**Main Method():**

import java.util.\*;

import java.lang.\*;

import java.util.Arrays;

public class inheritence{

        public static *void* main(String[] *args*){

                // Laptop Class

                laptop l1 = new laptop(20, 500, 1000, 50, 30, 40, 50, 150);

                l1.display();

                System.out.println("\n");

                // Publication Class

                publication p1 = new publication("Welcome Home", 456);

                p1.display();

                System.out.println("\n");

                // Book Class

                book b1 = new book();

                b1.display();

                System.out.println("\n");

                // Tape Class

                tape t1 = new tape("Welcome Home", 456, 60);

                t1.display();

                // Simple Class

                simple s1 = new simple(6, 5);

                // Verified Simple Class

                verifiedSimple v1 = new verifiedSimple(5, 4);

                v1.sum();

                // Person Class

                person p1 = new person("Sam", "Islamabad", "03324532345", "hiidk@gmail.com");

                p1.display();

                System.out.println();

                // Date Class

                My\_Date d1 = new My\_Date(2,10,2020);

                // Employee Class

                employee e1 = new employee("Sam", "Islamabad", "03324532345", "hiidk@gmail.com", "3", 55000, d1);

                e1.display();

                // Staff Class

                staff s1 = new staff("Sam", "Islamabad", "03324532345", "hiidk@gmail.com", "3", 55000, d1, "Whatcha doin' there, pal?");

                s1.display();

        }

}

**Class Computer:**

class Computer{

        protected *int* wordSize;

        protected *int* memorySize;

        protected *int* storageSize;

        protected *int* speed;

        // default constructor

        public Computer(){

        }

        //Argumented Constructor

        public Computer(*int* *wordSize\_prime*, *int* *memorySize\_prime*, *int* *storageSize\_prime*, *int* *speed\_prime*){

                this.wordSize = wordSize\_prime;

                this.memorySize = memorySize\_prime;

                this.storageSize = storageSize\_prime;

                this.speed = speed\_prime;

        }

        public *void* display(){

                System.out.println("wordSize is: " + wordSize);

                System.out.println("memorySize is: " + memorySize);

                System.out.println("storageSize is: " + storageSize);

                System.out.println("speed is: " + speed);

        }

}

**Class laptop *extends* computer:**

class laptop extends *Computer*{

        private *int* length;

        private *int* width;

        private *int* height;

        private *int* weight;

        // default constructor

        public laptop(){

                super();

        }

        // argumented constructor

        public laptop(*int* *wordSize\_prime*, *int* *memorySize\_prime*, *int* *storageSize\_prime*, *int* *speed\_prime*, *int* *length\_prime*, *int* *width\_prime*, *int* *height\_prime*, *int* *weight\_prime*){

                super(wordSize\_prime, memorySize\_prime, storageSize\_prime, speed\_prime);

                this.length = length\_prime;

                this.width = width\_prime;

                this.height = height\_prime;

                this.weight = weight\_prime;

        }

        public *void* display(){

                super.display();

                System.out.println("length is: " + length);

                System.out.println("width is: " + width);

                System.out.println("height is: " + height);

                System.out.println("weight is: " + weight);

        }

}

**Class publication:**

class publication{

        protected *String* title;

        protected *int* price;

        //default constructor

        public publication(){

        }

        //argumented constructor

        public publication(*String* *title\_prime*, *int* *price\_prime*){

                this.title = title\_prime;

                this.price = price\_prime;

        }

        public *void* display(){

                System.out.println("Title is: " + title);

                System.out.println("Price is: " + price);

        }

}

**Class book *extends* publication:**

class book extends publication{

        private *int* pageCount;

        //default constructor

        public book(){

                super();

        }

        //argumented constructor

        public book(*String* *title\_prime*, *int* *price\_prime*, *int* *pageCount\_prime*){

                super(title\_prime, price\_prime);

                this.pageCount = pageCount\_prime;

