

C307 Data Representation

Unit-2, Part B_4 **Array of Objects**

By:



Dr. Hossein Hakimzadeh
Computer Science and Informatics
IU South Bend

Creating an Array Objects

- Our goal is to create a class called **Person**.



- Then create a second class called **Group**.
(an array of Persons)



- Finally, create a 3rd class that **instantiates an object of type Group, and manipulates the people in the group.**

```

// Create two classes (person, and group), then a 3rd class
// to use the above classes.
//
package arrayofobjects;

class Person {
    private String lastName;
    private String firstName;
    private int age;
//-----
    public Person(String last, String first, int a) {           // constructor
        lastName = last;
        firstName = first;
        age = a;
    }
//-----
    public void displayPerson() {
        System.out.println("Name: " + lastName + ", " + firstName + ", Age: " + age);
    }
//-----
    public String getLast() // get last name
    {
        return lastName;
    }
} // end class Person

```

```

class Group {
    private Person[] aGroup;           // reference to array
    private int nElems;                // number of data items

    public Group(int max) // constructor
    {
        aGroup = new Person[max];      // create the array
        nElems = 0;                    // no items yet
    }
    //-----

    public Person find(String searchName) // find specified value
    {
        int j;
        for (j = 0; j < nElems; j++) // for each element,
        {
            if (aGroup[j].getLast().equals(searchName)) // found item?
            {
                break;                // exit loop before end
            }
        }
        if (j == nElems) // gone to end?
        {
            return null;              // yes, can't find it
        } else {
            return aGroup[j];         // no, found it
        }
    } // end find()
}

```

```

//-----
// put person into array

    public void insert(String last, String first, int age) {
        aGroup[nElems] = new Person(last, first, age);
        nElems++;                // increment size
    }
    //-----

    public boolean delete(String searchName) { // delete person from array
        int j;
        for (j = 0; j < nElems; j++) // look for it
        {
            if (aGroup[j].getLast().equals(searchName)) {
                break;
            }
        }
        if (j == nElems) // can't find it
        {
            System.out.println("***Can't find/delete: " + searchName);
            return false;
        } else // found it
        {
            for (int k = j; k < nElems; k++) // shift down
            {
                aGroup[k] = aGroup[k + 1];
            }
            nElems--;            // decrement size
            return true;
        }
    } // end delete()
    //-----

    public void display() // displays array contents
    {
        for (int j = 0; j < nElems; j++) // for each element,
        {
            aGroup[j].displayPerson(); // display it
        }
    }
    //-----
} // end class

```

```

public class ArrayOfObjects {

    public static void main(String[] args) {

        System.out.println("-----");
        System.out.println("----- Declaring a Group -----");
        int maxSize = 100;          // array size
        Group myGroup;              // reference to array
        myGroup = new Group(maxSize); // create the array

        System.out.println("-----");
        System.out.println("--Inserting members in the Group -----");
        myGroup.insert("Evans", "Patty", 24);
        myGroup.insert("Smith", "Lorraine", 37);
        myGroup.insert("Stimson", "Henry", 29);
        myGroup.insert("Velasquez", "Jose", 72);
        myGroup.insert("Lamarque", "Henry", 54);
        myGroup.insert("Vang", "Minh", 22);
        myGroup.insert("Creswell", "Lucinda", 18);

        System.out.println("-----");
        System.out.println("----- Displaying the Group -----");
        myGroup.display();          // display items

        System.out.println("-----");
        System.out.println("---- Searching for a Group Member ----");

        String searchKey = "Stimson"; // search for item
        Person found;
        found = myGroup.find(searchKey); // Return a person if successful
        if (found != null) {
            System.out.print("Found ");
            found.displayPerson();
        } else {
            System.out.println("Can't find " + searchKey);
        }

        System.out.println("-----");
        System.out.println("----- Deleting a Group Member -----");
        System.out.println("--Deleting Smith, Yee, and Creswell---");
        myGroup.delete("Smith");      // delete 3 items
        myGroup.delete("Yee");
        myGroup.delete("Creswell");

        System.out.println("-----");
        System.out.println("----- Displaying the Group -----");
        myGroup.display();            // display items again
    }
}

```

run:

```

-----
----- Declaring a Group -----
-----
--Inserting members in the Group -----
-----
----- Displaying the Group -----
Name: Evans, Patty, Age: 24
Name: Smith, Lorraine, Age: 37
Name: Stimson, Henry, Age: 29
Name: Velasquez, Jose, Age: 72
Name: Lamarque, Henry, Age: 54
Name: Vang, Minh, Age: 22
Name: Creswell, Lucinda, Age: 18
-----
---- Searching for a Group Member ----
Found Name: Stimson, Henry, Age: 29
-----
----- Deleting a Group Member -----
--Deleting Smith, Yee, and Creswell---
***Can't find/delete: Yee
-----
----- Displaying the Group -----
Name: Evans, Patty, Age: 24
Name: Stimson, Henry, Age: 29
Name: Velasquez, Jose, Age: 72
Name: Lamarque, Henry, Age: 54
Name: Vang, Minh, Age: 22
BUILD SUCCESSFUL (total time: 0 seconds)

```