**23CSE111**

OOPS

(Object Oriented Programming System)

**LAB MANUAL**

A logo with pink letters

Description automatically generated

**Department of CSE**

**Amrita School of Engineering**

**Amrita Vishwa Vidyapeetham, Amaravati Campus**

**Verified By : Name: D. Ganesh Reddy**

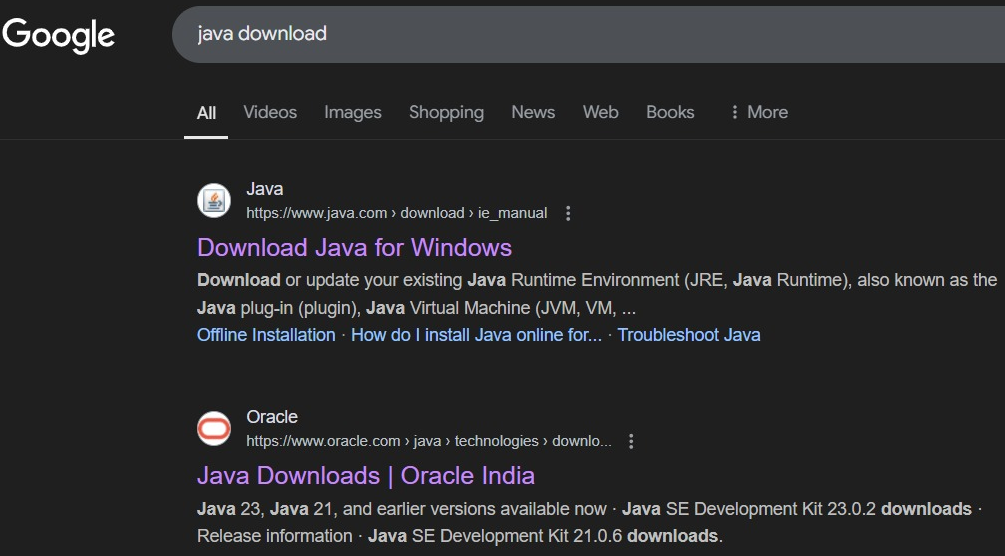
**Rajkumar Sir Class: CSE-A**

**Roll No: 24042**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.NO | Programs | Date | Pg:No | Signature |
| 1 | 1. Download and Install Java Software. 2. Write a java program to print message “Welcome to java programming”. 3. Write a java program that prints name, roll number, section of a student. |  |  |  |
| 2 | 1. java program to calculate the area of a rectangle 2. java program to convert temp from Celsius to   Fahrenheit and vice versa.   1. java program to calculate the simple interest 2. java program to find the largest of three numbers using ternary operators. 3. java program to find the factorial of the given number. |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Week-1

* Program : 1
* Aim : Download and Install Java Software.
* Step 1 : Visit chrome and search “ java download”.And select Oracle website.



* Step 2 : Now open Oracle website scroll down and now select “JDK 21” for

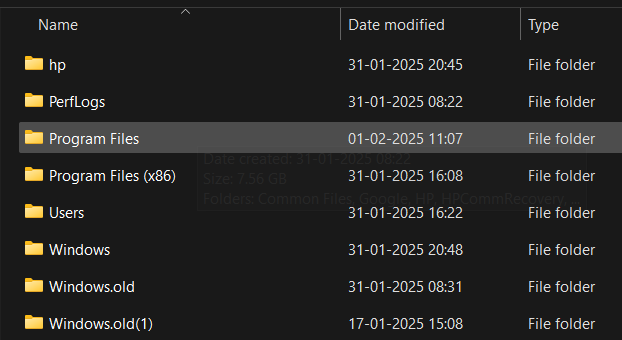
Windows and select “X64 installer” and download it.

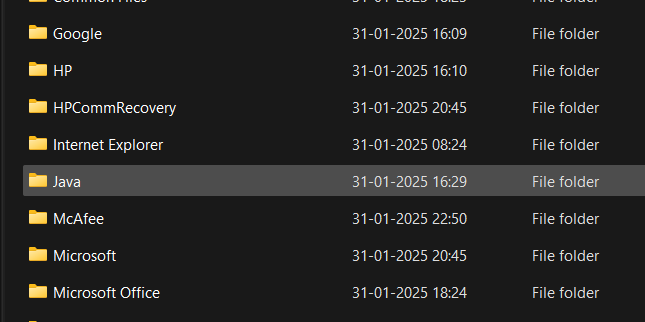
A screenshot of a computer

Description automatically generated

* Step 3 : After downloading open “this pc” in our laptop and open “program

files”,open “java”,open “JDK 21”