        }

        public *void* display(){

                super.display();

                System.out.println("Page Count is: " + pageCount);

        }

}

**Class tape *extends* publication:**

class tape extends publication{

        private *int* playingTimeInMinutes;

        //default constructor

        public tape(){

                super();

        }

        //argumented constructor

        public tape(*String* *title\_prime*, *int* *price\_prime*, *int* *playingTimeInMinutes\_prime*){

                super(title\_prime, price\_prime);

                this.playingTimeInMinutes = playingTimeInMinutes\_prime;

        }

        public *void* display(){

                super.display();

                System.out.println("Playing time is: " + playingTimeInMinutes);

        }

}

**Class person:**

class person{

        protected *String* name;

        protected *int* age;

        //default constructor

        public person(){

        }

        //argumented constructor

        public person(*String* *name\_prime*, *int* *age\_prime*){

                this.name = name\_prime;

                this.age = age\_prime;

        }

        // getters

        public *String* getName(){

                return name;

        }

        public *int* getAge(){

                return age;

        }

        public *void* display(){

                System.out.println("Name is: " + name);

                System.out.println("Age is: " + age);

        }

}

**Class vehicle:**

class vehicle{

        protected *String* manuName;

        protected *int* numberOfCylinders;

        protected person owner;

        //default constructor

        public vehicle(){

        }

        //argumented constructor

        public vehicle(*String* *manuName\_prime*, *int* *numberOfCylinders\_prime*, *person* *owner\_prime*){

                this.manuName = manuName\_prime;

                this.numberOfCylinders = numberOfCylinders\_prime;

                this.owner = owner\_prime;

        }

        // getters

        public *String* getManuName(){

                return manuName;

        }

        public *int* getAnumberOfCylinders(){

                return numberOfCylinders;

        }

        public person getOwner(){

                return owner;

        }

        public *void* display(){

                System.out.println("Manufacturer’s name is: " + manuName);

                System.out.println("Number of Cylinders are: " + numberOfCylinders);

                owner.display();

        }

}

**Class truck *extends* vehicle:**

class truck extends vehicle{

        private *double* loadingCap;

        private *int* towingCapicity;

        //default constructor

        public truck(){

                super();

        }

        //argumented constructor

        public truck(*String* *manuName\_prime*, *int* *numberOfCylinders\_prime*, *person* *owner\_prime*, *double* *loadingCap\_prime*, *int* *towingCapicity\_prime*){

                super(manuName\_prime, numberOfCylinders\_prime, owner\_prime);

                this.loadingCap = loadingCap\_prime;

                this.towingCapicity = towingCapicity\_prime;

        }

        public *void* display(){

                System.out.println("Loading Capicity is: " + loadingCap);

                System.out.println("towingCapicity Capicity is: " + towingCapicity);

                System.out.println("manuName is: " + manuName);

                System.out.println("Number of Cylinders is: " + numberOfCylinders);

                System.out.println("Owner: " + owner.getName() + " " + owner.getAge());

        }

}

**Class simple:**

class simple{

        protected *int* num1;

        protected *int* num2;

        // default constructor

        public simple(){

        }

        // Argumented constructor

        public simple(*int* *num1\_prime*, *int* *num2\_prime*){

                this.num1 = num1\_prime;

                this.num2 = num2\_prime;

        }

        //setters

        public *void* setNum1(*int* *num1\_prime*){

                this.num1 = num1\_prime;

        }

        public *void* setNum2(*int* *num2\_prime*){

                this.num2 = num2\_prime;

        }

        //getters

        public *int* getNum1(){

                return num1;

        }

        public *int* getNum2(){

                return num2;

        }

        public *void* sum(){

                System.out.println("Sum of two numbers is: " + (num1 + num2));

        }

        public *void* sub(){

                System.out.println("Sub of two numbers is: " + (num1 - num2));

