LAB WORK SHEET – 06 – CT/2021/025

Q_01:

Pet.java

```
package Q_01;

public class Pet {
	private String name;
	public String getName( ) {
	   return name;
	}
	public void setName(String petName) {
	   name = petName;
	}
	public String speak( ) {
	   return "I'm your cuddly little pet.";
	}
}
```

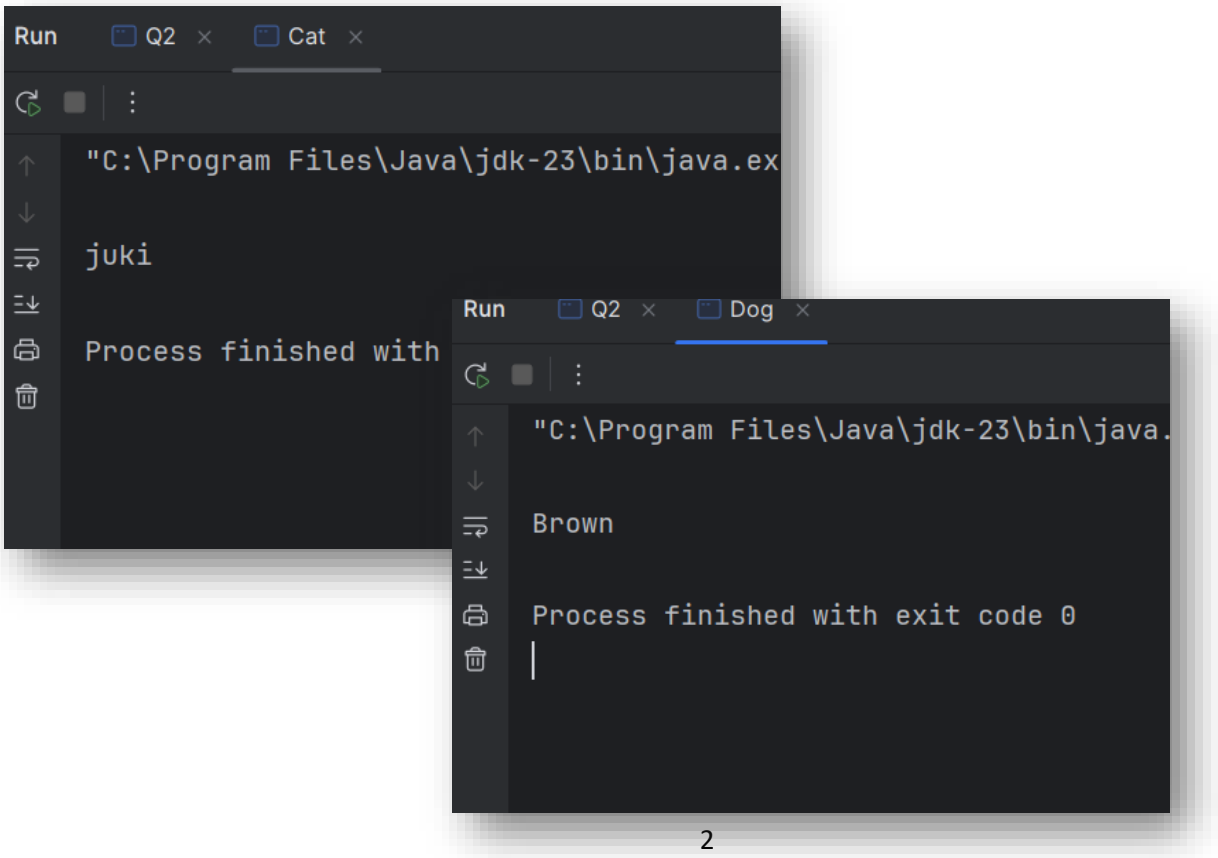
Dog.java

```
package Q_01;

public class Dog extends Pet {
   public String speak(){
      return " ";
   }
   public static void main(String[] args) {
      Dog obj1 = new Dog();
      obj1.setName("Brown");
      System.out.println(obj1.speak());
      System.out.println(obj1.getName());

 }
}
```

Cat.java

```
package Q_01;

public class Cat extends Pet{
   public String speak(){
      return " ";
   }

   public static void main(String[] args) {
      Cat obj2 = new Cat();
      obj2.setName("juki");
      System.out.println(obj2.speak());
      System.out.println(obj2.getName());
   }
```

