OBject oriented programming with java

Lab manual

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**Course Title:** Object Oriented Programming

**Course Code:**

**Course Outcomes:**

At the end of the course the student should be able to:

1. Apply Object Oriented Programming concepts to solve a given problem.
2. Apply design patterns to design a solution for a given problem.
3. Apply inheritance, polymorphism and exception handling mechanism to implement reusable, robust java programs.
4. Implement user interface java programs for a given scenario.

**List of Practical**

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| --- | --- | --- |
| **Sr.#** | **Week** | **Topics** |
| 1 | One | Introduction to IDE-NetBeans, Getting Started with Java |
| 2 | Two | Java Basics (Input/output, variable declaration and initialization, strings and arrays) |
| 3 | Three | Java Basics (Selection Structure and Iterative Structure, functions) |
| 4 | Four | OOP (creating classes, objects, constructors) |
| 5 | Five | access modifiers, inheritance |
| 6 | Six | multiple/multilevel inheritance |
| 7 | Seven | Function overriding |
| 8 | Eight | Polymorphism |
| 9 | Nine | abstract classes and interfaces |
| 10 | Ten | exception handling and Java file handling |

**Java Basics-1**

**LAB-2**

**First Java Program**

Let us look at a simple code that will print the words “Welcome Programmers”.

**Example**

import java.io.\*;

public class MyFirstJavaProgram {

/\* This is my first java program.

\* This will print ' Welcome Programmers ' as the output

\*/

public static void main(String []args) {

System.out.println("Welcome Programmers"); // prints Welcome Programmers

}

}

**Description:** In above example first we import java.io package that have different classes.

**Java I/O**

Java I/O (Input and Output) is used to process the input and produce the output. Java uses the concept of a stream to make I/O operation fast. The java.io package contains all the classes required for input and output operations.

For output you can write following statement:

System.out.println(“Message Type Here”);

For input you can use Scanner class like as follows:

Scanner sc=new Scanner(System.in);

String s=sc.nextline();

**Variable Declaration**

Variable declaration is process of assigning datatype to variable.

datatype variableName;

For Example:

int a;

float b;

String s;

**Variable Initialization**

The process of assigning value to variable is knows as variable initialization.

e.g

int a;

float b;

String s;

//Variable initialization

a=9;

b=3.4;

s= “Welcome”;

**Arrays**

Arrays are objects that store multiple variables of the same type. However, an array itself is an object on the heap.

For array declaration and initialize

Datatype[ ] arrayName={value1,value2,value3,……..};

Int[] marks={60,80,7,46,66};

**Strings**

Strings are used for storing text. A String variable contains a collection of characters surrounded by double quotes. Create a variable of type String and assign it a value:

String greeting = "Hello";

A String in Java is actually an object, which contain methods that can perform certain operations on strings. For example, the length of a string can be found with the length() method:

String txt = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";

System.out.println("The length of the txt string is: " + txt.length());

**Task-1**

Write a program using JAVA for a function that take five numbers from the user and store in array of size 5 after that display the sum and average of numbers.

**Hint:** Use scanner class for taking input from user. You can use sc.nextInt() for taking integer from user and save that integer in array.

**Task-2**

Write a program using JAVA that take input Name, Age and Address from user and print it.

**Hint:** Use scanner class for taking input from user. You can use sc.nextLine() for taking string from user. Use String datatype for Name, Address and int for age.