 A black screen with white numbers

Description automatically generated

A screenshot of a computer

Description automatically generated

* Step 4 : In the task bar search and open “environment variables of

system”,after opening environment variables, go to the system

variables and see for java if there leave it. Or click path and add

“JAVA” in ‘variable name’ and copy link in ‘variable value’

A screenshot of a computer

Description automatically generated

Screens screenshot of a computer

Description automatically generated

* Step 5 : Verifying Installation of Java. Again open task bar and search “cmd”,

open it ant type “java –version” and press enter. It will show the

version of installation of java.

A screenshot of a computer program

Description automatically generated

Successfully Java is installed and it will show the version otherwise it will show error and command is not recognized.

* Program : 2

Q) Write a java program to print the message “welcome to java program”.

class Main{

public static void main(String[] args){

System.out.println("welcome to java programming");

}

}

OUTPUT

A screenshot of a computer program

Description automatically generated

* Program : 3

Q) Write a java program that prints name,roll number,section of a student.

public class My\_Profile

{

public static void main(String args[]) {

System.out.println("Name: A.Vijay Kumar");

System.out.println("Class: CSE 'A'");

System.out.println("Roll No: 24002");

}

}

OUTPUT

A computer screen shot of a black screen

Description automatically generated

Week-2

A) write a java program to calculate the area of the rectangle

CODE:

import java.util.Scanner;

class arearect{

public static void main(String[]args){

Scanner input=new Scanner(System.in);

System.out.println("enter the length");

int len=input.nextInt();

System.out.println("enter the bredth");

int bred=input.nextInt();

int area=len\*bred;

System.out.println("THE AREA OF THE RECTANGLE IS:"+area);

}}

ERROR TABLE

|  |  |  |
| --- | --- | --- |
| S.No | Expected Error | Reason |
| 1 | ; | ; is expected at the end |
| 2 | area | Declaration of int type variable |

GIVEN INPUT:

Length=10;

Breadth=8;

OUTPUT:

A computer screen with white text

Description automatically generated

B) write a java program to convert the temperature from temperature in Celsius to

Fahrenheit and vice versa.

🡪Celsius to Fahrenheit :

CODE:

import java.util.Scanner;

class temperature{

public static void main(String[]args){

Scanner input =new Scanner(System.in);

System.out.println("enter the temperature in Celsius:");

double deg=input.nextDouble();

System.out.println("the temperature in Fahrenheit"+((deg\*9/5)+32));

}

}

ERROR TABLE:

|  |  |  |
| --- | --- | --- |
| S.No | Expected Error | Reason |
| 1 | ; | ; is expected at the end |
| 2 | Input .close(); | The input is expected to be closed |

GIVEN INPUT:

32 degrees of Celsius

OUTPUT:

A computer screen with white text

Description automatically generated

🡪 Fahrenheit to Celsius :

CODE:

import java.util.Scanner;

class ftoc{

public static void main(String[]args){

Scanner input =new Scanner(System.in);

System.out.println("enter the the temperature in degrees:");

double deg=input.nextDouble();

System.out.println("the temperatuer in fahrenheit"+((deg-32)\*5/9));

}

}

ERROR TABLE:

|  |  |  |
| --- | --- | --- |
| S.No | Expected Error | Reason |
| 1 | string | String is defined wrongly |
| 2 | system | System is defined wrongly |

GIVEN INPUT:

99 degrees of fahrenheit

OUTPUT:

A computer screen with white text

Description automatically generated

C) write a java program to calculate the simple interest

CODE:

import java.util.Scanner;

class simpleintrest{

public static void main(String[]args){

Scanner input=new Scanner(System.in);

System.out.println("enter the p value");

int p=input.nextInt();

System.out.println("enter the t value");

int t=input.nextInt();

System.out.println("enter the r value");

int r=input.nextInt();

float si=(p\*t\*r)/100;

System.out.println(si);

}}

ERROR TABLE:

|  |  |  |
| --- | --- | --- |
| S.No | Expected Error | Reason |
| 1 | ; | ; is expected at the end |
| 2 | Int t | Without declaration of “t” the computer cannot execute the program |

GIVEN INPUT:

P=1000;T=3;R=5

OUTPUT:

A computer screen with white text

Description automatically generated

D) write a java program to find the largest of the three numbers using ternary opperators

CODE:

import java.util.Scanner;

class ternary{

public static void main(String[]args){

Scanner input=new Scanner(System.in);

System.out.println("enter value of A");

int a=input.nextInt();

System.out.println("enter value of B");

int b=input.nextInt();

System.out.println("enter value of C");

int c=input.nextInt();

int large=(a>b)?((a>c)?a:c):((b>c)?b:c);

System.out.println(large);

}}

ERROR TABLE:

|  |  |  |
| --- | --- | --- |
| S.No | Expected Error | Reason |
| 1 | ? | Checks the condition |
| 2 | : | Comparison between two variables |

GIVEN INPUT:

A=34;B=56;C=42;

OUTPUT:

A computer screen with white text

Description automatically generated

E) write a java program to find the factorial of the given number

CODE:

import java.util.Scanner;

class factorial{

public static void main(String[]args){

Scanner input=new Scanner(System.in);

System.out.println("enter the number to find its factorial");

int n=input.nextInt();

int sum=1;

for(int i=1;i<=n;i++){

sum=sum\*i;}

System.out.println(sum);}}

ERROR TABLE:

|  |  |  |
| --- | --- | --- |
| S.No | Expected Error | Reason |
| 1 | } | To close for loop |
| 2 | System.out.pritnln(); | Spelling in the given program is incorrect  (System.out.println();) |

GIVEN INPUT:

Entered number=10;

OUTPUT:

A computer screen with white text

Description automatically generated

Week-3

A) Write a java program with the following instructions.

Create a class with name car.

Create four attributes named car\_colour,car\_brand,fuel\_type,top\_speed.

Create three method named “Start\_Racing”,”End\_Race”.{ }

Create three objects named Car1,Car2,Car3.

Create a constructor which should print “Welcome to Garage”.

Class Diagram:

|  |
| --- |
| **Car** |
| * carColor: String |
| * carBrand: String |
| * fuelType: String |
| * topSpeed: int |
| + Car(String,String,String,int) |
| + startRacing() |
| + endRace() |

CODE:

// Car.java

public class Car {

// Attributes

private String carColour;

private String carBrand;

private String fuelType;

private int topSpeed;

// Constructor

public Car(String carColour, String carBrand, String fuelType, int

topSpeed) {

this.carColour = carColour;

this.carBrand = carBrand;

this.fuelType = fuelType;

this.topSpeed = topSpeed;

System.out.println("Welcome to car garage");

}//End of the constructor

// Method to start racing

public void startRacing() {

System.out.println(carBrand + " (" + carColour + ") is starting the

race with a top speed of " + topSpeed + " km/h and runs on " +

fuelType + "!");

}//End of Method

// Method to end race

public void endRace() {

System.out.println(carBrand + " (" + carColour + ") has finished

the race!");

}

//End of the Method

// Main method to create objects and demonstrate functionality

public static void main(String[] args) {

// Creating three objects

Car car1 = new Car("Red", "Ferrari", "Petrol", 200);

Car car2 = new Car("Blue", "Tesla", "Electric", 250);

Car car3 = new Car("Black", "BMW", "Diesel", 220);

// Starting and ending races

car1.startRacing();

car1.endRace();

car2.startRacing();

car2.endRace();

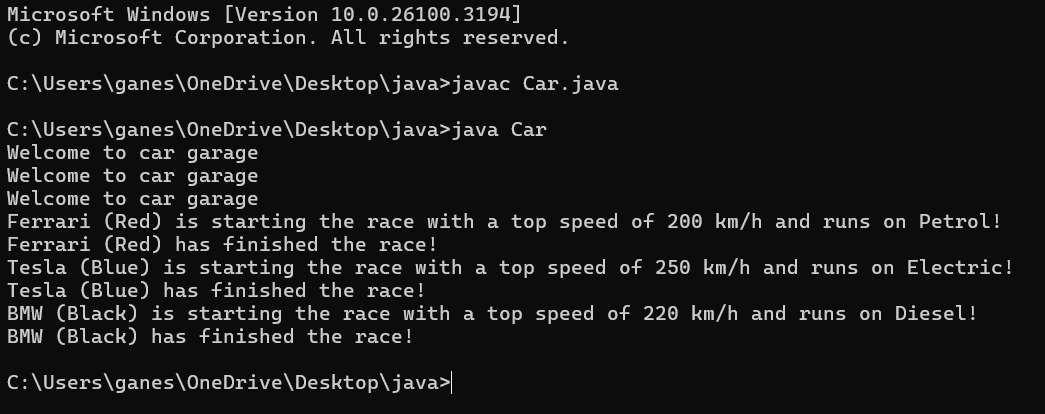
car3.startRacing();

car3.endRace();