Output:



Q_02 :

Pet_2.java

```
package Q_02;

abstract public class Pet_2 {
   protected String name;

   public Pet_2 (String name){
      this.name = name;
   }
   public  String getName(){
      return name;
   }
  public String getType(){
      return "Pet";
  }
}
```

Dog_2.java

```
package Q_02;

public class Dog_2 extends Pet_2{
   public Dog_2 (String name){
      super(name);
   }
   public String getType(){
      return "Dog";
   }
}
```

Cat_2.java

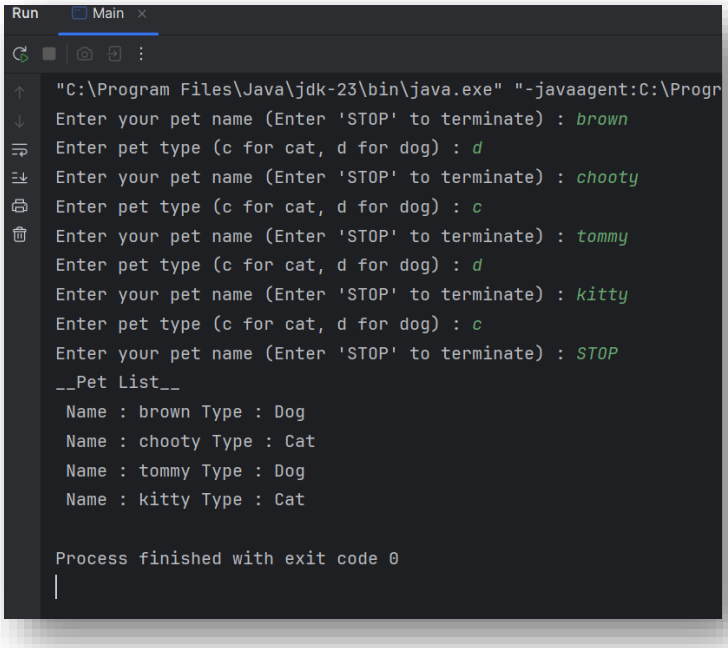
```
package Q_02;

public class Cat_2 extends Pet_2{
   public Cat_2(String name){
      super(name);
   }
   public String getType(){
      return "Cat";
   }
}
```

Main.java

```
package Q_02;

import java.util.ArrayList;
import java.util.Scanner;

public class Main {
   public static void main(String[] args){
      Scanner scanner = new Scanner(System.in);
      ArrayList<Pet_2> petlist = new ArrayList<>();
      int count = 0;


      while(true) {
         System.out.print("Enter your pet name (Enter 'STOP' to terminate) : ");
         String name = scanner.nextLine();

         if(name.equalsIgnoreCase("STOP")){
            break;
```

```
        }
        System.out.print("Enter pet type (c for cat, d for dog) : ");
        char type = scanner.nextLine().charAt(0);

        while(type != 'c' && type != 'd'){
            System.out.println("Invalid input, Reenter c for cat, d for dog : ");
            type = scanner.nextLine().charAt(0);
        }
        if(type == 'd'){
            petlist.add(new Dog_2((name)));
        }
        else{
            petlist.add(new Cat_2((name)));
        }
        count++;
    }
    System.out.println("__Pet List__");
    for(Pet_2 pet : petlist) {
        System.out.println(" Name : " + pet.getName() + " Type : " + pet.getType());
    }
    scanner.close();
  }
}
```

Output:



Q_03 :

Pet_3.java

```
package Q_03;

abstract  public class Pet_3 {
   protected String name;

   public Pet_3 (String name){
      this.name = name;
   }
   public  String getName(){
      return name;
   }
   public String getType(){
      return "Pet";
```

Dog_3.java

```
package Q_03;

public class Dog_3 extends Pet_3{
   public Dog_3 (String name){
      super(name);
   }
   public String getType(){
      return "Dog";
   }
}
```

