Creating Objects

A variable holds either a primitive type or a reference to an object.

A class name can be used as a type to declare an object reference variable.

String title;

No object is created with this declaration.

An object reference variable holds the address of an object.

The object itself must be created separately.

Special Case: Creating String Objects

Because strings are so common, we don’t have to use the new operator to create a String object.

```
title = “Rephactor Java !!!!!”;
```

This is special syntax that works only for strings.

Each string literal (enclosed in double quotes) represents a String object.

Creating Objects

Generally, we use the new operator to create an object.

```
title = new String (“Rephactor Java!!!!!”);
```

This calls the String constructor, which is a special method that sets up the object.

- Creating an object is called instantiation.
- An object is an instance of a particular class.

The import Declaration

When you want to use a class from a package, you could use its fully qualified name.

```
import java.util.Scanner;
```

Or you can import the class, and then use just the class name.

```
import java.util.Scanner;
```

To import all classes in a particular package, you can use the * wildcard character.

```
import java.util.*;
```
The import Declaration

All classes of the `java.lang` package are imported automatically into all programs.

It's as if all programs contain the following line:

```
import java.lang.*;
```

That's why we didn't have to import the `System` or `String` classes explicitly in earlier programs.

The `Scanner` class, on the other hand, is part of the `java.util` package, and therefore must be imported.

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The Math Class

The Math class is part of the `java.lang` package.

The Math class contains methods that perform various mathematical functions.

These include:
- absolute value
- square root
- exponentiation
- trigonometric functions

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The Random Class

The Random class is part of the `java.util` package.

It provides methods that generate pseudorandom numbers.

A Random object performs complicated calculations based on a seed value to produce a stream of seemingly random values.

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The Math Class

The methods of the Math class are static methods (also called class methods).

Static methods can be invoked through the class name – no object of the Math class is needed.

```
value = Math.cos(90) + Math.sqrt(delta);
```