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**Java Lab Workbook**

**Subject: Java Programming Lab**

**Course: MCA I - [Sem: I]**

**Prepared By: -**

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**Program 1:** **Write a program of class addition of two numbers by using void method and without void method.**

import java.util.Scanner;

public class AddTwoNumbers {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.println("Enter two numbers: ");

int num1 = sc.nextInt();

int num2 = sc.nextInt();

// Using void method

addNumbers(num1, num2);

// Without using void method

int sum = num1 + num2;

System.out.println("Sum of " + num1 + " and " + num2 + " is " + sum);

public static void addNumbers(int n1, int n2) {

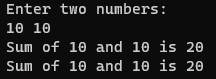
int sum = n1 + n2;

System.out.println("Sum of " + n1 + " and " + n2 + " is " + sum);

}

}

OUTPUT:



**Program 2: Write a program of ‘This’ keyword can be used to refer current class instance variable and Method.**

public class MyClass {

int myVariable;

public void setMyVariable(int myVariable) {

this.myVariable = myVariable;

}

public int getMyVariable() {

return this.myVariable;

}

public static void main(String[] args) {

MyClass obj = new MyClass();

obj.setMyVariable(42);

System.out.println("The value of myVariable is: " + obj.getMyVariable());

}

}

OUTPUT:



**Program 3: Create a Package package1 having one class A contains msg method. Create second package mypack with class B, call msg method of A**

class in the second package.

package package1;

public class A {

public void msg() {

System.out.println("Hello from package1.A!");

}

}

package mypack;

import package1.A;

public class B {

public static void main(String[] args) {

A obj = new A();

obj.msg();

}

}

OUTPUT:



**Program 4: Write a Java program of create Interface GHI having print method which extends another Interface XYZ having a show method. (create Interface extends another Interface program).**

interface XYZ {

void show();

}

interface GHI extends XYZ {

void print();

}

public class Main {

public static void main(String[] args) {

MyClass obj = new MyClass();

obj.show();

obj.print();

}

}

class MyClass implements GHI {

public void show() {

System.out.println("Hello from show method!");

}

public void print() {

System.out.println("Hello from print method!");

}

}

OUTPUT:



**Program 5: Create Constructor with accepting two numbers and perform any two types of constructor.**

public class MyClass {

int num1;

int num2;

public MyClass(int n1, int n2) {

num1 = n1;

num2 = n2;

}

public MyClass() {

num1 = 0;

num2 = 0;

}

public static void main(String[] args) {

MyClass obj1 = new MyClass(10, 20);

System.out.println("num1: " + obj1.num1 + ", num2: " + obj1.num2);

MyClass obj2 = new MyClass();

System.out.println("num1: " + obj2.num1 + ", num2: " + obj2.num2);

}

}

OUTPUT:



**Program 6: Write a Java program to test any one Build in exception and one user defined exception.**

public class ExceptionTest {

public static void main(String[] args) {

try {

int[] arr = new int[5];

arr[10] = 50;

} catch (ArrayIndexOutOfBoundsException e) {

System.out.println("Caught ArrayIndexOutOfBoundsException: " + e.getMessage());

}

try {

throw new MyException("This is a custom exception.");

} catch (MyException e) {

System.out.println("Caught MyException: " + e.getMessage());

}

}

}

class MyException extends Exception {

public MyException(String message) {

super(message);

}

}

OUPUT:



**Program 7: Write a program to create dmart class with accepting values of product id,name,rate and quantity and calculate payable amt with discount If amt 5000-3000 =20 %, 3000-2000 =15%, 2000-1000=10% , Otherwise no discount.**

public class Dmart {

int productId;

String name;

double rate;

int quantity;

public Dmart(int productId, String name, double rate, int quantity) {

this.productId = productId;

this.name = name;

this.rate = rate;

this.quantity = quantity;

}

public double calculatePayableAmount() {

double amount = rate \* quantity;

double discount = 0.0;

if (amount >= 5000) {

discount = 0.2;

} else if (amount >= 3000) {

discount = 0.15;