Cat_3.java

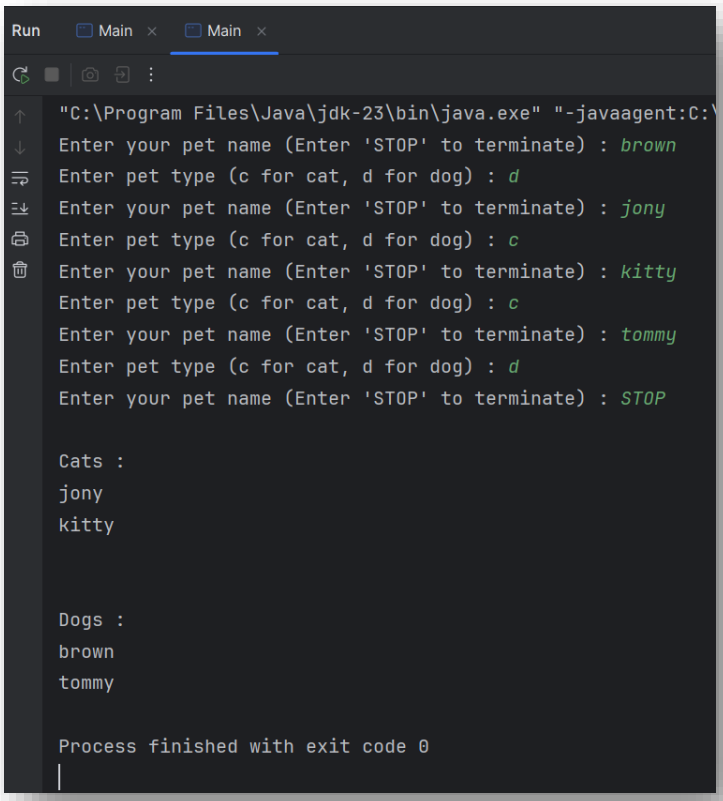
```
package Q_03;

public class Cat_3 extends Pet_3{
    public Cat_3(String name){
        super(name);
    }
    public String getType(){
        return "Cat";
    }
}
```

Main.java

```
package Q_03;

import java.util.ArrayList;
import java.util.Scanner;

public class Main {
    public static void main(String[] args){
        Scanner scanner = new Scanner(System.in);
        ArrayList<Pet_3> petlist = new ArrayList<>();
        int count = 0;


        while(true) {
            System.out.print("Enter your pet name (Enter 'STOP' to terminate) : ");
            String name = scanner.nextLine();

            if(name.equalsIgnoreCase("STOP")){
                break;
            }
            System.out.print("Enter pet type (c for cat, d for dog) : ");
            char type = scanner.nextLine().charAt(0);
```

```
        while(type != 'c' && type != 'd'){
            System.out.println("Invalid input, Reenter c for cat, d for dog : ");
            type = scanner.nextLine().charAt(0);
        }
        if(type == 'd'){
            petlist.add(new Dog_3((name)));
        }
        else{
            petlist.add(new Cat_3((name)));
        }
        count++;
    }
    System.out.println("\nCats : ");
    for(Pet_3 pet : petlist) {
        if(pet instanceof  Cat_3 ){
            System.out.println(pet.getName());
        }
    }
    System.out.println("\n\nDogs : ");
    for (Pet_3 pet : petlist){
        if(pet instanceof  Dog_3) {
            System.out.println(pet.getName());
        }
    }
    scanner.close();
  }
}
```

Output :


Run
Main
Main
"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\
Enter your pet name (Enter 'STOP' to terminate) : brown
Enter pet type (c for cat, d for dog) : d
Enter your pet name (Enter 'STOP' to terminate) : jony
Enter pet type (c for cat, d for dog) : c
Enter your pet name (Enter 'STOP' to terminate) : kitty
Enter pet type (c for cat, d for dog) : c
Enter your pet name (Enter 'STOP' to terminate) : tommy
Enter pet type (c for cat, d for dog) : d
Enter your pet name (Enter 'STOP' to terminate) : STOP
Cats :
jony
kitty
Dogs :
brown
tommy
Process finished with exit code 0

Q_04 :

Pet.java

```
package Q_04;

public class Pet {
  private String name ;

    public Pet(String name) {
       this.name = name;
    }
    public String getName(){
       return name;
    }
    public String getType(){
       return "Pet";
    }
}
```

