

CNAS 12A 4-27-10

11

overloading of method names:

Ex. Overload.java

Arrays and Containers: Chap 5.

- an array is a contiguous set of memory locations, all storing the same data type.

Ex.
address

Array Name

Array Indices

Array
Contents
or
Array
Elements

address	list	
100	5	0
104	73	1
108	-12	2
.	0	3
.	5	4
.	3	5
.	9	6
.	13	7
.	-100	8
136	0	9

Contiguous set of int variables

Ex. Given above memory

```
System.out.println(list[2] + " " + list[5]);
```

// output : -12 3

To declare such an array :

```
int[] list;
```

To declare and allocate memory :

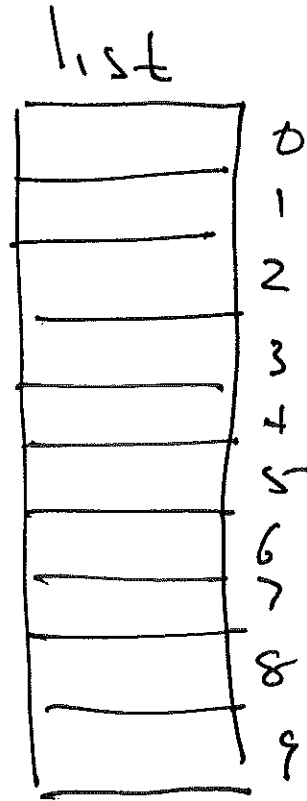
```
int[] list = new int[10];
```

NOTE : Valid array indices range from 0 to (length - 1)

so

```
int[] list = new int[10];
```

creates:



to fill this array do

```
list[0] = 5;
```

```
list[1] = 73;
```

⋮

```
list[9] = 0;
```

we can access length of an array as follows;

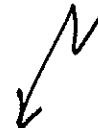
```
int n = list.length;
```

Ex.

```
int n = 10, i;
```

```
int[] list = new int[n];
```

Any int expression



```
for(i=0; i<n; i++)
```

```
list[i] = 3 * i;
```

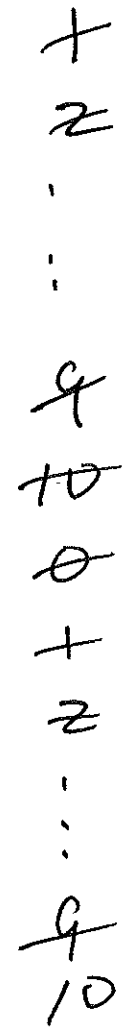
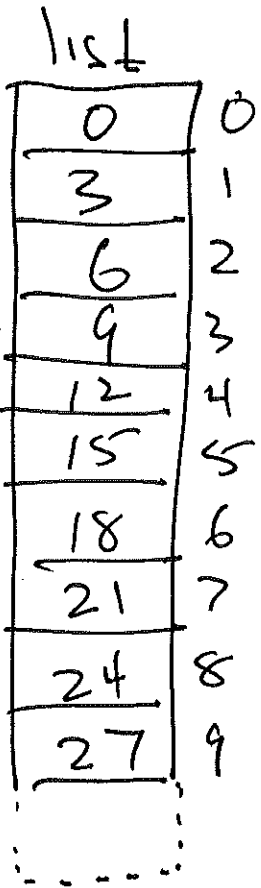
```
for(i=0; i<n; i++)
```

```
System.out.print (list[i] + " ");
```

```
System.out.println();
```

// output : 0 3 6 9 12 27

memory :



Another way to both declare and allocate :

```
int[] list = {0, 3, 6, 9, 12, 15, 18, 21, 24, 27};
```

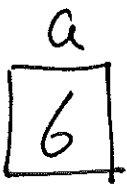
Creates :

list	
0	0
3	1
6	2
9	3
12	4
15	5
18	6
21	7
24	8
27	9

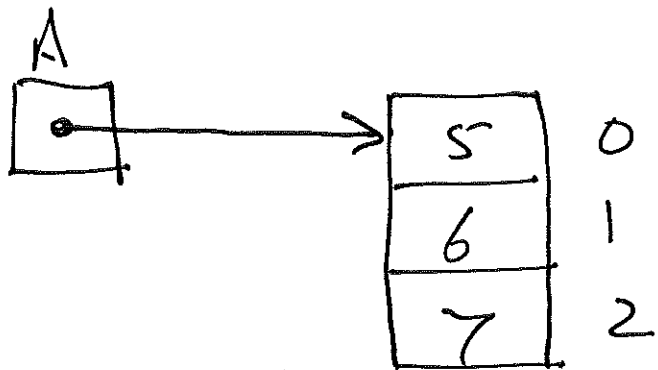
Differences between ordinary
Variables & Array variables

18

int a = 6;