} else if (amount >= 2000) {

discount = 0.1;

}

return amount - (amount \* discount);

}

public static void main(String[] args) {

Dmart obj = new Dmart(1, "Product 1", 100.0, 10);

double payableAmount = obj.calculatePayableAmount();

System.out.println("Payable amount: " + payableAmount);

}

}

OUTPUT:



**Program 8: Write any one example of Multilevel inheritance in JAVA**

class Animal {

public void eat() {

System.out.println("Animal is eating.");

}

}

class Dog extends Animal {

public void bark() {

System.out.println("Dog is barking.");

}

}

class Labrador extends Dog {

public void color() {

System.out.println("Labrador is brown in color.");

}

}

public class Main {

public static void main(String[] args) {

Labrador obj = new Labrador();

obj.eat();

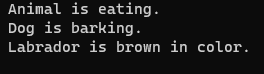
obj.bark();

obj.color();

}

}

OUTPUT:



**Program 9: WAP of static, abstract class keyword in JAVA.**

abstract class Shape {

public static final double PI = 3.14159;

public abstract double area();

}

class Circle extends Shape {

private double radius;

public Circle(double radius) {

this.radius = radius;

}

public double area() {

return PI \* radius \* radius;

}

}

public class MainSt {

public static void main(String[] args) {

Circle circle = new Circle(5.0);

System.out.println("Area of circle: " + circle.area());

}

}

OUTPUT:



**Program 10: Calculate area of Circle, triangle and Square using Method Overloading.**

public class CalculateArea {

public void area(double radius) {

double area = Math.PI \* radius \* radius;

System.out.println("Area of circle: " + area);

}

public void area(double base, double height) {

double area = 0.5 \* base \* height;

System.out.println("Area of triangle: " + area);

}

public void area(double side1, double side2, double side3) {

double s = (side1 + side2 + side3) / 2;

double area = Math.sqrt(s \* (s - side1) \* (s - side2) \* (s - side3));

System.out.println("Area of square: " + area);

}

public static void main(String[] args) {

CalculateArea obj = new CalculateArea();

obj.area(5.0);

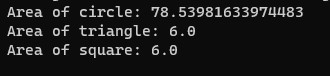
obj.area(3.0, 4.0);

obj.area(3.0, 4.0, 5.0);

}

}

OUTPUT:



**Program 11: Create student information form using Java AWT components (Accept Rollno, Student Name, Address, Mob no) with Save, Update and delete components.**

import java.awt.\*;

import java.awt.event.\*;

public class StudentInformationForm extends Frame implements ActionListener {

Label rollNoLabel, nameLabel, addressLabel, mobNoLabel;

TextField rollNoTextField, nameTextField, addressTextField, mobNoTextField;

Button saveButton, updateButton, deleteButton;

public StudentInformationForm() {

rollNoLabel = new Label("Roll No:");

nameLabel = new Label("Name:");

addressLabel = new Label("Address:");

mobNoLabel = new Label("Mobile No:");

rollNoTextField = new TextField();

nameTextField = new TextField();

addressTextField = new TextField();

mobNoTextField = new TextField();

saveButton = new Button("Save");

updateButton = new Button("Update");

deleteButton = new Button("Delete");

saveButton.addActionListener(this);

updateButton.addActionListener(this);

deleteButton.addActionListener(this);

setLayout(new GridLayout(5, 2));

add(rollNoLabel);

add(rollNoTextField);

add(nameLabel);

add(nameTextField);

add(addressLabel);

add(addressTextField);

add(mobNoLabel);

add(mobNoTextField);

add(saveButton);

add(updateButton);

add(deleteButton);

setTitle("Student Information Form");

setSize(400, 200);

setVisible(true);

}

public void actionPerformed(ActionEvent e) {

if (e.getSource() == saveButton) {

// Save student information

} else if (e.getSource() == updateButton) {

// Update student information

} else if (e.getSource() == deleteButton) {

// Delete student information

}

}

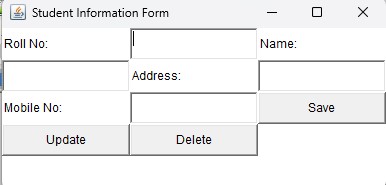
public static void main(String[] args) {

new StudentInformationForm();

