

Q1

Code:

```
package Q1;
import Teacher.Pet;

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

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

public class Q1_Main {
    public static void main(String[] args) {

    }
}
```

Q2

Code:

```
package Q2;
import Teacher.Pet;

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

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

```

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

public class Q2_Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        ArrayList<Pet> pets = new ArrayList<>();
        String playerInput = "";
        while (true)
        {
            System.out.println("Enter Type (c,d,STOP) : ");
            playerInput = scanner.nextLine();

            if(playerInput.equals("STOP"))
                break;

            System.out.println("Enter Name : ");
            String name = scanner.nextLine();
            if(playerInput.equals("c"))
            {
                Cat cat = new Cat();
                cat.setName(name);
                pets.add(cat);
            } else if (playerInput.equals("d")) {
                Dog dog = new Dog();
                dog.setName(name);
                pets.add(dog);
            }
            else {
                System.out.println("Invalid input. Try again.");
            }
        }
        System.out.println(pets.size());
        for (int i=0;i<pets.size();i++)
        {
            System.out.println((pets.get(i) instanceof Dog ? "Dog" : "Cat") + " | " +
pets.get(i).getName());
        }
    }
}

```

Output:

```
Run  Q2_Main x
Enter Type (c,d,STOP) :
Jam
Enter Type (c,d,STOP) :
c
Enter Name :
kitty
Enter Type (c,d,STOP) :
c
Enter Name :
purr
Enter Type (c,d,STOP) :
STOP
4
Cat | Hello
Dog | Jam
Cat | kitty
Cat | purr
```

Q3

Code:

```
package Q3;
import Teacher.Pet;

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

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

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

public class Q3_Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        ArrayList<Pet> pets = new ArrayList<>();
        String playerInput = "";
        while (true)
        {
            System.out.println("Enter Type (c,d,STOP) : ");
            playerInput = scanner.nextLine();

            if(playerInput.equals("STOP"))
                break;

            System.out.println("Enter Name : ");
            String name = scanner.nextLine();
            if(playerInput.equals("c"))
            {
```

```

        Cat cat = new Cat();
        cat.setName(name);
        pets.add(cat);
    } else if (playerInput.equals("d")) {
        Dog dog = new Dog();
        dog.setName(name);
        pets.add(dog);
    }
    else {
        System.out.println("Invalid input. Try again.");
    }
}
System.out.println(pets.size());
for (int i=0;i<pets.size();i++)
{
    if (pets.get(i) instanceof Dog) continue;
    System.out.println((pets.get(i) instanceof Dog ? "Dog" : "Cat") + " | " +
pets.get(i).getName());
}
for (int i=0;i<pets.size();i++)
{
    if (pets.get(i) instanceof Cat) continue;
    System.out.println((pets.get(i) instanceof Dog ? "Dog" : "Cat") + " | " +
pets.get(i).getName());
}
}
}

```

Output:

```
Run Q3_Main x
Enter Name :
ddd
Enter Type (c,d,STOP) :
STOP
4
Cat | kitty
Cat | ddd
Dog | bark
Dog | james

Process finished with exit code 0
```

Q4

Code:

```
package Q4;
import Teacher.Pet;

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

class Dog extends Pet{
    float weight;
```

```

    public void setWeight(float weight)
    {
        this.weight = weight;
    }

    public float getWeight()
    {
        return this.weight;
    }

    public String speak( ) {
        return "";
    }
}

class Cat extends Pet{

    String coatColor;

    public void setCoatColor(String coatColor)
    {
        this.coatColor = coatColor;
    }

    public String getCoatColor()
    {
        return this.coatColor;
    }

    public String speak( ) {
        return "";
    }
}

public class Q4_Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        ArrayList<Pet> pets = new ArrayList<>();
        String playerInput = "";
        while (true)
        {
            System.out.println("Enter Type (c,d,STOP) : ");
            playerInput = scanner.nextLine();

```

```
        if(playerInput.equals("STOP"))
            break;

        System.out.println("Enter Name : ");
        String name = scanner.nextLine();
        if(playerInput.equals("c"))
        {
            Cat cat = new Cat();
            cat.setName(name);
            System.out.println("Enter Coat Color : ");
            cat.setCoatColor(scanner.nextLine());
            pets.add(cat);
        } else if (playerInput.equals("d")) {
            Dog dog = new Dog();
            dog.setName(name);
            System.out.println("Enter Weight : ");
            dog.setWeight(scanner.nextFloat());
            scanner.nextLine();
            pets.add(dog);
        }
        else {
            System.out.println("Invalid input. Try again.");
        }
    }

    for (int i=0;i<pets.size();i++)
    {
        if (pets.get(i) instanceof Dog) continue;
        Cat cat = (Cat) pets.get(i);
        System.out.println("Cat | " + pets.get(i).getName() + " | " + cat.getCoatColor());
    }

    for (int i=0;i<pets.size();i++)
    {
        if ( pets.get(i) instanceof Cat) continue;
        Dog dog = (Dog)pets.get(i);
        System.out.println("Dog | " + pets.get(i).getName() + " | " + dog.getWeight());
    }
}
}
```


Output:

```
Run Q4_Main x
Enter Type (c,d,STOP) :
c
Enter Name :
kitty
Enter Coat Color :
white
Enter Type (c,d,STOP) :
STOP
Cat | yhiv | red
Cat | kitty | white
Dog | hero | 23.5
Dog | jack | 65.0
```

Q5

Code:

```
package Q5;

import Teacher.Pet;

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

class Dog extends Pet
{
    float Weight;

    public void setWeight(float Weight)
    {
        this.Weight = Weight;
    }

    public float getWeight()
    {
        return this.Weight;
    }

    public String speak()
    {
        return "";
    }
}

class Cat extends Pet
{
    String CoatColor;
```

```
    public void setCoatColor(String CoatColor)
    {
        this.CoatColor = CoatColor;
    }

    public String getCoatColor()
    {
        return this.CoatColor;
    }

    public String speak()
    {
        return "";
    }
}

public class Q5_Main
{
    public static void main(String[] Args)
    {
        Scanner ScannerObj = new Scanner(System.in);
        ArrayList<Pet> Pets = new ArrayList<>();
        String PlayerInput = "";

        while (true)
        {
            System.out.println("Enter Type (c,d,STOP) : ");
            PlayerInput = ScannerObj.nextLine();

            if (PlayerInput.equals("STOP"))
            {
                break;
            }

            System.out.println("Enter Name : ");
            String Name = ScannerObj.nextLine();

            if (PlayerInput.equals("c"))
            {
                Cat CatObj = new Cat();
                CatObj.setName(Name);

                System.out.println("Enter Coat Color : ");
```

```
CatObj.setCoatColor(ScannerObj.nextLine());

    Pets.add(CatObj);
}
else if (PlayerInput.equals("d"))
{
    Dog DogObj = new Dog();
    DogObj.setName(Name);

    System.out.println("Enter Weight : ");
    DogObj.setWeight(ScannerObj.nextFloat());
    ScannerObj.nextLine(); // Consume newline

    Pets.add(DogObj);
}
else
{
    System.out.println("Invalid input. Try again.");
}
}

System.out.println("Total Pets: " + Pets.size());

for (int I = 0; I < Pets.size(); I++)
{
    if (Pets.get(I) instanceof Dog)
    {
        Dog DogObj = (Dog) Pets.get(I);
        System.out.println("Dog | " + DogObj.getName() + " | " + DogObj.getWeight());
    }
}

for (int I = 0; I < Pets.size(); I++)
{
    if (Pets.get(I) instanceof Cat)
    {
        Cat CatObj = (Cat) Pets.get(I);
        System.out.println("Cat | " + CatObj.getName() + " | " + CatObj.getCoatColor());
    }
}

ArrayList<Dog> DogList = new ArrayList<>();

for (int I = 0; I < Pets.size(); I++)
```

```
{
    if (Pets.get(l) instanceof Dog)
    {
        DogList.add((Dog) Pets.get(l));
    }
}

if (!DogList.isEmpty())
{
    float TotalWeight = 0;
    float MinWeight = DogList.get(0).getWeight();
    float MaxWeight = DogList.get(0).getWeight();

    for (int l = 0; l < DogList.size(); l++)
    {
        float Weight = DogList.get(l).getWeight();
        TotalWeight += Weight;

        if (Weight < MinWeight)
        {
            MinWeight = Weight;
        }

        if (Weight > MaxWeight)
        {
            MaxWeight = Weight;
        }
    }

    float AverageWeight = TotalWeight / DogList.size();

    System.out.println("\nDog Weight Stats:");
    System.out.println("Average: " + AverageWeight);
    System.out.println("Minimum: " + MinWeight);
    System.out.println("Maximum: " + MaxWeight);
}
else
{
    System.out.println("\nNo Dogs Found.");
}
}
```

Output:



```
Project ▾ Q1_Main.java
Run Q5_Main x
KITTY
Enter Coat Color :
red
Enter Type (c,d,STOP) :
STOP
Total Pets: 5
Dog | jake | 23.6
Dog | rufus | 56.0
Dog | kade | 22.0
Dog | nice | 89.0
Cat | kitty | red

Dog Weight Stats:
Average: 47.65
Minimum: 22.0
Maximum: 89.0
```

Q6

Code:

```
package Q6;

import Teacher.Pet;