        }

        public *void* mul(){

                System.out.println("Mul of two numbers is: " + (num1 \* num2));

        }

        public *void* div(){

                System.out.println("Div of two numbers is: " + (num1 / num2));

        }

}

**Class verifiedSimple *extends* Simple:**

class verifiedSimple extends simple{

        public verifiedSimple(){

                super();

        }

        public verifiedSimple(*int* *num1\_prime*, *int* *num2\_prime*){

                super(num1\_prime, num2\_prime);

        }

        public *void* sum(){

                if(getNum1() > 0 && getNum2() > 0){

                        super.sum();

                }

                else{

                        System.out.println("Add number greater than 0");

                }

        }

        public *void* sub(){

                if(getNum1() > 0 && getNum2() > 0){

                        super.sub();

                }

                else{

                        System.out.println("Add number greater than 0");

                }

        }

        public *void* mul(){

                if(getNum1() > 0 && getNum2() > 0){

                        super.mul();

                }

                else{

                        System.out.println("Add number greater than 0");

                }

        }

        public *void* div(){

                if(getNum1() > 0 && getNum2() > 0){

                        super.div();

                }

                else{

                        System.out.println("Add number greater than 0");

                }

        }

}

**Class my\_date:**

class My\_Date {

        private *int* day;

        private *int* month;

        private *int* year;

    public My\_Date(*int* *day*, *int* *month*, *int* *year*) {

        this.day = *day*;

        this.month = *month*;

        this.year = *year*;

    }

    public My\_Date() {

    }

    public *int* getDay() {

        return day;

    }

    public *void* setDay(*int* *day*) {

        this.day = *day*;

    }

    public *int* getMonth() {

        return month;

    }

    public *void* setMonth(*int* *month*) {

        this.month = *month*;

    }

    public *int* getYear() {

        return year;

    }

    public *void* setYear(*int* *year*) {

        this.year = *year*;

    }

    public *void* display() {

        System.out.println(day + "  " + month + "  " + year);

    }

}

**Class person (Second One)**

class person{

        protected *String* name;

        protected *String* address;

        protected *String* phoneNumber;

        protected *String* email;

        // default constructor

        public person(){

        }

        // argumented constructor

        public person(*String* *name\_prime*, *String* *address\_prime*, *String* *phoneNumeber\_prime*, *String* *email\_prime*){

                this.name = name\_prime;

                this.address = address\_prime;

                this.phoneNumber = phoneNumeber\_prime;

                this.email = email\_prime;

        }

        //setters

        public *void* setName(*String* *name\_prime*){

                this.name = name\_prime;

        }

        public *void* setAddress(*String* *address\_prime*){

                this.address = address\_prime;

        }

        public *void* setPhoneNumber(*String* *phoneNumeber\_prime*){

                this.phoneNumber = phoneNumeber\_prime;

        }

        public *void* setEmail(*String* *email\_prime*){

                this.email = email\_prime;

        }

        //getters

        public *String* getName(){

                return name;

        }

        public *String* getAddress(){

                return address;

        }

        public *String* getPhoneNumber(){

                return phoneNumber;

        }

        public *String* getEmail(){

                return email;

        }

        public *void* display(){

                System.out.println("Name is: " + name);

                System.out.println("\nAddress is: " + address);

                System.out.println("\nPhone Number is: " + phoneNumber);

                System.out.println("\nEmail is: " + email);

        }

}

**Class student *extends* person**

class student extends person{

        private String status;

        // default constructor

        public student(){

                super();

        }

        // argumented constructor

        public student(String *name\_prime*, String *address\_prime*, String *phoneNumeber\_prime*, String *email\_prime*, String *status\_prime*){

                super(*name\_prime*, *address\_prime*, *phoneNumeber\_prime*, *email\_prime*);

                this.status = *status\_prime*;

        }

        public *void* display(){

                System.out.println("Name is: " + getName());

                System.out.println("\nAddress is: " + getAddress());