}

}

OUTPUT:



**Program 12: Create SBI Bank customer information form using Java Swing components**

import javax.swing.\*;

import java.awt.\*;

import java.awt.event.\*;

public class SbiBankForm extends JFrame implements ActionListener {

JLabel rollNoLabel, nameLabel, addressLabel, mobNoLabel;

JTextField rollNoTextField, nameTextField, addressTextField, mobNoTextField;

JButton saveButton, updateButton, deleteButton;

public SbiBankForm() {

rollNoLabel = new JLabel("Roll No:");

nameLabel = new JLabel("Name:");

addressLabel = new JLabel("Address:");

mobNoLabel = new JLabel("Mobile No:");

rollNoTextField = new JTextField();

nameTextField = new JTextField();

addressTextField = new JTextField();

mobNoTextField = new JTextField();

saveButton = new JButton("Save");

updateButton = new JButton("Update");

deleteButton = new JButton("Delete");

saveButton.addActionListener(this);

updateButton.addActionListener(this);

deleteButton.addActionListener(this);

setLayout(new GridLayout(5, 2));

add(rollNoLabel);

add(rollNoTextField);

add(nameLabel);

add(nameTextField);

add(addressLabel);

add(addressTextField);

add(mobNoLabel);

add(mobNoTextField);

add(saveButton);

add(updateButton);

add(deleteButton);

setTitle("SBI Bank Customer Information Form");

setSize(400, 200);

setVisible(true);

}

public void actionPerformed(ActionEvent e) {

if (e.getSource() == saveButton) {

// Save customer information

} else if (e.getSource() == updateButton) {

// Update customer information

} else if (e.getSource() == deleteButton) {

// Delete customer information

}

}

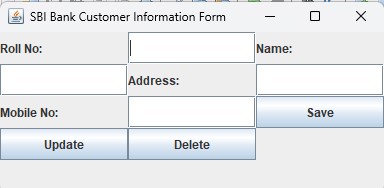
public static void main(String[] args) {

new SbiBankForm();

}

}

OUTPUT:



**Program 13: Write program of any two Layout Managers JAVA.**

FlowLayOut

import javax.swing.\*;

import java.awt.\*;

public class FlowLayoutExample {

public static void main(String[] args) {

JFrame frame = new JFrame("FlowLayout Example");

JPanel panel = new JPanel(new FlowLayout());

JButton button1 = new JButton("Button 1");

JButton button2 = new JButton("Button 2");

JButton button3 = new JButton("Button 3");

JButton button4 = new JButton("Button 4");

JButton button5 = new JButton("Button 5");

panel.add(button1);

panel.add(button2);

panel.add(button3);

panel.add(button4);

panel.add(button5);

frame.add(panel);

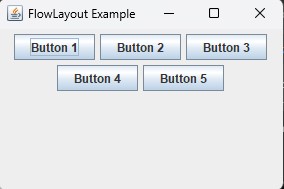
frame.setSize(300, 200);

frame.setVisible(true);

}

}

OUTPUT:



GridLayout

import javax.swing.\*;

import java.awt.\*;

public class GridLayoutExample {

public static void main(String[] args) {

JFrame frame = new JFrame("GridLayout Example");

JPanel panel = new JPanel(new GridLayout(2, 3));

JButton button1 = new JButton("Button 1");

JButton button2 = new JButton("Button 2");

JButton button3 = new JButton("Button 3");

JButton button4 = new JButton("Button 4");

JButton button5 = new JButton("Button 5");

JButton button6 = new JButton("Button 6");

panel.add(button1);

panel.add(button2);

panel.add(button3);

panel.add(button4);

panel.add(button5);

panel.add(button6);

frame.add(panel);

frame.setSize(300, 200);

frame.setVisible(true);

}

}

OUTPUT:

