Children as we have done in previous assignment that BlueJ is an Integrated Development Environment Short form used is IDE. BlueJ is basically used to write, edit and execute the Java program. Students, to open or start BlueJ follow the given Steps:-

ı Click on Start button and Select All programs and then click on BlueJ

Students, after following this step the first Screen of BlueJ will appear for a moment, followed by the BlueJ working environment Screen.

Now Students move to next that is creating a Java program. Follow the given steps to create a Java program
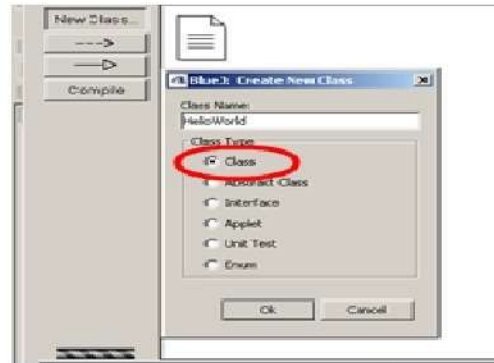
1. Click on the project menu. A popup menu appears. Select the New Project option from it.

2. You will find the New Project dialog box on the screen. Define the project name, for example ICSE is the name of your project.

3. Click on the create button to move to the next Screen.

4. After this we will get second Screen.

5. Now click on the New Class option. The BlueJ : Create New class dialog box appears
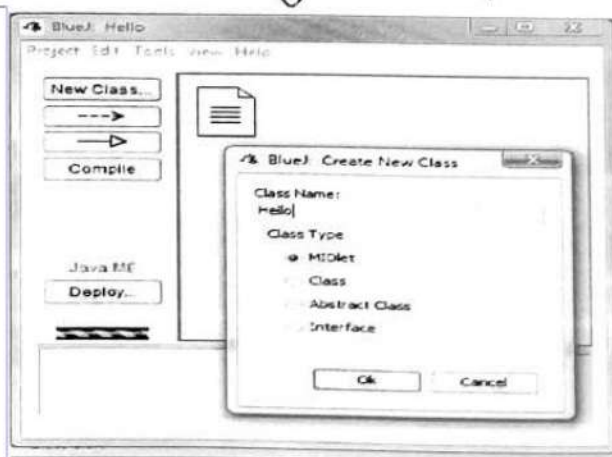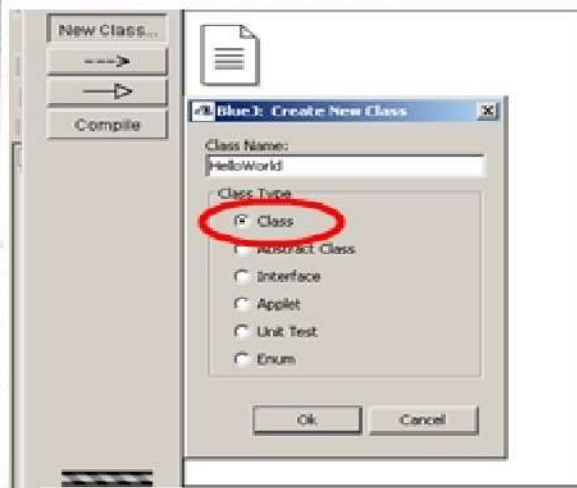
6. Define the class name, let us say 'Hello' is the class dialog box give name and click Ok.

7 you can observe that the class named 'Hello' is created and its icon appeared on the BlueJ: JCSE window.
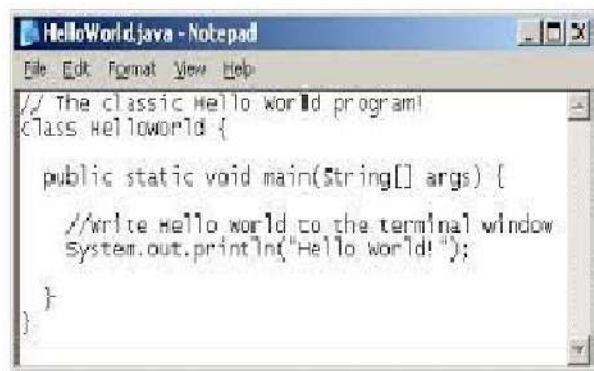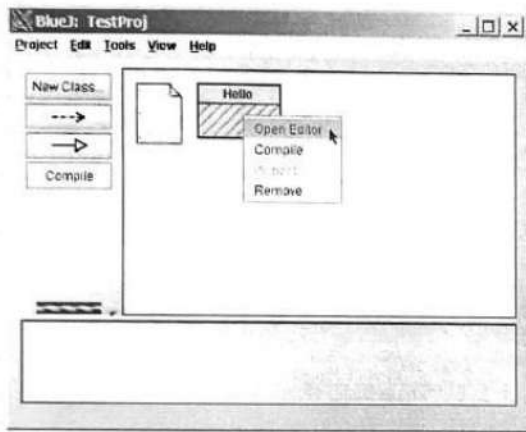
8. For opening the program code of Java, double click on the class 'Hello'

Now students let us start with important concept of this chapter 'writing program code'. Students you can delete or erase the code written by using Ctrl+A and pressing Delete key will erase the code and you can write new program according to your requirement.

```
1.        /** Program1 */

2.        /** My first program is Java */

3.        Public Class  Hello

4.        {

5.        Public Static void main (String args[])

6.        {

7.        System.Out.PrintIn ("welcome to
                Tender Heart School")
8.        }
9.     }
```
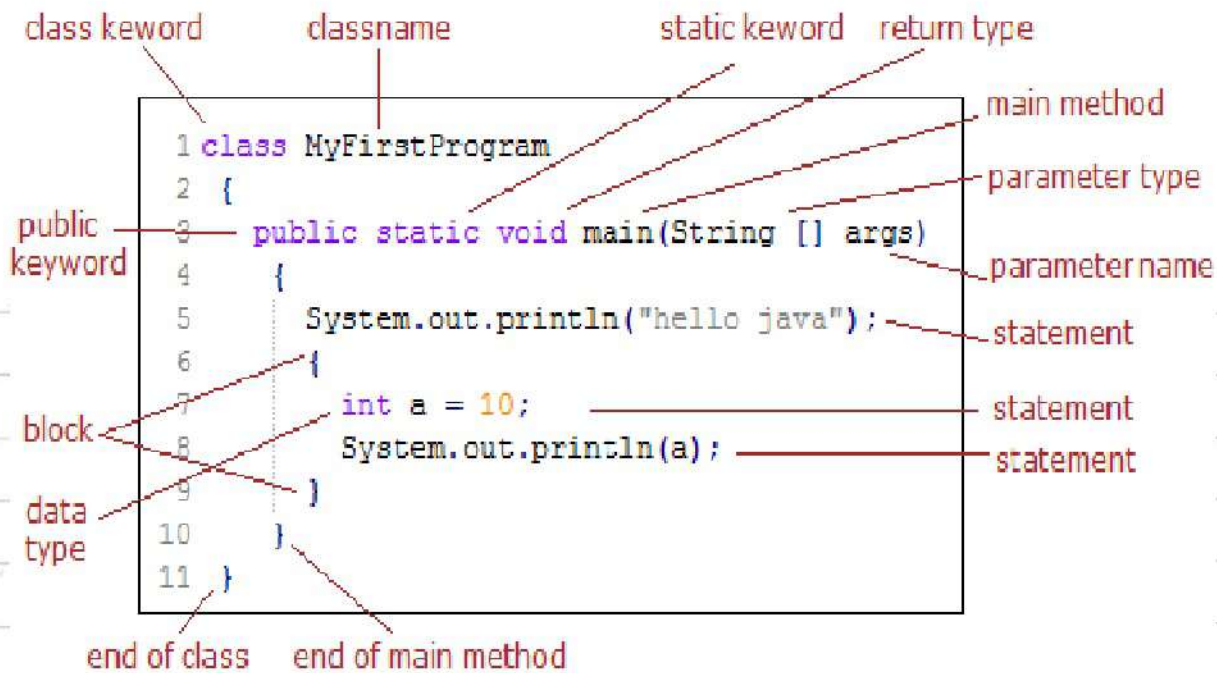
1. Student Statement no.1 shows the Comment about the program.

2. Statement no.2 shows the comment about the purpose of the program Comments are opetional to write. you can start your program without Comments also

3. Statement no. 3 specifies the name of the class, which is named as 'Hello'

4. Statement no. 4 includes the curly braces to indicate the beginning of properties of the particular class.

5. Statement no. 5 defines the basic attributes of the class.

6. Statement no. 6 is again a curly brace that shows that the main body of the program begins or starts from this particular point.

7. System.out.println ("welcome to Tender Heart School"); will print your message on screen.

8. Statement no. 8 class the corresponding curly brace specified in step no. 6

9. Statement no. 9 also class the corresponding curly brace specified in step no. 4

Students, I am ending my lesson here, you are advised to read and understand assignment carefully.
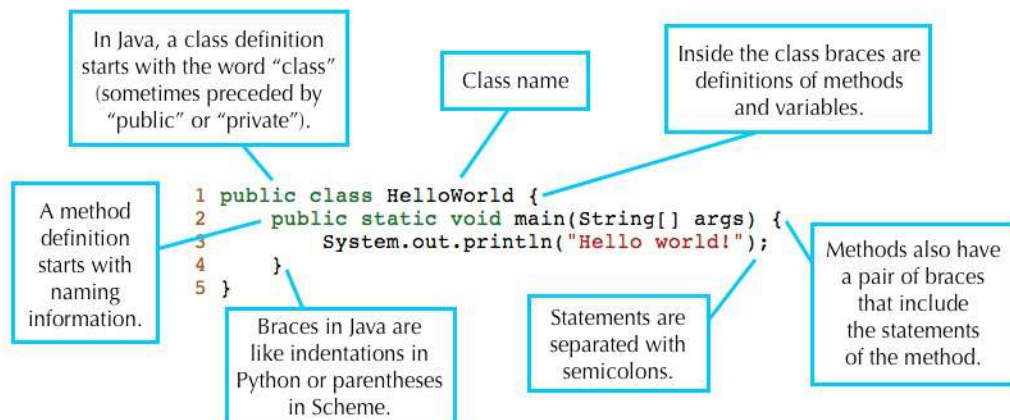
THE CLASS DECLARATION

Example 1

Example 2

Basic Structure in Java Programming:

JAVA program is made up of different parts and all these parts are having different functions. Let us know about all these parts.

1. Comment: Any text written inside slash asterisk (/* ___ */) or after double slash // is considered as comment.

2. Class Declaration: Class declaration indicates that we are going to create a new class. For Example we have taken 'HELLO' as class name in previous written statements.

3. Main: Main is the place or postion from where the actual program gets started or begin.

4. Public: Public is a keyword of Java which indicates that the method can be called or used from anywhere inside or outside the class, as it is public not private.

5. Void : Void is also a Java keyword which shows that function will not return any value except the text that we enter in print statement.

6. String args[] : args means arguments. It is also called command line arguments.

7. System.out.println() : This Statement is used to print any message or result.

Now move on to next of compiling and Running of a Java program in BlueJ. Compilation is a process of Converting the programming statement that is written in simple english language into a machine level code that is byte code by a compiler. For compiling and running a program in Blue J follow the given steps:
1. Click on the Compile button, Placed at the top of the ribbon as you can see in figure 5.9 on page no. 60 in your book.

2. If there are errors or mistake in program, remove them and compile the program again.

3. If there are no errors in the program, it will display the message " Class Compiled -

no syntax errors".
4. Click on the Close button.
5. Now right click on the class icon.
6. Select void main (strings[]args)
7. You will see a BlueJ method call dialog box, that appears on your screen.
8. Click ok and the Output or result will be displayed on the BlueJ Terminal window.