                System.out.println("\nPhone Number is: " + getPhoneNumber());

                System.out.println("\nEmail is: " + getEmail());

                System.out.println("\nStatus is: " + status);

        }

}

**Class employee *extends* person**

class employee extends person{

        protected String office;

        protected *int* salary;

        protected My\_Date date;

        // default constructor

        public employee(){

                super();

        }

        // argumented constructor

        public employee(String *name\_prime*, String *address\_prime*, String *phoneNumeber\_prime*, String *email\_prime*, String *office\_prime*, *int* *salary\_prime*, My\_Date *date\_prime*){

                super(*name\_prime*, *address\_prime*, *phoneNumeber\_prime*, *email\_prime*);

                this.office = *office\_prime*;

                this.salary = *salary\_prime*;

                this.date = *date\_prime*;

        }

        // setters

        public *void* setOffice(String *office\_prime*){

                this.office = *office\_prime*;

        }

        public *void* setSalary(*int* *salary\_prime*){

                this.salary = *salary\_prime*;

        }

        public *void* setDate(My\_Date *date\_prime*){

                this.date = *date\_prime*;

        }

        //getters

        public String getOffice(){

                return office;

        }

        public *int* getSalary(){

                return salary;

        }

        public My\_Date getDate(){

                return date;

        }

        public *void* display(){

                System.out.println("Name is: " + getName());

                System.out.println("\nAddress is: " + getAddress());

                System.out.println("\nPhone Number is: " + getPhoneNumber());

                System.out.println("\nEmail is: " + getEmail());

                System.out.println("Office is: " + office);

                System.out.println("\nSalray is: " + salary);

                date.display();

        }

}

**Class faculty *extends* employee**

class faculty extends employee{

        private *int* officeHours;

        private String rank;

        // default constructor

        public faculty(){

                super();

        }

        // argumented constructor

        public faculty(String *name\_prime*, String *address\_prime*, String *phoneNumeber\_prime*, String *email\_prime*, String *office\_prime*, *int* *salary\_prime*, My\_Date *date\_prime*, *int* *officeHours\_prime*, String *rank\_prime*){

                super(*name\_prime*, *address\_prime*, *phoneNumeber\_prime*, *email\_prime*, *office\_prime*, *salary\_prime*, *date\_prime*);

                this.officeHours = *officeHours\_prime*;

                this.rank = *rank\_prime*;

        }

        public *void* display(){

                System.out.println("Name is: " + getName());

                System.out.println("\nAddress is: " + getAddress());

                System.out.println("\nPhone Number is: " + getPhoneNumber());

                System.out.println("\nEmail is: " + getEmail());

                System.out.println("Office is: " + getOffice());

                System.out.println("\nSalray is: " + getSalary());

                getDate().display();

                System.out.println("Office hours are: " + officeHours);

                System.out.println("\nRank is: " + rank);

        }

}

**Class staff *extends* person**

class staff extends employee{

        protected String title;

                // default constructor

        public staff(){

                super();

        }

        // argumented constructor

        public staff(String *name\_prime*, String *address\_prime*, String *phoneNumeber\_prime*, String *email\_prime*, String *office\_prime*, *int* *salary\_prime*, My\_Date *date\_prime*, String *title\_prime*){

                super(*name\_prime*, *address\_prime*, *phoneNumeber\_prime*, *email\_prime*, *office\_prime*, *salary\_prime*, *date\_prime*);

                this.title = *title\_prime*;

        }

        public *void* display(){

                System.out.println("Name is: " + getName());

                System.out.println("\nAddress is: " + getAddress());

                System.out.println("\nPhone Number is: " + getPhoneNumber());

                System.out.println("\nEmail is: " + getEmail());

                System.out.println("Office is: " + getOffice());

                System.out.println("\nSalray is: " + getSalary());

                getDate().display();

                System.out.println("\nTitle is: " + title);

        }

}