Dog.java

```
package Q_04;

public class Dog extends Pet {
     private double weight;

    public Dog(String name,double weight){
       super(name);
       this.weight = weight ;
    }
    public String getType(){
       return "Dog";
    }
    public double getWeight() {
       return weight;
    }
    public void setWeight(double weight) {
       this.weight = weight;
    }
}
```

Cat.java

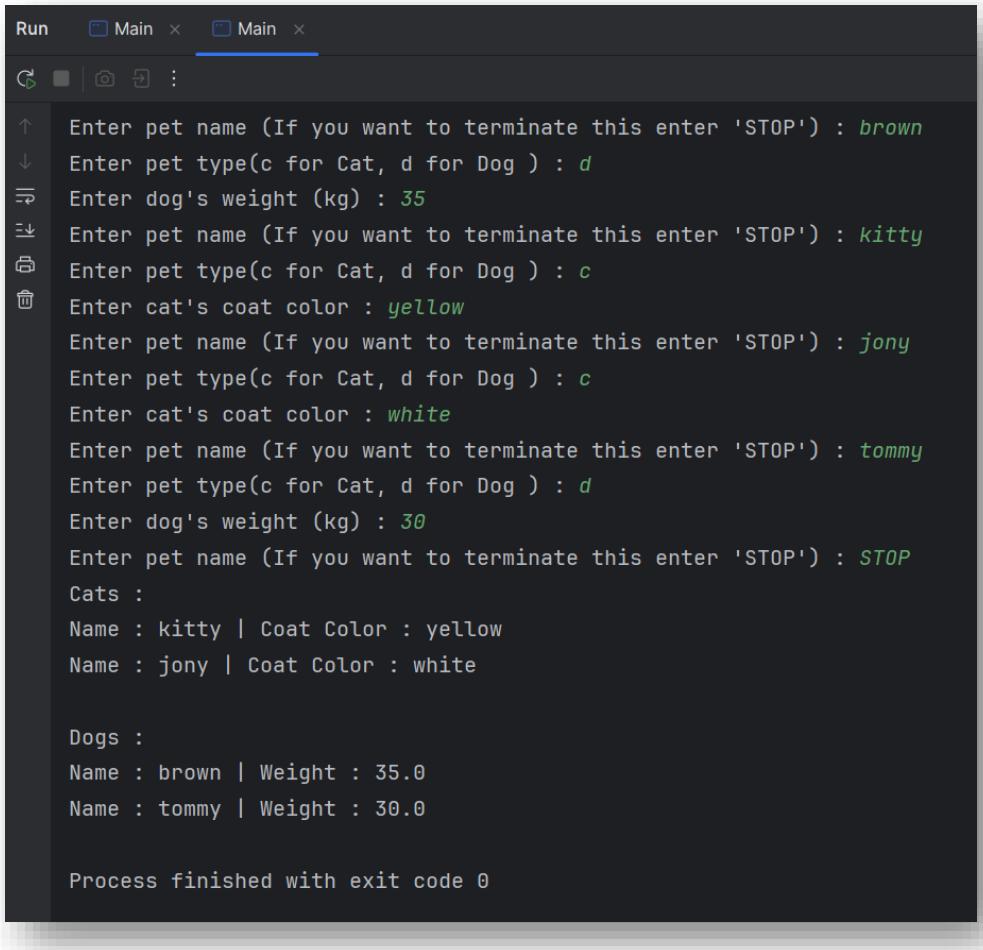
```
package Q_04;

public class Cat extends Pet{
   private String coatColor;

   public Cat(String name, String coatColor){
      super(name);
      this.coatColor = coatColor;
   }
   public String getType(){
      return "Cat";
   }
   public String getCoatColor(){
      return coatColor;
   }
   public void setCoatColor(String coatColor){
      this.coatColor = coatColor;
   }
}
```

Main.java

```
package Q_04;

import java.util.ArrayList;
import java.util.Scanner;

public class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      ArrayList<Pet> petlist = new ArrayList<>();

      while(true) {
         System.out.print("Enter pet name (If you want to terminate this enter
'STOP') : ");
         String name = scanner.nextLine();

         if(name.equalsIgnoreCase("STOP")){
            break;
         }
         System.out.print("Enter pet type(c for Cat, d for Dog ) : ");
         char type = scanner.nextLine().charAt(0);

         while(type != 'c' && type != 'd') {
            System.out.print("Invalid input,Reenter c for cat, d for dog : ");
            type = scanner.nextLine().charAt(0);
         }

         if(type == 'd'){
               System.out.print("Enter dog's weight (kg) : ");
               double weight = scanner.nextDouble();
               scanner.nextLine();
               petlist.add(new Dog(name,weight));
         }
```

```
            else {
                  System.out.print("Enter cat's coat color : ");
                  String coatColor = scanner.nextLine();
                  petlist.add(new Cat(name ,coatColor));
            }

      }
      System.out.println("Cats : ");
      for(Pet pet : petlist){
         if(pet instanceof Cat){
            Cat cat = (Cat)pet;
            System.out.println("Name : " + cat.getName() + " | Coat Color : " +
cat.getCoatColor());
         }

      }
      System.out.println("\nDogs : ");
      for(Pet pet : petlist){
         if(pet instanceof Dog) {
            Dog dog = (Dog) pet;
            System.out.println("Name : " + dog.getName() + " | Weight : " +
dog.getWeight());
         }
      }
      scanner.close();


   }
}
```

Output :


Run
Main
Main
Enter pet name (If you want to terminate this enter 'STOP') : brown
Enter pet type(c for Cat, d for Dog) : d
Enter dog's weight (kg) : 35
Enter pet name (If you want to terminate this enter 'STOP') : kitty
Enter pet type(c for Cat, d for Dog) : c
Enter cat's coat color : yellow
Enter pet name (If you want to terminate this enter 'STOP') : jony
Enter pet type(c for Cat, d for Dog) : c
Enter cat's coat color : white
Enter pet name (If you want to terminate this enter 'STOP') : tommy
Enter pet type(c for Cat, d for Dog) : d
Enter dog's weight (kg) : 30
Enter pet name (If you want to terminate this enter 'STOP') : STOP
Cats :
Name : kitty | Coat Color : yellow
Name : jony | Coat Color : white
Dogs :
Name : brown | Weight : 35.0
Name : tommy | Weight : 30.0
Process finished with exit code 0

Q_05 :

Pet.java

```
package Q_04;

public class Pet {
  private String name ;

    public Pet(String name) {
       this.name = name;
    }
    public String getName(){
       return name;
    }
    public String getType(){
       return "Pet";
    }
}
```

Dog.java

```
package Q_04;

public class Dog extends Pet {
     private double weight;

    public Dog(String name,double weight){
       super(name);
       this.weight = weight ;
    }
    public String getType(){
       return "Dog";
    }
    public double getWeight() {
       return weight;
    }
    public void setWeight(double weight) {
       this.weight = weight;
    }
}
```

Cat.java

```
package Q_04;

public class Cat extends Pet{
   private String coatColor;

   public Cat(String name, String coatColor){
      super(name);
      this.coatColor = coatColor;
   }
   public String getType(){
      return "Cat";
   }
   public String getCoatColor(){
      return coatColor;
   }
   public void setCoatColor(String coatColor){
      this.coatColor = coatColor;
   }
}
```

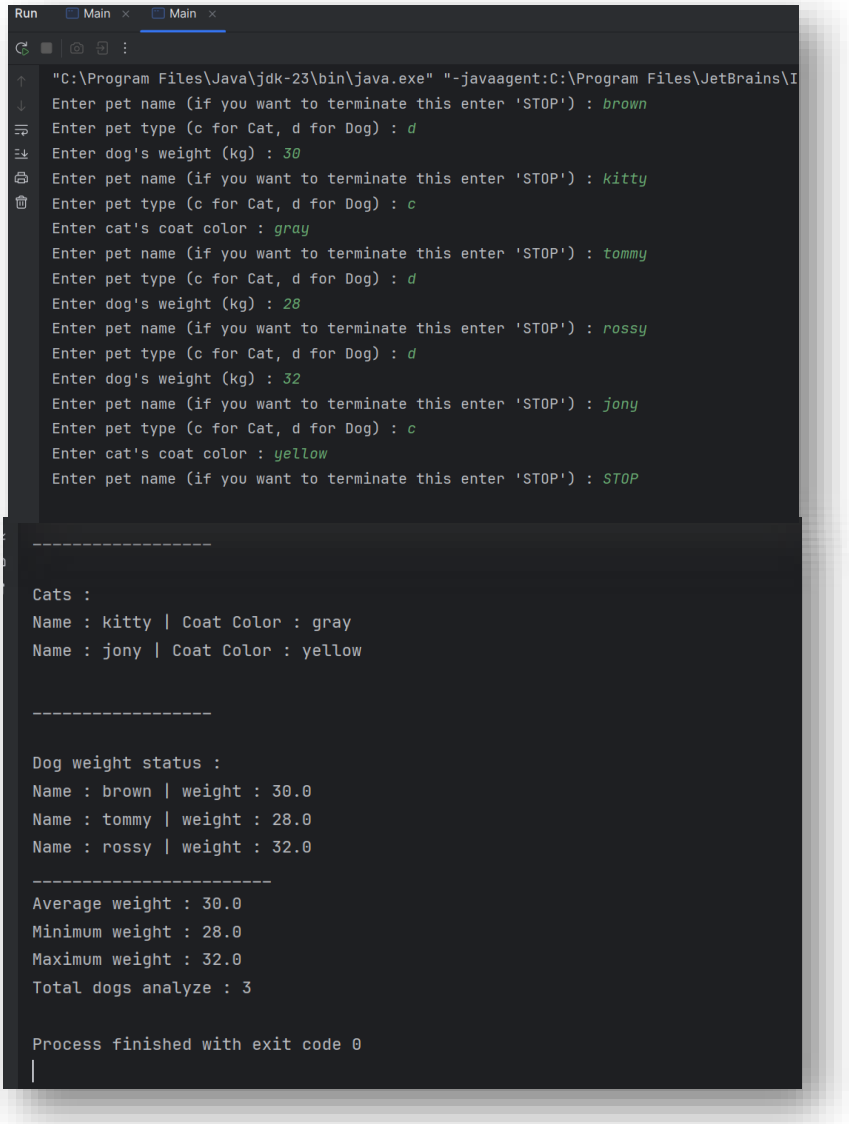
Main.java

```
package Q_05;

import java.util.ArrayList;
import java.util.Scanner;

public class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      ArrayList<Pet> petlist = new ArrayList<>();

      while (true) {
         System.out.print("Enter pet name (if you want to terminate this enter 'STOP') : ");
         String name = scanner.nextLine();

         if(name.equalsIgnoreCase("STOP")){
            break;
         }
         System.out.print("Enter pet type (c for Cat, d for Dog) : ");
         char type = scanner.nextLine().charAt(0);

         while (type != 'c' && type != 'd') {
            System.out.print("Invalid type, Reenter pet type (c for Dog,d for Dog) : " );
            type = scanner.nextLine().charAt(0);
         }
         if(type == 'd') {
            System.out.print("Enter dog's weight (kg) : ");
            double weight = scanner.nextDouble();
            scanner.nextLine();
            petlist.add(new Dog(name, weight));
         }
```

```
        else {
            System.out.print("Enter cat's coat color : ");
            String color = scanner.nextLine();
            petlist.add(new Cat(name, color));
        }

    }
    ArrayList<Dog> doglist = new ArrayList<>();
    for (Pet pet : petlist){
        if(pet instanceof Dog) {
            doglist.add((Dog) pet);
        }
    }
    if(!doglist.isEmpty()) {
        double totalWeight = 0;
        double minWeight = Double.MAX_VALUE;
        double maxWeight = Double.MIN_VALUE;

        System.out.println("\n_____\n");
        System.out.println("Cats : ");
        for (Pet pet : petlist) {
            if (pet instanceof Cat) {
                Cat cat = (Cat) pet;
                System.out.println("Name : " + cat.getName() + " | Coat Color : " +
cat.getCoatColor());
            }
        }
        System.out.println("\n_____\n");
            System.out.println("Dog weight status : ");

            for (Dog dog : doglist) {
                double weight = dog.getWeight();
                totalWeight = totalWeight + weight;
                minWeight = Math.min(minWeight, weight);
                maxWeight = Math.max(maxWeight, weight);

                System.out.println("Name : " + dog.getName() + " | weight : " + weight);
            }
```

```
            double avgWeight = totalWeight / doglist.size();

             System.out.println("_____");

             System.out.println("Average weight : " + avgWeight);
             System.out.println("Minimum weight : " + minWeight);
             System.out.println("Maximum weight : " + maxWeight);
             System.out.println("Total dogs analyze : " + doglist.size());

        }
        else {
           System.out.println("No dogs");
        }
        scanner.close();
    }
}
```

Output :


Run
Main
Main
"C:\Program Files\Java\jdk-23\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\I
Enter pet name (if you want to terminate this enter 'STOP') : brown
Enter pet type (c for Cat, d for Dog) : d
Enter dog's weight (kg) : 30
Enter pet name (if you want to terminate this enter 'STOP') : kitty
Enter pet type (c for Cat, d for Dog) : c
Enter cat's coat color : gray
Enter pet name (if you want to terminate this enter 'STOP') : tommy
Enter pet type (c for Cat, d for Dog) : d
Enter dog's weight (kg) : 28
Enter pet name (if you want to terminate this enter 'STOP') : rossy
Enter pet type (c for Cat, d for Dog) : d
Enter dog's weight (kg) : 32
Enter pet name (if you want to terminate this enter 'STOP') : jony
Enter pet type (c for Cat, d for Dog) : c
Enter cat's coat color : yellow
Enter pet name (if you want to terminate this enter 'STOP') : STOP
Cats :
Name : kitty | Coat Color : gray
Name : jony | Coat Color : yellow
Dog weight status :
Name : brown | weight : 30.0
Name : tommy | weight : 28.0
Name : rossy | weight : 32.0
Average weight : 30.0
Minimum weight : 28.0
Maximum weight : 32.0
Total dogs analyze : 3
Process finished with exit code 0

Q_06 :

Pet.java

```
package Q_06;

public class Pet {
   protected String name;

   public Pet(String name) {
      this.name = name;
   }

   public String getName() {
      return name;
   }
}
```

Dog.java

```
package Q_06;

public class Dog extends Pet {
   private double weight;

   public Dog(String name, double weight) {
      super(name);
      this.weight = weight;
   }

   public double getWeight() {
      return weight;
   }

   public String toString() {
      return String.format("Name :" + name + " | Weight : " + weight);
   }
}
```

Cat.java

```
package Q_06;


public class Cat extends Pet {
   private String coatColor;

   public Cat(String name, String coatColor) {
      super(name);
      this.coatColor = coatColor;
   }

   public String getCoatColor() {
      return coatColor;
   }

   public String toString() {
      return String.format("Name : " + name + " | Coat color : " + coatColor);
   }
}
```

