Day4\_Assignment\_Answers:

1. package day\_4\_Assignment;

//Write code to store all objects in an array and use polymorphism to invoke their performFunction().

class Student{

String name;

int id;

Student(String name,int id){

this.name=name;

this.id=id;

}

void performFunction() {

System.***out***.println(name+" with id: "+id+" started studying");

}

}

public class All\_objects {

public static void main(String[] args) {

// **TODO** Auto-generated method stub

Student s1=new Student("Swapna",501);

Student s2=new Student("Jyoshna",502);

Student s3=new Student("Spandana",503);

Student arr[]= {s1,s2,s3};

for(Student s:arr) {

s.performFunction();

}

}

}

Output:

Swapna with id: 501 started studying

Jyoshna with id: 502 started studying

Spandana with id: 503 started studying

2. package day\_4\_Assignment;

public class Calculator {

static void add(int a,int b) {

System.***out***.println(a+b);

}

static void add(int a,int b,int c) {

System.***out***.println(a+b+c);

}

static void add(double a,double b) {

System.***out***.println(a+b);

}

public static void main(String[] args) {

Calculator.*add*(2, 3);

Calculator.*add*(2, 3,8);

Calculator.*add*(2.5, 3.0);

}

}

Output:

5

13

5.5

3. package day\_4\_Assignment;

/\*Runtime Polymorphism with constructor Chaining

\*create a class vehicle with a constructor that prints “Vehicle Created”

Create a subclass Bike that override a method and uses super() in constructor\*/

class Vehicle1{

Vehicle1(){//constructor

System.***out***.println("Vehicle Created!!");

}

void drive() {

System.***out***.println("Vehicle is required to drive");

}

}

class Bike extends Vehicle1{

Bike(){//subclass constructor

super();

System.***out***.println("Bike is a 2 wheeler");

}

void drive() {//overriding

System.***out***.println("Driving a bike ");

}

}

public class cons\_and\_polymorphism {

public static void main(String[] args) {

// **TODO** Auto-generated method stub

Bike b=new Bike();//Constructor chaining

Vehicle1 v=new Vehicle1();

b.drive();//run time polymorphism

v.drive();

}

}

Output:

Vehicle Created!!

Bike is a 2 wheeler

Vehicle Created!!

Driving a bike

Vehicle is required to drive

4. package day\_4\_Assignment;

//Hierarchical Inheritance

class Hospital\_1{

void display() {

System.***out***.println("Yashoda Hospital");

}

}

//Hospital subclass

class Doctor extends Hospital\_1{

String designation="Doctor";

void display\_designation() {

System.***out***.println(designation);

}

}

//Doctor subclasses

class Gynac extends Doctor{

String spec="gynacologist";

}

class Endo extends Doctor{

String spec="Endocrynologist";

}

class Cardiac extends Doctor{

String spec="Cardiologist";

}

//Cardiac subclasses

class Operation extends Cardiac{

String dept="Operation";

}

class OPD extends Cardiac{

String dept="OPD";

}

//Hospital Subclasses

class Nurse extends Hospital{

String designation="Nurse";

}

class Accountant extends Hospital\_1{

String designation="Accountant";

}

//Accountant subclasses

class Payments extends Accountant{

String dept="Payments";

}

class Documentation extends Accountant{

String dept="Documention";

}

public class MainClass3 {

public static void main(String[] args) {

Gynac g=new Gynac();

g.display();

}

}

Output:

Yashoda Hospital

5. package day\_4\_Assignment;

class Shape{

void area() {

System.***out***.println("Area of Shape");

}

}

class Circle extends Shape{

double pi=3.14;

double radius=10;

void area() {

System.***out***.println("Area of circle is : "+pi\*radius\*radius);

}

}

class Rectangle extends Shape{

int length=20;

int width=10;

void area() {

System.***out***.println("Area of Rectangle is : "+length\*width);

}

}

public class MainClass4 {

public static void main(String[] args) {

// **TODO** Auto-generated method stub

System.***out***.println("Area method of Shape class");

Shape s=new Shape();

s.area();

System.***out***.println("Area method of Circle");

Circle c=new Circle();

c.area();

System.***out***.println("Area method of Rectangle");

Rectangle r=new Rectangle();

r.area();

}

}

Output:

Area method of Shape class

Area of Shape

Area method of Circle

Area of circle is : 314.0

Area method of Rectangle

Area of Rectangle is : 200

6. package day\_4\_Assignment;

/\*Create a Bank class with a method getInterestRate()

\* create subclasses: SBIà return 6.7%

\* ICICIà return 7.0%

\* HDFCà return 7.5% \*/

class Bank {

void getInterestRate() {

System.***out***.println("Interest rate is different for each bank ");

}

}

class SBI extends Bank{

void getInterestRate() {

System.***out***.println("Interest rate at SBI : 6.7% ");

