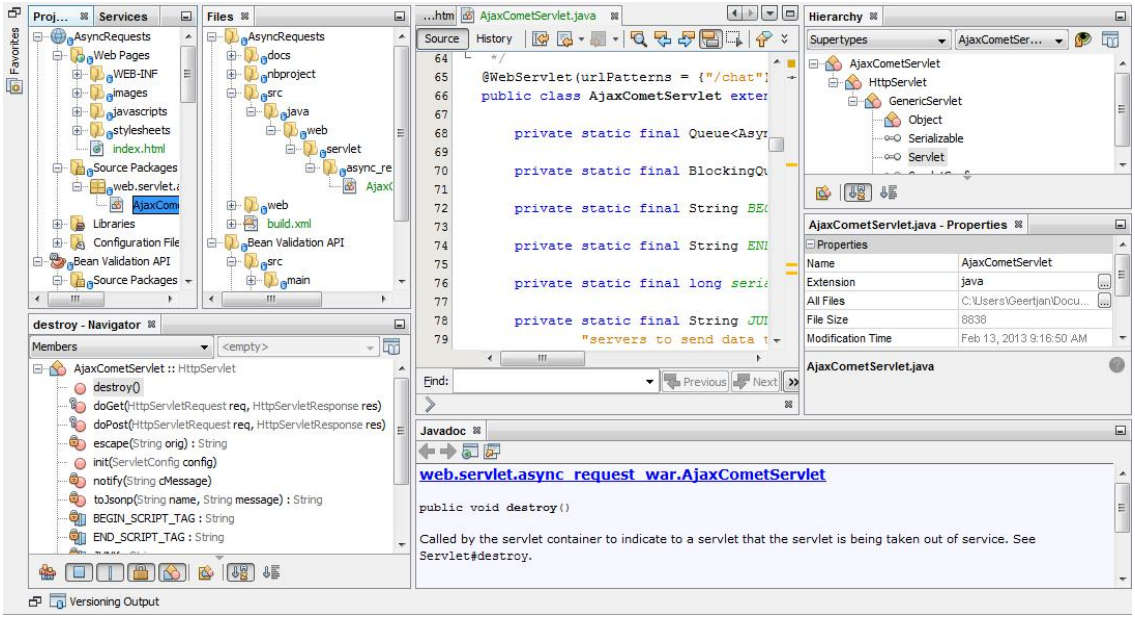
Eclipse features –

* Supports many plugins and extensions
* Code completion ensures lesser code writing
* Refactoring enhances and simplifies code
* Syntax checking aids code corrections while writing

ii) NetBeans IDE

NetBeans is an alternative preferred by many developers. It is a free and open source application that runs on macOS Windows, LInux and Solaris. NetBeans offers support for other languages and a GUI that facilitates ease of use. It is available for free download at **netbeans.org**. Programs created on the NetBeans IDE are licensed to the Apache License.

The GUI (graphical user interface of NetBeans IDE) –



NetBeans features –

* Simple learning curve for beginners
* Large selection of inbuilt plugins
* Modern and intuitive features
* Easy workflow customization

3.2 Programming Syntax and Rules

Java programming syntax is the set of rules and standards for writing code correctly. Programmers must learn Java syntax to write a valid program. The syntax of Java programming is quite similar to C and C++ languages. Java syntax grows with the latest versions of the Java Development Kit (JDK).

Example of a Java Code Syntax

```
public void processData() {
   do {
      int data = getData();

      if (data < 0)
         performOperation1(data);
      else
         performOperation2(data);
   } while (hasMoreData());
}
```

In Java syntax -

* Values are known as 'objects'
* Code belongs to 'classes'
* Primitive data types are not assigned 'classes'

Basic syntax guidelines of Java

Class Names – The first letter of a class name should be in Upper Case. If the class name has multiple words, the first letter of each word has to be in Upper Case.
Example: class JavaProgramDemoClass

Case Sensitivity – Java is a case sensitive programming language. Lower and upper case identifiers can have different meanings. For example, java and Java are different.

Program File Name - A program file's name has to match a class name. For example, if the class name is 'JavaDemoExample', the program file has to be saved as 'JavaDemoExample.java'.

Method Names - Method names in Java have to start with lowercase letters. If the method name consists of multiple words, the first letter of each inner word has to be in upper case.

Example - public void myMethodName()

public static void main(String args[]) – Program processing in Java begins from the main () method

Identifier Names – The names used for variables, methods, or classes – should contain numeric characters, alphabetic characters, connecting characters and currency characters. Identifier names cannot start with a numeric character.

What is a command line argument?

*** Command line argument –** A command line argument in Java is one that is passed during the time of running a Java program. The passed arguments can be received in the Java program and utilised as input. The information is stored in the form of a string array within a main method. The number of command line arguments can be specified by a programmer.

Addition of two numbers using a command line argument –

```
public class CommandLineArgument {
    public static void main(String args[]){
       int num1, num2;
       if (args.length > 0) {
        try {
          num1 = Integer.parseInt(args[0]);
          num2 = Integer.parseInt(args[1]);
          System.out.println('Sum of inputted numbers = ');
          System.out.println(num1 + num2);
        } catch (NumberFormatException e) {
          System.err.println('Argument must be an integer.');
        }
      }
    }
}
```

Output:

Sum of inputted numbers = 30

Subtraction of two numbers using a command line argument –

```
public class CommandLineArgument {
    public static void main(String args[]){
        int num1, num2;
        if (args.length > 0) {
         try {
            num1 = Integer.parseInt(args[0]);
            num2 = Integer.parseInt(args[1]);
            System.out.println('Difference of inputted numbers = ');
            System.out.println(num1 - num2);
         } catch (NumberFormatException e) {
            System.err.println('Argument must be an integer.');
         }
       }
    }
}
```

Output:

```
Difference of inputted numbers = 10
```

Practical (30 minutes) – Search, download and install the Eclipse and NetBeans IDE applications on a computer system.

Instructions: The progress of students will be assessed with the exercises mentioned below.

MCQ

1. IDE stands for Integrated _____ Environment.

a) Decoding

b) Debugging

c) Development

d) none of the mentioned

2. The features of a Java IDE application can be accessed through a graphical _____ interface.

a) installation

b) display

c) user

d) computer

3. Two of the most popular Java IDEs are Eclipse and _____.

a) NetBeans

b) NetScape

c) NetJava

d) NetFrame

4. Can a 32-bit macOS system run Eclipse?

a) Yes

b) No

c) only 64-bit supported

d) does not run on macOS

5. Code completion _____ code writing effort.

a) increases

b) rejects

c) reduces

d) All of the mentioned

6. What is the license of programs created by Eclipse IDE?

a) Eclipse Programming License

b) Eclipse Proprietary License

c) Eclipse Private License

d) Eclipse Public License

7. Which of these programming languages have a similar syntax to Java?

a) C++

b) C

c) Html

d) a and b

8. New Java syntax is introduced with newer versions of Java _____ Kits.

a) Deployment

b) Development

c) Disintegration

d) None of the mentioned

9. In Java syntax, values are _____.

a) objects

b) tables

c) data arrays

d) None of the above

10. A Java program file name has to match a _____ name.

a) array

b) class

c) function

d) All of the mentioned