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

class Dog extends Pet
{
    float Weight;

    public void setWeight(float Weight)
    {
        this.Weight = Weight;
    }

    public float getWeight()
    {
        return this.Weight;
    }

    public String speak()
    {
        return "";
    }
}

class Cat extends Pet
{
    String CoatColor;

    public void setCoatColor(String CoatColor)
    {
        this.CoatColor = CoatColor;
    }

    public String getCoatColor()
    {
        return this.CoatColor;
    }

    public String speak()
```

```
{
    return "";
}
}

public class Q6_Main
{
    public static void main(String[] Args)
    {
        Scanner ScannerObj = new Scanner(System.in);
        ArrayList<Pet> Pets = new ArrayList<>();
        ArrayList<Dog> DogList = new ArrayList<>();
        ArrayList<Cat> CatList = new ArrayList<>();

        while (true)
        {
            System.out.println("Enter Type (c,d,STOP) : ");
            String PlayerInput = ScannerObj.nextLine();

            if (PlayerInput.equals("STOP"))
            {
                break;
            }

            System.out.println("Enter Name : ");
            String Name = ScannerObj.nextLine();

            if (PlayerInput.equals("c"))
            {
                Cat CatObj = new Cat();
                CatObj.setName(Name);
                System.out.println("Enter Coat Color : ");
                CatObj.setCoatColor(ScannerObj.nextLine());

                Pets.add(CatObj);
                CatList.add(CatObj);
            }
            else if (PlayerInput.equals("d"))
            {
                Dog DogObj = new Dog();
                DogObj.setName(Name);
                System.out.println("Enter Weight : ");
                DogObj.setWeight(ScannerObj.nextFloat());
                ScannerObj.nextLine();
            }
        }
    }
}
```



```

        Pets.add(DogObj);
        DogList.add(DogObj);
    }
}

while (true)
{
    System.out.println("\nMenu:");
    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 Choice: ");
    int Choice = ScannerObj.nextInt();
    ScannerObj.nextLine();

    if (Choice == 0)
    {
        break;
    }
    else if (Choice == 1)
    {
        System.out.println("Enter Name : ");
        String Name = ScannerObj.nextLine();
        System.out.println("Enter Coat Color : ");
        String CoatColor = ScannerObj.nextLine();

        Cat CatObj = new Cat();
        CatObj.setName(Name);
        CatObj.setCoatColor(CoatColor);

        Pets.add(CatObj);
        CatList.add(CatObj);
    }
    else if (Choice == 2)
    {
        System.out.println("Enter Name : ");
        String Name = ScannerObj.nextLine();
        System.out.println("Enter Weight : ");
        float Weight = ScannerObj.nextFloat();
        ScannerObj.nextLine();
    }
}

```

```
Dog DogObj = new Dog();
DogObj.setName(Name);
DogObj.setWeight(Weight);

Pets.add(DogObj);
DogList.add(DogObj);
}
else if (Choice == 3)
{
    System.out.println("Enter Name to Remove: ");
    String Name = ScannerObj.nextLine();
    Cat ToRemove = null;

    for (int I = 0; I < CatList.size(); I++)
    {
        if (CatList.get(I).getName().equals(Name))
        {
            ToRemove = CatList.get(I);
            break;
        }
    }

    if (ToRemove != null)
    {
        CatList.remove(ToRemove);
        Pets.remove(ToRemove);
        System.out.println("Cat Removed.");
    }
    else
    {
        System.out.println("Cat Not Found.");
    }
}
else if (Choice == 4)
{
    System.out.println("Enter Name to Remove: ");
    String Name = ScannerObj.nextLine();
    Dog ToRemove = null;

    for (int I = 0; I < DogList.size(); I++)
    {
        if (DogList.get(I).getName().equals(Name))
        {
            ToRemove = DogList.get(I);
```

```

        break;
    }
}

if (ToRemove != null)
{
    DogList.remove(ToRemove);
    Pets.remove(ToRemove);
    System.out.println("Dog Removed.");
}
else
{
    System.out.println("Dog Not Found.");
}
}
}

System.out.println("Final Pets List:");
for (int I = 0; I < Pets.size(); I++)
{
    Pet PetObj = Pets.get(I);
    if (PetObj instanceof Dog)
    {
        Dog DogObj = (Dog) PetObj;
        System.out.println("Dog | " + DogObj.getName() + " | " + DogObj.getWeight());
    }
    else if (PetObj instanceof Cat)
    {
        Cat CatObj = (Cat) PetObj;
        System.out.println("Cat | " + CatObj.getName() + " | " + CatObj.getCoatColor());
    }
}
}
}

```

Output:

```
Run Q6_Main x
Enter Name :
runner
Enter Coat Color :
rainbow
Enter Type (c,d,STOP) :
STOP

Menu:
1. Add Cat
2. Add Dog
3. Remove Cat
4. Remove Dog
0. Quit
Enter Choice: 3
Enter Name to Remove:
rufus
Cat Removed.

Menu:
```