So, this is the process of compiling and running the JAVA program in BlueJ. Students if you want to change or modify your program then Double Click on the Class icon; the program screen will appear and you can do the changes and again you have to compile the program to get the output or result
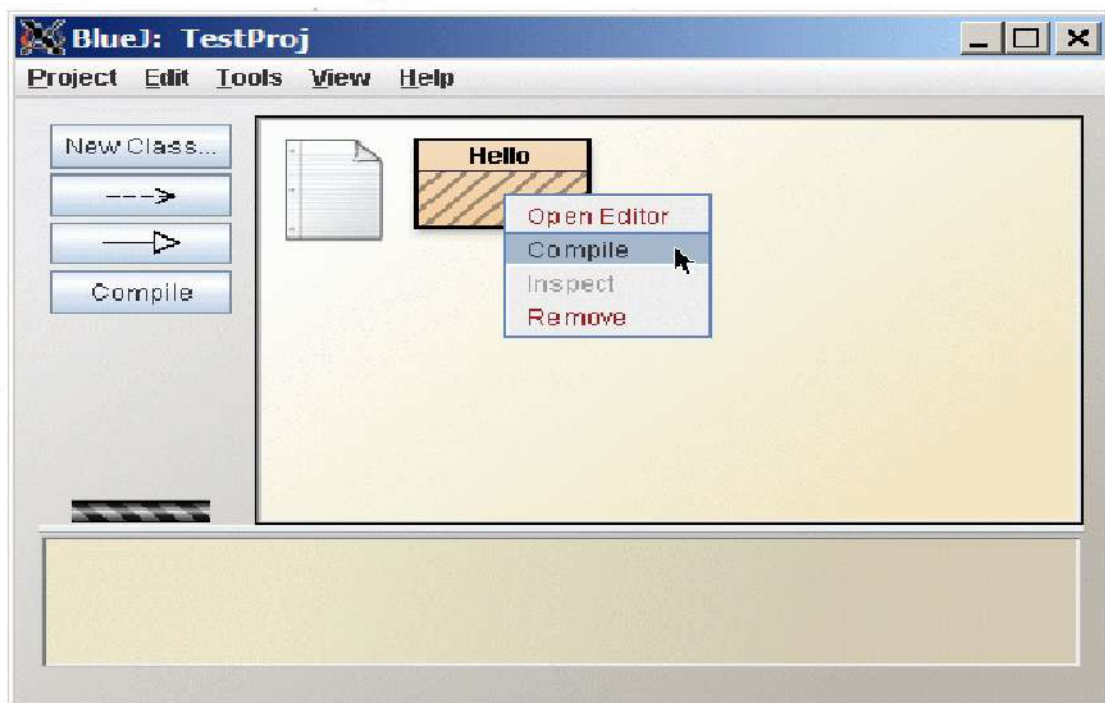
Class IX   Computer Application
Answerkey

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True or False

1 True   2 True   3 False   4 True   5 False

Fill in the blanks

1 case   2 java.lang   3 keywords/reserved   4 //   5 window

Answer the following questions

1   James Gosling developed Java programming language. It was initially called Oak.

2   In 1991, at Sun Microsystems, Green team led by James Gosling started working on a new technology for consumer electronic devices. Over the next 18 months, in 1992 the team created a new programming language which they called "Oak". By 1994 the team refocussed their efforts towards internet programming with Oak as it didn't find much traction in consumer electronics space. Oak was renamed to Java and on 23rd of May 1995, Sun microsystems made its first public release.

3   Four features of Java are:

1.   It is an Object Oriented Programming Language.
2.   It is platform independent. It provides us Write Once, Run Anywhere (WORA) feature.
3.   It uses a compiler as well as an interpreter.
4.   It is case sensitive.

4   (a) A compiler

A compiler is a program that translates a source program written in some high-level programming language into a target program in another low-level programming language without changing the meaning of the program. The compiler processes the complete source program at once and if there are compilation errors, they are all reported together at once.

(b) An interpreter

An interpreter is a program that reads a source program line by line, converts each line into its equivalent machine code and executes it. As it reads the program line by line so the errors are reported one by one.

(c) Byte code

Java compiler converts Java source code into an intermediate binary code called Bytecode. Bytecode can't be executed directly on the processor. It needs to be converted into Machine Code first.

5   Java Virtual Machine (JVM) is a software that takes Bytecode as input, converts it into Machine code of the specific platform it is running on and executes it. JVM is platform specific, each platform has its own JVM.