}

}

class ICICI extends Bank{

void getInterestRate() {

System.***out***.println("Interest rate at ICICI : 7.0%");

}

}

class HDFC extends Bank{

void getInterestRate() {

System.***out***.println("Interest rate at HDFC : 7.5%");

}

}

public class MainClass5 {

public static void main(String[] args) {

// **TODO** Auto-generated method stub

Bank b=new Bank();

SBI s=new SBI();

ICICI i=new ICICI();

HDFC h=new HDFC();

b.getInterestRate();

s.getInterestRate();

i.getInterestRate();

h.getInterestRate();

}

}

Output:

Interest rate is different for each bank

Interest rate at SBI : 6.7%

Interest rate at ICICI : 7.0%

Interest rate at HDFC : 7.5%

7. package day\_4\_Assignment;

/\*Create an abstract class SmartDevice with methods like turnOn(), turnOff(), and performFunction().

Create child classes:

SmartPhone: performs calling and browsing.

SmartWatch: tracks fitness and time.

SmartSpeaker: plays music and responds to voice commands. \*/

abstract class SmartDevice{

void turnOn() {

System.***out***.println("Turning on Smart Device");

}

void turnOff() {

System.***out***.println("Turning off Smart Device");

}

abstract void performFunction();

}

class SmartPhone extends SmartDevice{

void performFunction() {

System.***out***.println("performs calling and browsing.");

}

}

class SmartWatch extends SmartDevice{

void performFunction() {

System.***out***.println("tracks fitness and time");

}

}

class SmartSpeaker extends SmartDevice{

void performFunction() {

System.***out***.println("plays music and responds to voice commands.");

}

}

public class MainClass6 {

public static void main(String[] args) {

// **TODO** Auto-generated method stub

SmartDevice s;

s=new SmartWatch();

s.turnOn();

s.performFunction();

}

}

Output:

Turning on Smart Device

tracks fitness and time

8. package day\_4\_Assignment;

/\*Create a base class Vehicle with method start().

Derive Car, Bike, and Truck from it and override the start() method.

Create a static method that accepts Vehicle type and calls start().

Pass different vehicle objects to test polymorphism. \*/

abstract class Vehicle2{

abstract void start();

}

class Car extends Vehicle2{

void start() {

System.***out***.println("Starting car");

}

}

class Bike1 extends Vehicle2{

void start() {

System.***out***.println("Starting bike");

}

}

class Truck extends Vehicle2{

void start() {

System.***out***.println("Starting truck");

}

}

public class MainClass7 {

public static void main(String[] args) {

// **TODO** Auto-generated method stub

Vehicle2 v;

v=new Car();

v.start();

v=new Bike1();

v.start();

v=new Truck();

v.start();

}

}

Output:

Starting car

Starting bike

Starting truck

9. package day\_4\_Assignment;

/\*create multilevel inheritance for

//Vehicle

//Four\_wheeler

//Petrol\_Four\_Wheeler

//FiveSeater\_Petrol\_Four\_Wheeler

//Baleno\_FiveSeater\_Petrol\_Four\_Wheeler \*/

class Vehicle{

void drive(String vehicle) {

System.***out***.println("Drive using "+vehicle);

}

}

class Four\_Wheeler extends Vehicle{

void wheels(int count) {

System.***out***.println("Vehicle Wheels count "+count);

}

}

class Petrol\_Fourwheeler extends Four\_Wheeler{

void fuel(String fuel) {

System.***out***.println("Fuel used is "+fuel);

}

}

class Five\_seater\_petro\_fourwheeler extends Petrol\_Fourwheeler{

void seater(int seat) {

System.***out***.println("Seater count "+seat);

}

}

class Baleno\_Petrol\_Fiveseater\_Fourwheeler extends Five\_seater\_petro\_fourwheeler{

void model(String mod) {

System.***out***.println("Model is "+mod);

}

}

public class mul\_inherit {

public static void main(String[] args) {

Baleno\_Petrol\_Fiveseater\_Fourwheeler b=new Baleno\_Petrol\_Fiveseater\_Fourwheeler();

b.drive("Car");

b.wheels(4);

b.fuel("Petrol");

b.seater(5);

b.model(" Maruti Baleno");

}

}

Output:

Drive using Car

Vehicle Wheels count 4

Fuel used is Petrol

Seater count 5

Model is Maruti Baleno

10. package day\_4\_Assignment;

//Create Hospital super class and access this class inside the patient child class and access properties from Hospital class.

class Hospital{

String hos\_name="Yashoda";

}

public class Patient extends Hospital{

String patient\_name="Mallika";

void display() {

System.***out***.println("Hospital name ="+hos\_name);

System.***out***.println("Patient name ="+patient\_name);

}

public static void main(String[] args) {

// **TODO** Auto-generated method stub

Patient p=new Patient();

p.display();

}

}

Output:

Hospital name =Yashoda

Patient name =Mallika