}

}

Output:



|  |  |  |
| --- | --- | --- |
| **S.NO** | **Errors** | **Rectification** |
| 1 | } | To close for loop |
| 2 | System.out.print(); | If we place the print statement inside the for loop it will print the each i value everytime but to print only the final value we must place it outside the for loop. |

B ) Write a class by writing java program named Bank Account

with two methods “deposits and withdraw”.

a) In deposit method whenever an amount is deposited it

has to be updated with current amount (logic C.A+D.A).

b) With draw amount whenever an amount is being

withdraw it has to be less than the current amount less

than the amount else print “Insufficient funds”.

Class Diagram:

|  |
| --- |
| Bank Account |
| * currentAmount: double |
| + BankAccount(initialAmount:double) |
| + deposit(amount: double):void |
| + withdraw(amount: double):void |
| + getCurrentAmount():double |

import java.util.Scanner;

class BankAccount {

String name;

int accountNumber;

int currentBalance;

// Constructor to initialize the bank account

BankAccount(String name, int accountNumber, int currentBalance) {

this.name = name;

this.accountNumber = accountNumber;

this.currentBalance = currentBalance;

System.out.println("Customer Details: " + name + ", Account Number: " + accountNumber + ", Current Balance: " + currentBalance);

}

// Method to withdraw an amount

public void withdraw(int withdrawAmount) {

if (withdrawAmount <= currentBalance) {

currentBalance -= withdrawAmount;

System.out.println("Withdrawn: " + withdrawAmount);

System.out.println("Current Balance: " + currentBalance);

}

else {

System.out.println("Insufficient Funds");

}

}

// Method to deposit an amount

public int deposit(int depositAmount) {

currentBalance += depositAmount;

System.out.println("Deposited: " + depositAmount);

return currentBalance;

}

// Main method to run the program

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

// Input for account details

System.out.print("Enter your name: ");

String name = scanner.nextLine();

System.out.print("Enter your account number: ");

int accountNumber = scanner.nextInt();

System.out.print("Enter your initial balance: ");

int initialBalance = scanner.nextInt();

// Create a new bank account

BankAccount account = new BankAccount(name,

accountNumber, initialBalance);

// Input for withdrawal and deposit

System.out.print("Enter amount to withdraw: ");

int withdrawAmount = scanner.nextInt();

account.withdraw(withdrawAmount);

System.out.print("Enter amount to deposit: ");

int depositAmount = scanner.nextInt();

account.deposit(depositAmount);

// Final balance

System.out.println("Final Amount: " + account.currentBalance);

// Close the scanner

scanner.close();

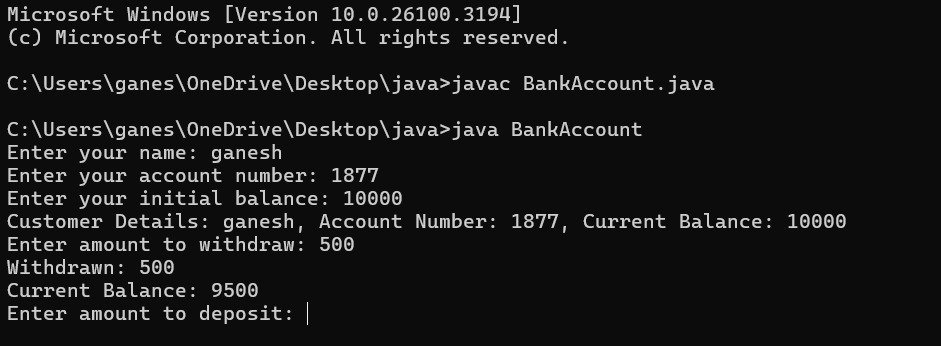
}

}

Given Input:

* Name: ganesh.
* Account number: 1877.
* Initial balance: 10000.
* Amount to withdraw: 500.

Output:



|  |  |  |
| --- | --- | --- |
| **S.NO** | **Errors** | **Rectification** |
| 1 | ; | ; is expected at end |
| 2 | Int t | Without declaring the compiler cannot execute the  program. |