Class IX   Computer Application
Answerkey

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6   Three packages of Java Class Library are:

1.   java.lang
2.   java.io
3.   java.util

7   In Java, a reserved word is a word that has a predefined meaning in the language. Due to this, reserved words can't be used as names for variables, methods, classes or any other identifier. Reserved words are also known as keywords. Five commonly used Java reserved words are:

1.   public
2.   class
3.   int
4.   double
5.   char

8   Distinguish between:

(a) Source code and Object code

Source code

It is a set of statements in a High-Level programming language.

It is understood by human/programmer.

Object code

It is a set of statements in Machine Language.

It is understood by the processor.

(b) Compiler and Interpreter

Compiler

It translates the whole source program into target program at once.

All the errors found during compilation are displayed together at once.

Interpreter

It translates the source program into target program one line at a time.

Errors are displayed line by line as each line is translated and executed.

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(c) JDK 1.3 and BlueJ

JDK 1.3

JDK or Java Development Kit is the set of tools required to compile and run Java programs

JDK includes tools like Compiler, Interpreter, Java libraries, etc.

JDK is essential for developing Java programs.

BlueJ

BlueJ is an IDE or Integrated Development Environment for developing Java programs.

BlueJ provides tools like Code Editor, Debugger, Syntax Highlighting, etc.

IDE isn't essential for developing Java programs but it makes the process easier and efficient.

9   A compiler translates a source program written in some high-level programming language into a target program in another low-level programming language. As low-level programming languages are platform specific hence a compiler is specific to a language.

10   The basic format of a Java program.

```
/*
    First Program of Computer Applications course
    Name this file "HelloJava.java"
*/

class HelloJava {

    //Your program starts with a call to main()

    public static void main(String args[]) {

        System.out.println("Hello Java!!!");

    }
\
```

11   BlueJ is an integrated development environment for Java. It was created for teaching Object Oriented programming to computer science students.

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12   Five features of BlueJ are:

1.   Simple beginner friendly graphical user interface.
2.   It allows creating objects of the class dynamically, invoking their methods and also supplying data to the method arguments if present.
3.   It supports syntax highlighting. (Syntax highlighting means showing the different tokens of the program like keywords, variables, separators, etc. in different colours so that they show up more clearly.)
4.   It facilitates easier debugging as lines causing compilation errors are marked clearly and the error is displayed at the bottom of the window.
5.   It provides a code editor, compiler and debugger integrated into a single tool.

13   java.lang

14   A class name should be a valid Java identifier i.e. it should follow the below three rules:

1.   Name of the class should be a sequence of alphabets, digits, underscore and dollar sign characters only.
2.   It should not start with a digit.
3.   It should not be a keyword or a boolean or null literal.

15   Java is case sensitive means that it distinguishes between upper case and lower case characters. Consider the below code snippet:

int studentMarks;

StudentMarks = 92;

This will give a compilation error as Java will treat studentMarks and StudentMarks as two different variables because the case of the characters is not same in both.

16   The main function in a Java program is declared as:
          public static void main (String args[])

public — The public keyword is an access specifier. It controls the visibility of class members. We can access public class members outside the class where we declare them. We need to make the main method public because it will be called by code outside of its class when the program is started.

static — When we declare a method inside a class as static, we can call it without creating the object of that class. We need to make the main method static because Java Virtual Machine (JVM) will call it to start the program even before any objects of the class are created.

void — The void keyword tells the compiler that the main method will not return any value.

17   The process of converting a source program written in some high-level programming language into a target program in another low-level programming language without changing the meaning of the program is called Compilation.

18 Java compiler compiles Java source code to Bytecode. Bytecode cannot run on the processor directly as processor only understands Machine Code. Java Virtual Machine (JVM) takes this Bytecode as input and converts it into Machine Code line by line. So, JVM acts as an interpreter for converting Bytecode to Machine Code. In this way, a Java program uses both a Compiler as well as an Interpreter to get executed on the processor.

19 Design a program in Java to display the following information on the output screen:
Name:
Class:
Roll No.:
Subject:
School:

```
class StudentInfo {

    public static void main(String args[]) {

        System.out.println("Name: Anjali");

        System.out.println("Class: 10");

        System.out.println("Roll No.: 5");

        System.out.println("Subject: Computer Applications");

System.out.println("School: Tender Heart High School");

    }

}
```