

JAVA PROGRAM

Task 3

Write a Java program that demonstrates various OOP concepts including class design, inheritance, abstraction, polymorphism, encapsulation, method overriding, and method overloading.

program

```
//Abstract class
abstract class Bird {
    private String name;
    private String color;

    //Constructor
    public Bird (String name,String color) {
        this.name = name;
        this.color = color;
    }

    //Abstract method
    public abstract void makeSound();

    //Encapsulation get and set methods
    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getColor() {
        return color;
    }

    public void setColor(String color) {
        this.color = color;
    }
}
```

```

}

//method overloading
public void describe() {
    System.out.println("This is a bird.");
}
public void describe(String details) {
    System.out.println("This is a bird: " + details);
}
}

// inheritance and method overriding
class Crow extends Bird {
    private int age;

    public Crow(String name, String color,int age) {
        super(name,color);
        this.age = age;
    }

    public void makeSound() {
        System.out.println("caw! caw!");
    }

    public int getAge(){
        return age;
    }
    public void setAge(int age) {
        this.age = age;
    }

    public void describe() {
        System.out.println("This is a crow.");
    }
}

class Eagle extends Bird {
    private String breed;

    public Eagle(String name, String color, String breed) {
        super(name, color);
        this.breed = breed;
    }

    public void makeSound() {
        System.out.println("Screech! Screech!");
    }
}

```

```

        public String getBreed() {
            return breed;
        }

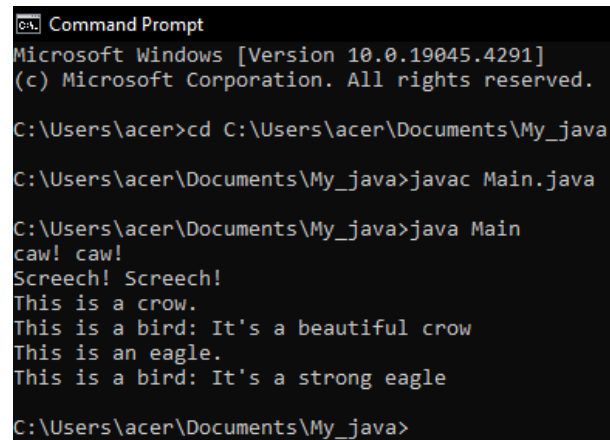
        public void setBreed(String breed) {
            this.breed = breed;
        }

        public void describe() {
            System.out.println("This is an eagle.");
        }
    }
}

public class Main {
    public static void main(String[] args) {
        Crow crow = new Crow("ram", "black", 5);
        Eagle eagle = new Eagle("Piku", "brown", "Golden");
        Bird b1 = crow;
        Bird b2 = eagle;
        b1.makeSound();
        b2.makeSound();
        b1.describe();
        b1.describe("It's a beautiful crow");
        b2.describe();
        b2.describe("It's a strong eagle");
    }
}

```

output



```

C:\Users\acer>cd C:\Users\acer\Documents\My_java
C:\Users\acer\Documents\My_java>javac Main.java
C:\Users\acer\Documents\My_java>java Main
caw! caw!
Screech! Screech!
This is a crow.
This is a bird: It's a beautiful crow
This is an eagle.
This is a bird: It's a strong eagle
C:\Users\acer\Documents\My_java>

```