Main.java

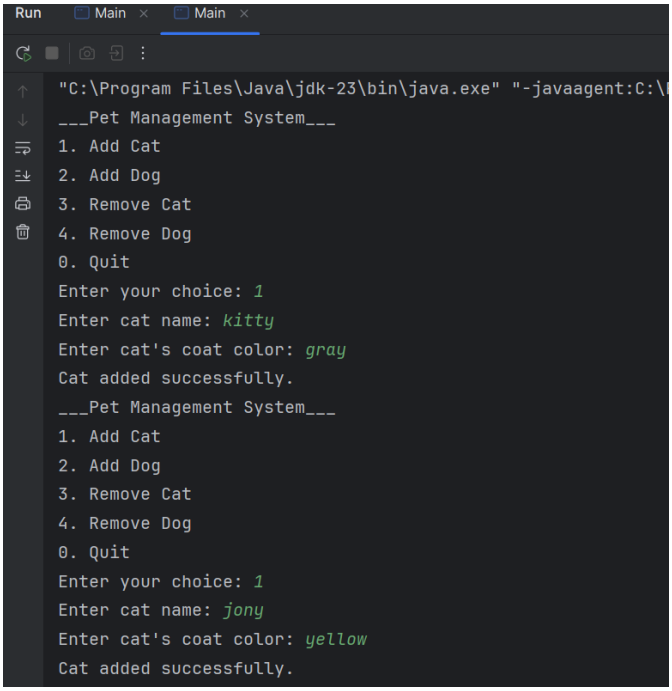
```
package Q_06;

import java.util.ArrayList;
import java.util.Scanner;

public class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);

      ArrayList<Pet> pettlist = new ArrayList<>();
      ArrayList<Dog> doglist = new ArrayList<>();
      ArrayList<Cat> catlist = new ArrayList<>();

      int choice;
      do {
         System.out.println("___Pet Management System___");
         System.out.println("1. Add Cat");
         System.out.println("2. Add Dog");
         System.out.println("3. Remove Cat");
         System.out.println("4. Remove Dog");
         System.out.println("0. Quit");
         System.out.print("Enter your choice: ");

         while (!scanner.hasNextInt()) {
            System.out.println("Please enter a number.");
            scanner.next();
            System.out.print("Enter your choice: ");
         }
         choice = scanner.nextInt();
         scanner.nextLine();
```

```
switch (choice) {
            case 1:
               System.out.print("Enter cat name: ");
               String catName = scanner.nextLine();
               System.out.print("Enter cat's coat color: ");
               String color = scanner.nextLine();
               Cat newCat = new Cat(catName, color);
               pettlist.add(newCat);
               catlist.add(newCat);
               System.out.println("Cat added successfully.");
               break;

            case 2:
               System.out.print("Enter dog name: ");
               String dogName = scanner.nextLine();
               System.out.print("Enter dog's weight (kg): ");
               double weight = scanner.nextDouble();
               scanner.nextLine();
               Dog newDog = new Dog(dogName, weight);
               pettlist.add(newDog);
               doglist.add(newDog);
               System.out.println("Dog added successfully.");
               break;

            case 3:
               System.out.print("Enter cat name to remove: ");
               String catToRemove = scanner.nextLine();
               boolean catRemoved = false;
               for (int i = 0; i < catlist.size(); i++) {
                  if (catlist.get(i).getName().equalsIgnoreCase(catToRemove)) {
                     pettlist.remove(catlist.get(i));
                     catlist.remove(i);
                     catRemoved = true;
                     System.out.println("Cat removed successfully.");
                     break;
                  }
               }
```

```
            if (!catRemoved) {
                System.out.println("Cat not found.");
            }
            break;

        case 4:
            System.out.print("Enter dog name to remove: ");
            String dogToRemove = scanner.nextLine();
            boolean dogRemoved = false;
            for (int i = 0; i < doglist.size(); i++) {
                if (doglist.get(i).getName().equalsIgnoreCase(dogToRemove)) {
                    pettlist.remove(doglist.get(i));
                    doglist.remove(i);
                    dogRemoved = true;
                    System.out.println("Dog removed successfully.");
                    break;
                }
            }
            if (!dogRemoved) {
                System.out.println("Dog not found.");
            }
            break;

        case 0:
            System.out.println("Exiting program...");
            break;

        default:
            System.out.println("Invalid choice. Please try again.");
    }
}
```

```
        while (choice != 0);


        System.out.println("Current Pets:");
        System.out.println("Cats:");
        for (Cat cat : catlist) {
            System.out.println(cat);
        }
        System.out.println("\nDogs:");
        for (Dog dog : doglist) {
            System.out.println(dog);
        }


        scanner.close();
    }
}
```

Output :



```
___Pet Management System___
1. Add Cat
2. Add Dog
3. Remove Cat
4. Remove Dog
0. Quit
Enter your choice: 2
Enter dog name: brown
Enter dog's weight (kg): 30
Dog added successfully.
___Pet Management System___
1. Add Cat
2. Add Dog
3. Remove Cat
4. Remove Dog
0. Quit
Enter your choice: 2
Enter dog name: tommy
Enter dog's weight (kg): 28
Dog added successfully.
___Pet Management System___
1. Add Cat
2. Add Dog
3. Remove Cat
4. Remove Dog
0. Quit
Enter your choice: 3
Enter cat name to remove: kitty
Cat removed successfully.
___Pet Management System___
1. Add Cat
2. Add Dog
3. Remove Cat
4. Remove Dog
0. Quit
Enter your choice: 4
Enter dog name to remove: brown
Dog removed successfully.
___Pet Management System___
1. Add Cat
2. Add Dog
3. Remove Cat
4. Remove Dog
0. Quit
Enter your choice: 0
Exiting program...
Current Pets:
Cats:
Name : jony | Coat color : yellow

Dogs:
Name :tommy | Weight : 28.0

Process finished with exit code 0
```