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CS 340

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2/13/22

Arrays:

B) contains a group of elements that are usually the same data type. Ex: integer or string

Arrays are typically used to organize data so that it can be easily sorted and searched.

C) We can think of an array as a table like structure that can have multiple dimensions but typical for simpler programs, we use arrays as a 1d object almost like a list but not really.

|  |
| --- |
| 0 |
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |

This would be an example of a single array with 8 spaces to hold data with the first index of the data set being at 0. But the real power that comes with arrays is the power of adding multiple dismissions to the array to store data in a memory like fashion.

|  |  |
| --- | --- |
| 0 | 0 |
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |

This is an example of 2-dimensional array as you can see it is starting to look more like a table than anything but each side is its own little array that both work in conjunction together both starting at an index of 0.

D) there are 3 data structure that you need to use an array

1) Search: find something in the array

2) Insertion: put something in the array anywhere in the array

3) Deletion: remove anything from the array

E) Example of an Array:

// array.java

//this is an example of an array in Java

Class ArrayEx

{

Public static void main(String[] args)

{

long[] arr; //reference the array

arr = new long[100]; //create the array

int el = 0; // number of items

int I; //this is the counter for the loop

long key; //key of items to search for

arr[0] = 77;

arr[1] = 99;

arr[2] = 33;

arr[4] = 20;

el = 5; // there are 5 items in the array

for( i=0; i<el; i++) {

//the loop to show the entire array

System.out.println(arr[i] = “ “);

}

key = 20; //find item in array with the key of 20

for(i=0; i<el; i++) { //for each element in the array

if(arr[i] == key) { //is it the key?

Break; } //yes exit before end

If( I == el) {

System.out.println(“Can’t find “ + key);

} else {

Sytem.out.println(“Fond “ + key); }

}

key = 77;

for(I=0; I<el; I++){  
if(arr[i] == key){

break;

}

for(int j = I; j<el-1; j++){

arr[j] = arr[j+1];

el--;

}

}

for(i=0; i<el; i++)

{

System.out.println(arr[i] + “ “)

}

}