

C307 Data Representation

Unit-2, Part B_2 Array Simple Manipulations

By:



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Elementary Data Structures

- ☐ Simple Array Manipulation
- ☐ Vs.
- ☐ Array as an abstract data type

Arrays

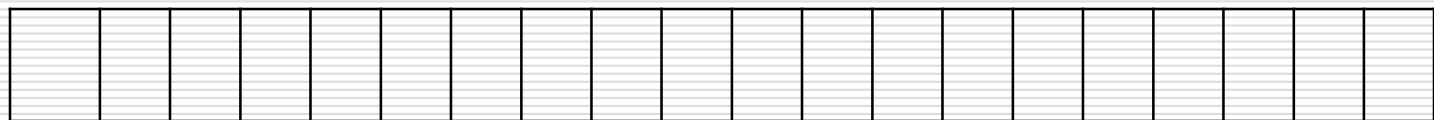
- ❑ A homogeneous aggregate of data elements.
- ❑ A collection of objects of the same type.
- ❑ A collection of similar variables which are identified under the same name.

- ❑ **Creating an Array of 20 integers:**

- `int test_scores = new int[20];`

or

- `int[] test_scores = new int[20];`



0 1 2 3 4 19

Simple manipulation of array

☐ **Directly manipulating the Array:**

- Inserting an item in the array
- Deleting an item from the array
- Searching for an item
- Printing the array elements

```

package array_1_simplemanipulation;

public class Array_1_SimpleManipulation {

    public static void main(String[] args) {
        int[] myArray;           // reference to array
        myArray = new int[100];   // make array
        int nElems = 0;           // number of items

        //-----
        System.out.println("-----");
        System.out.println("--- Manually Initialize Array -----");
        myArray[0] = 77;           // insert 10 items
        myArray[1] = 99;
        myArray[2] = 44;
        myArray[3] = 55;
        myArray[4] = -1;
        myArray[5] = 88;
        myArray[6] = 11;
        myArray[7] = 0;
        myArray[8] = 66;
        myArray[9] = 33;

        nElems = 10;               // now 10 items in array
        //-----
        System.out.println("-----");
        System.out.println("----- Print Array -----");

        int j;                     // loop counter / index
        for (j = 0; j < nElems; j++) // display items
        {
            System.out.print(myArray[j] + " ");
        }
        System.out.println("");

        //-----
        System.out.println("-----");
        System.out.println("----- Search Array for 66 -----");
        int searchKey;             // key of item to search for
        searchKey = 66;            // find item with key 66

        for (j = 0; j < nElems; j++) // for each element,
        {
            if (myArray[j] == searchKey) // found item?
            {
                break;                // yes, exit before end
            }
        }
        if (j == nElems) // at the end?
        {
            System.out.println("Can't find " + searchKey); // yes
        } else {
            System.out.println("Found " + searchKey + " at location " + j);
        }
        //-----
    }
}

```

```

        System.out.println("-----");
        System.out.println("----- Delete 55 -----");
        System.out.println("First find the location of 55 ");

        searchKey = 55;           // delete item with key 55
        for (j = 0; j < nElems; j++) // look for it
        {
            if (myArray[j] == searchKey) {
                break;
            }
        }

        System.out.println("----- Move array element up -----");
        for (int k = j; k < nElems; k++) // move higher ones down
        {
            myArray[k] = myArray[k + 1];
        }
        nElems--;                // decrement size
        //-----
        System.out.println("-----");
        System.out.println("----- Print the array again -----");
        for (j = 0; j < nElems; j++) // display items
        {
            System.out.print(myArray[j] + " ");
        }
        System.out.println("");
    } // end main()
}

```

```

-----
--- Manually Initialize Array ---
-----
----- Print Array -----
77 99 44 55 -1 88 11 0 66 33
-----
----- Search Array for 66 -----
Found 66 at location 8
-----
----- Delete 55 -----
First find the location of 55
----- Move array element up -----
-----
----- Print the array again -----
77 99 44 -1 88 11 0 66 33
BUILD SUCCESSFUL (total time: 0 seconds)

```