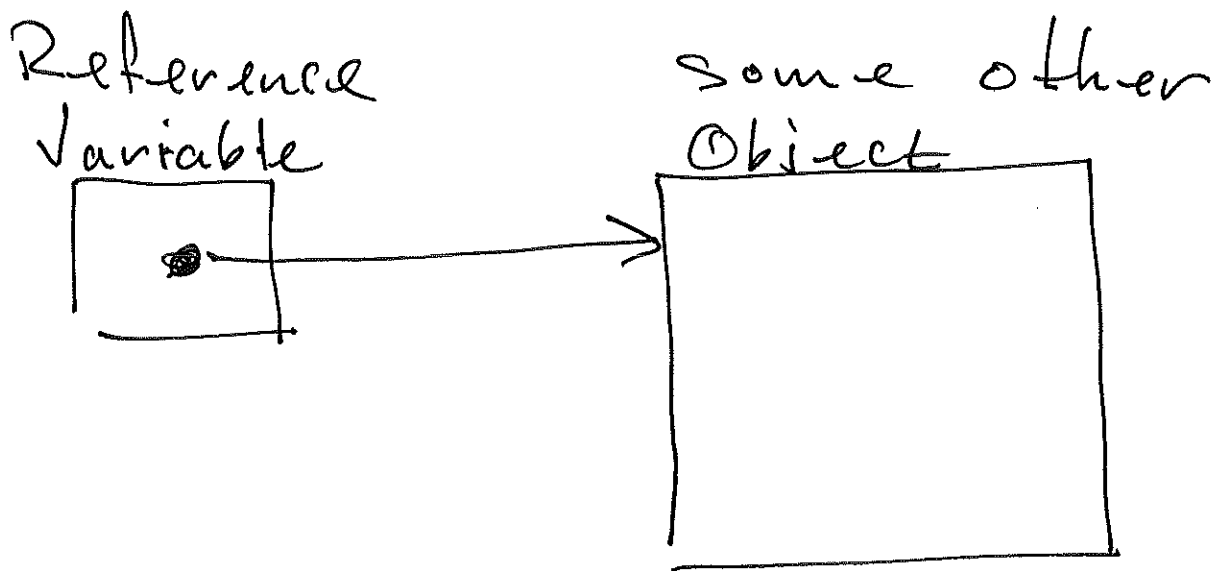


int[] A = {5, 6, 7};



FACT: The name of an array
is itself a variable which
stores the address of the 0th
array element.

In General, any variable which stores the address of some other object is called a Reference variable.



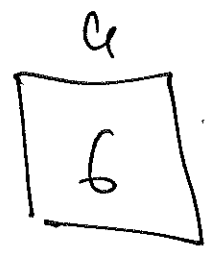
In C/C++ we call these Pointer variables, or Pointers.

Ex.

String word = "happy";



int a = 6;



Recall: two categories of data types in java

(1) Primitive types: 8

byte, char, short, int long { integer }
 float, double { floating point } } numeric
 boolean

(2) Reference types: All others

String, Scanner, (libraries)

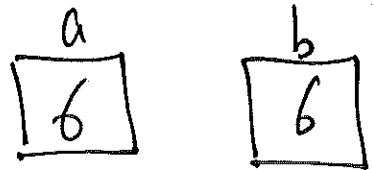
Array types: int[], double[],
String[],

Ex Primitive types :

int a = 6, b;

b = a;

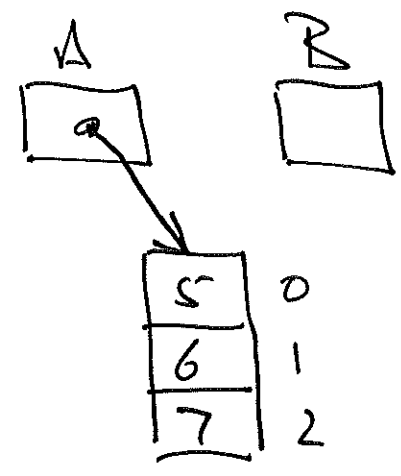
b = 7;



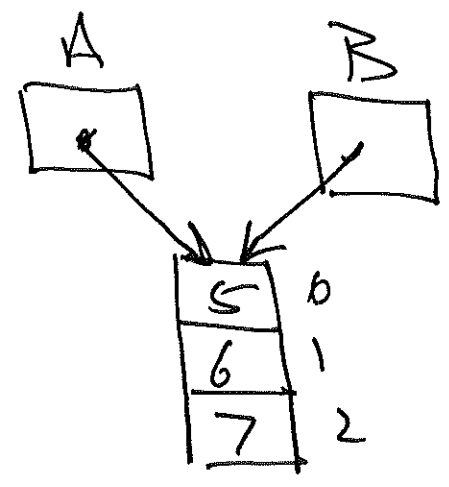
EX. Reference types: Arrays

```
int[] A = {5, 6, 7};
```

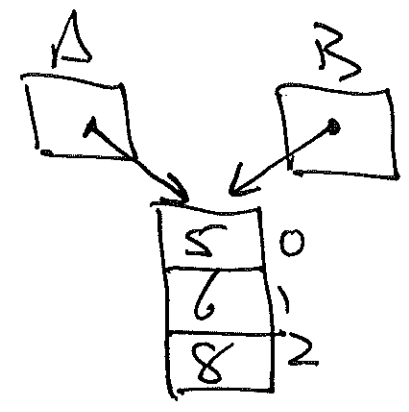
```
int[] B;
```



```
B = A;
```



```
B[2] = 8;
```



Continuing

```
System.out.print("A = ( ");  
for(int i = 0; i < 3; i++)  
    System.out.print(A[i] + " ");  
System.out.println(")");
```

Output:

A = (5 6 8)