

```
package oopcode;
```

```
import java.util.Scanner;
```

```
class BubbleSort {  
    public void bubbleSort (int[] numbers) {  
        for (int i = 0; i < numbers.length - 1; i++)  
        {  
            for (int j = 0; j < numbers.length - i - 1; j++)  
            {  
                if (numbers[j] > numbers[j + 1])  
                {  
                    int temp = numbers[j];  
                    numbers[j] = numbers[j + 1];  
                    numbers[j + 1] = temp;  
                }  
            }  
        }  
    }  
}
```

```
public class Main {  
    public static void main(String[] args) {  
        Scanner src = new Scanner(System.in);  
        BubbleSort sort = new BubbleSort();  
  
        int[] numbers = new int[10];  
        System.out.println("Enter 10 numbers:");  
  
        for (int i = 0; i < 10; i++)  
        {  
            System.out.print("Enter number #" + (i + 1) + ": ");  
            numbers[i] = src.nextInt();  
        }  
  
        System.out.println("\nThese are the random items you entered: ");  
        for(int i = 0; i < numbers.length; i++)  
        {  
            System.out.print(numbers[i] + ((i < numbers.length - 1) ? ", " : " \n"));  
        }  
  
        sort.bubbleSort(numbers);  
  
        System.out.println("\nThese are the following items sorted: ");  
    }  
}
```

```

        for(int i = 0; i < numbers.length; i++)
        {
            System.out.print(numbers[i] + ((i < numbers.length - 1) ? ", " : " \n"));
        }
    }
}

```

```

class SelectSort {
    public void selectSort (int[] numbers) {
        for (int i = 0; i < numbers.length - 1; i++) {
            int minIndex = i;
            for (int j = i + 1; j < numbers.length; j++) {
                if (numbers[j] < numbers[minIndex]) {
                    minIndex = j;
                }
            }
            int temp = numbers[i];
            numbers[i] = numbers[minIndex];
            numbers[minIndex] = temp;
        }
    }
}

```

```

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

        int[] numbers = new int[10];
        System.out.println("Enter 10 numbers:");

        for (int i = 0; i < 10; i++)
        {
            System.out.print("Enter number #" + (i + 1) + ": ");
            numbers[i] = src.nextInt();
        }

        System.out.println("\nThese are the random items you entered: ");
        for(int i = 0; i < numbers.length; i++)
        {
            System.out.print(numbers[i] + ((i < numbers.length - 1) ? ", " : " \n"));
        }

        sort.selectSort(numbers);
    }
}

```

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        System.out.println("\nThese are the following items sorted: ");
        for(int i = 0; i < numbers.length; i++)
        {
            System.out.print(numbers[i] + ((i < numbers.length - 1) ? ", " : " \n"));
        }
    }
}

```

```

class InsertSort {
    public void insertSort (int[] numbers) {
        for (int i = 1; i < numbers.length; i++)
        {
            int key = numbers[i];
            int j = i - 1;
            while (j >= 0 && numbers[j] > key) {
                numbers[j + 1] = numbers[j];
                j = j - 1;
            }
            numbers[j + 1] = key;
        }
    }
}

```

```

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

        int[] numbers = new int[10];
        System.out.println("Enter 10 numbers:");

        for (int i = 0; i < 10; i++)
        {
            System.out.print("Enter number #" + (i + 1) + ": ");
            numbers[i] = src.nextInt();
        }

        System.out.println("\nThese are the random items you entered: ");
        for(int i = 0; i < numbers.length; i++)
        {
            System.out.print(numbers[i] + ((i < numbers.length - 1) ? ", " : " \n"));
        }
    }
}

```

```

        sort.insertSort(numbers);

        System.out.println("\nThese are the following items sorted: ");
        for(int i = 0; i < numbers.length; i++)
        {
            System.out.print(numbers[i] + ((i < numbers.length - 1) ? ", " : " \n"));
        }
    }
}

```

```

class Person {
    private String lastName;
    private String firstName;
    private int age;

    public Person (String lastName, String firstName, int age) {
        this.lastName = lastName;
        this.firstName = firstName;
        this.age = age;
    }

    public void displayPerson() {
        System.out.println(lastName + ", " + firstName + ", " + age);
    }

    public String getLastName() {
        return lastName;
    }

    public String getFirstName() {
        return firstName;
    }
}

```

```

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

        System.out.println("Please enter 10 random items: ");
        Person[] person = new Person[10];

        for(int i = 0; i < 10; i++)
        {

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```

        String iExtention = i == 0 ? "st" : (i == 1 ? "nd" : (i == 2 ? "rd" : "th"));
        System.out.print("Enter information of " + (i + 1) + iExtention + " person : \nLast
Name: ");
        String lastName = src.next();
        System.out.print("First Name: ");
        String firstName = src.next();
        System.out.print("Age: ");
        int age = src.nextInt();
        person[i] = new Person(lastName, firstName, age);
    }

    System.out.println("\nThese are the inputted items: ");
    for (Person person1 : person)
    {
        person1.displayPerson();
    }

    Person[] sorted = objectSort(person);

    System.out.println("\nThese are the items sorted: ");
    for (Person persons : sorted)
    {
        persons.displayPerson();
    }
}

public static Person[] objectSort(Person[] arr) {
    int n = arr.length;
    for (int i = 1; i < n; i++) {
        Person key = arr[i];
        int j = i - 1;

        while (j >= 0 && (arr[j].getLastName().compareTo(key.getLastName()) > 0 ||
            (arr[j].getLastName().equals(key.getLastName()) &&
            arr[j].getFirstName().compareTo(key.getFirstName()) > 0))) {
            arr[j + 1] = arr[j];
            j = j - 1;
        }

        arr[j + 1] = key;
    }
    return arr;
}

```

}
}