DEFAULT VALUES & THE NULL REFERENCE

CS302 – Introduction to Programming
University of Wisconsin – Madison
Lecture 20

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Default Values

- If we do not initialize variables in the constructor, the object's instance variables are set to default values:
  - Numbers are set to zero
  - Boolean variables are set to false
  - Reference variables are set to **null**

Default Values

```
class Car
{
        // Instance variables
        private String make;
        private String model;
        private int mileage;
}
```

By default, make and model are set to **null**. The mileage variable is set to 0.

null

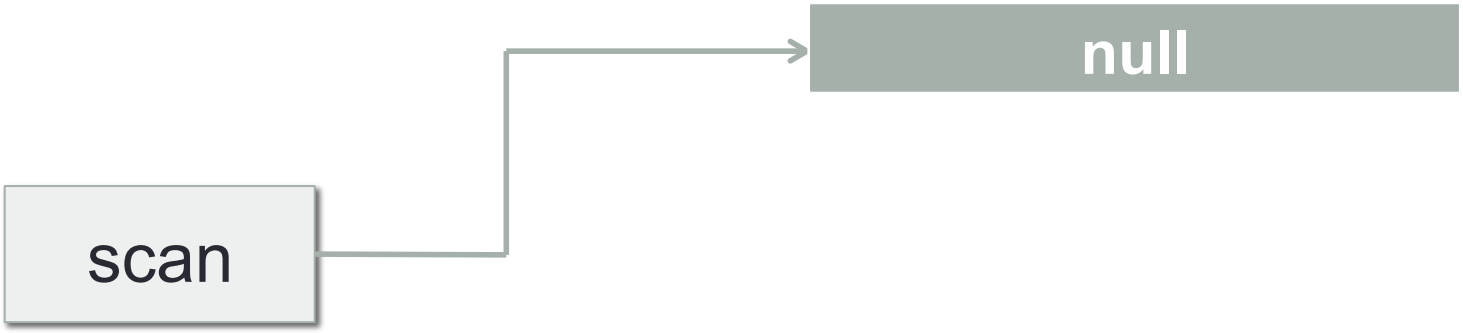
- **null** is reserved word in Java that corresponds to the value of a reference variable that is not assigned to an object
- Example:

```
// This variable holds the null value because
// it is not referencing an object
Scanner scan;
```

scan is null

Memory Diagram

Scanner scan;



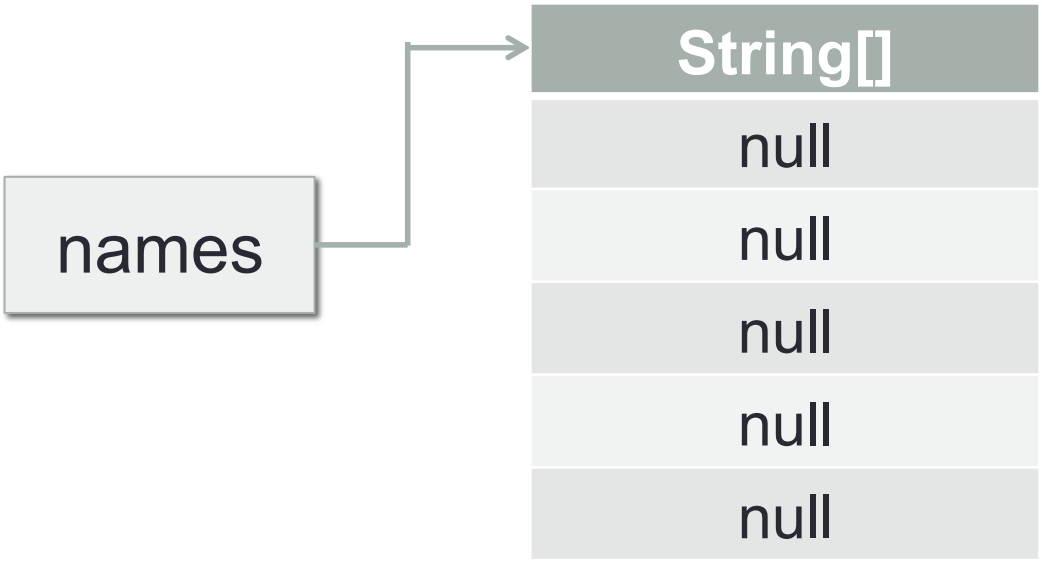
null examples

- When we create an array of objects, such as Strings, each element in the array is set to the null value by default

```
// All 5 Strings are equal to null
String[] names = new String[5];
```

Empty Array of Strings

```
String[] names = new String[5];
```



Null Pointer Exception

- Trying to access a public member (either accessing a public instance variable or calling a public class) of an reference variable whose value is null will result in a runtime error called a **Null Pointer Exception**
- The following example will result in a a runtime error:

```
Scanner scan;

// Trying to call a public method on a
// null reference variable
scan.hasNextInt();
```

Cool CS Link of the Day

- What is Quantum Computing?
- http://mashable.com/2013/10/13/google-quantum-computing-video/