Chapter 2: Reference Types

- If its not a primitive, its a reference
- Will always point to the memory storage location, unless null

- ref ++ doesn't work, it would increase memory location.
- only = and logical on reference types other than String

dot operator selects method
double a = object.method();

Button b;   reference
b = new Button();   declaration = null

object Constructor

- Java has automatic garbage collection

Button one = new Button();
Button two = one;   ← Still only 1 Button, with 2 references
     you must clone the object as any
     assignment is by reference only

Object a = new...;
Object b = new...;   ← logical operators are only
a == b → false   true if both references point
a = b }   to the same object
a == b } → true

void Method (Button b) {
   b.setLabel("hello");

Chapter 2:

Strings:
- Can be used with + and +=

  "first" + "second"
- only != 3, == can be used

lazy → "" + 45.3 = "45.3"

direct → Integer.parseInt
Double.parseDouble

```
String e = "";
String other = "hello";
String next = other;
```

Two string objects in memory

Useful String methods
string.length()
string.charAt(int)
string.Substring(int a, int b)
string.contains(char)

Arrays
- must have defined length
- can be dynamically expanded with loop

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

- Can be multidimensional

ArrayList

ArrayList <type> name = new ArrayList<type>();
name.add(type);

String[] args   Command Line args
args[0] = "hello";
args[1] = "world"; java Program hello world

The Enhanced For

for(String s : strings)

Chapter 2   Exception Handling

```
try {

} catch (Exception e) {

} finally {

}
```

try:
  - do this
catch:
  - do this if try fails for Exception
finally:
  - do this no matter what after try or try → catch

Runtime
Common Exceptions:
- Arithmatic Exception
- Number Format
- Index Out Of Bounds
- Negative Array Size
- Null Pointer
- Security
- No Such Element

← Based on Programming error

Checked Exceptions
- java.io. EOF Exception
- File Not Found
- IOException
- Interupted Exception

↑ Should be handled with try or throws

Throw ? . Throws
- don't throw off main function "Bad Practice"

throw new Arithmatic Exception (" Bad math");
  ↑   ↑ create new Exception
throw the exception

Public static void method () throws IOException