

# Introduction to Java - Topic #8

"C# without the tough stuff!"

NO Operator Overloading

NO User Defined Type Conversions

NO explicit pointers

NO "delete"

NO destructors

NO "unsigned"

NO "Pass by Reference" (although we pass references by value)

} Garbage Collection!

# Overview of Similarities C++ & Java

- 1) Built-in data types  
(int, long, float, double, char  
except NO unsigned)
- 2) Way objects are defined:  
int i; ← Same
- 3) Loops: do while, while, for  
(Same)
- 4) Operators: All arithmetic, relational,  
logical, subscript, increment, decrement  
except NO sizeof, explicit pointer ops,  
scope resolution op.
- 5) Comments // and /\* ..... \*/
- 6) compound Blocks { }

# Overview of Differences

- 1) EVERYTHING is in a class
- 2) NO Globals
- 3) NO Separate implementation versus prototype/declarations.
- 4) Methods are implemented INSIDE the class
- 5) NO friends

members are considered "friendly" if they are not preceded with private, protected, public keywords

these are NOT categories

- 6) NO Operator Overloading - Think I/O!
- 7)  $\emptyset$  is NOT FALSE - while(head)  
— NO more —

# Data Types

## Primitive

int, long, short, etc.

ALLOCATED ON  
The STACK

CANNOT be allocated  
dynamically with new

Functions:

Can ONLY pass  
and return by value

## Reference

class types  
arrays

ALLOCATED FROM  
The HEAP

MUST be allocated  
dynamically with new

(CAN'T be allocated on  
the stack)

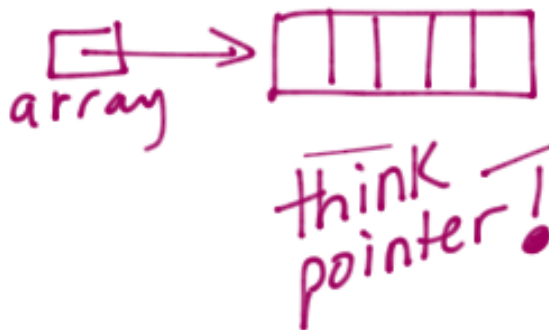
CAN ONLY pass and  
return References  
by Value

# Arrays

C#

int array[5];

int \* array;  
array = new int[5];



Java

can't do this!

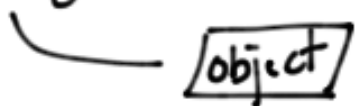
int array[]; NO size  
array = new int[5];

or  
int [] array;  
array = new int[5];



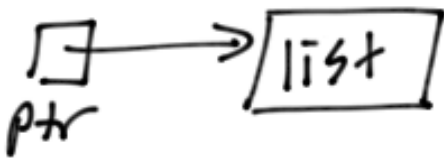
# Class Types

C++

list object;  


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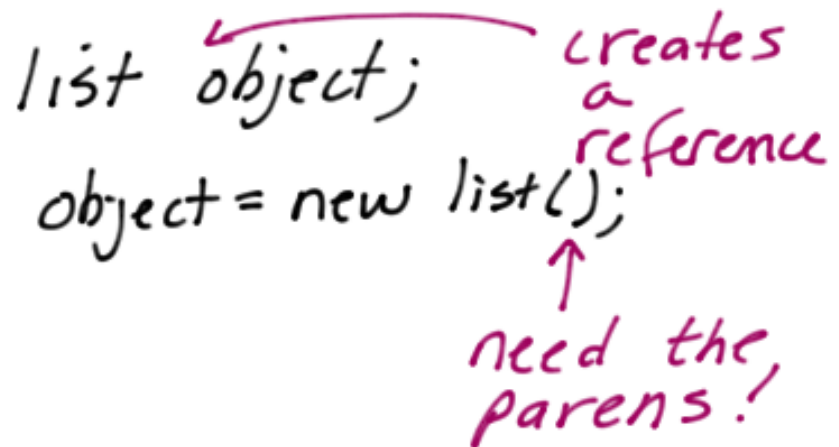
list \* ptr;  
ptr = new list;

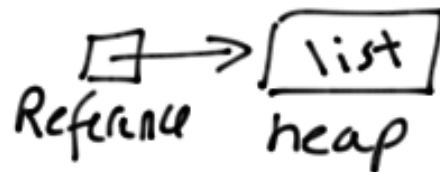


Java

can't do this

---

list object;  
object = new list();  




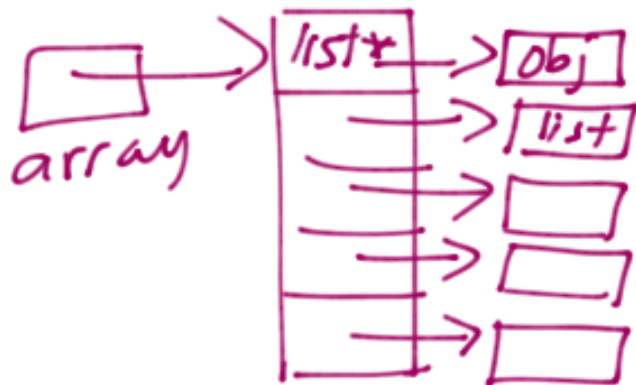


# Array of Class Types

C++

list array [5];

```
list ** array;  
array = new list* [5];  
for (int i = 0; i < 5; ++i)  
{  
    array[i] = new list;  
}
```



Java

can't do this!

list array [5];  
array = new list [5];  
an array of  
references  
NOT objects

```
for (int i = 0; i < 5; ++i)  
{  
    array[i] = new list();  
}
```

new we  
have list  
objects!