Learning Goals

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This chapter will help you to understand,

- About Wrapper Classes?
- Types of Wrapper Classes?
- Usage of Wrapper API's?

Wrappers Classes

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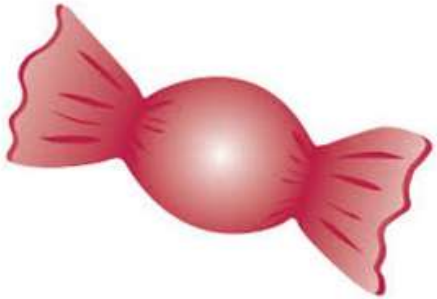
Wrapper Classes are an object representation of primitive data types



Primitive data types (the actual chocolate) are wrapped or converted into objects using wrapper classes

Primitive data types → changed to → Wrapper Objects

- Primitive data type are not objects. Whenever the data is needed as an object, wrapper classes can be used to convert the primitive data into an object.
- Wrapper classes has many methods for processing/transforming the primitive data types.

  Example: Assume you have a number 100.2345 and you need to round it to 100.23. Wrappers provide API's to perform this easily.

Wrapper Classes

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- Each primitive data type has their own corresponding wrapper class.
- The name of the wrapper object is same as the primitive data type except that the first letter is capitalized.
- Eight wrapper classes exist in **java.lang** package that represent 8 primitive data types.

Example: Wrapper class of

- Primitive data type float is Float
- Primitive data type long is Long

Primitive Wrapper Mapping

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Primitive Data Type	Wrapper Class
boolean	Boolean
byte	Byte
short	Short
int	Integer
long	Long
float	Float
double	Double
char	Character

Hierarchy of Wrapper classes

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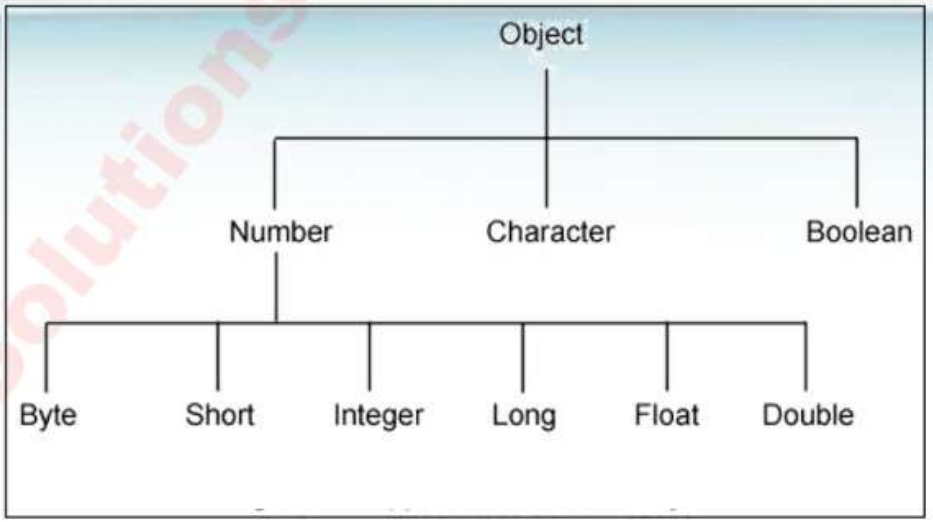

- Super class of Boolean and Character is Object
- Super class of all Numeric wrapper classes is Number
- Number has six concrete subclasses that hold explicit values of each numeric type Double, Float, Byte, Short, Integer, and Long.

Convert Primitives to Wrappers

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Some more examples on other primitive to wrapper conversion is illustrated below.

Float salary = new Float(“5.0f”);

Other illustration

- Boolean boolean1= new Boolean("false");
- Byte byte1= new Byte("2");
- Short short1= new Short("4");
- Integer int1 = new Integer("16");
- Long long1 = new Long("123");
- Float float1 = new Float("12.34f");
- Double double1 = new Double("12.56d");
- Character char1 = new Character('c');

Convert int to String

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String to int:

int number = Integer.parseInt("15000");

Converts the String "15000" into an int data type with value as 15000.

Int to string:

String number = Integer.toString(200);

The above statement converts the int 200 into an String data type with value as 100.

NOTE: String object can be converted to any primitive using the corresponding Wrapper Classes

Integer Wrapper

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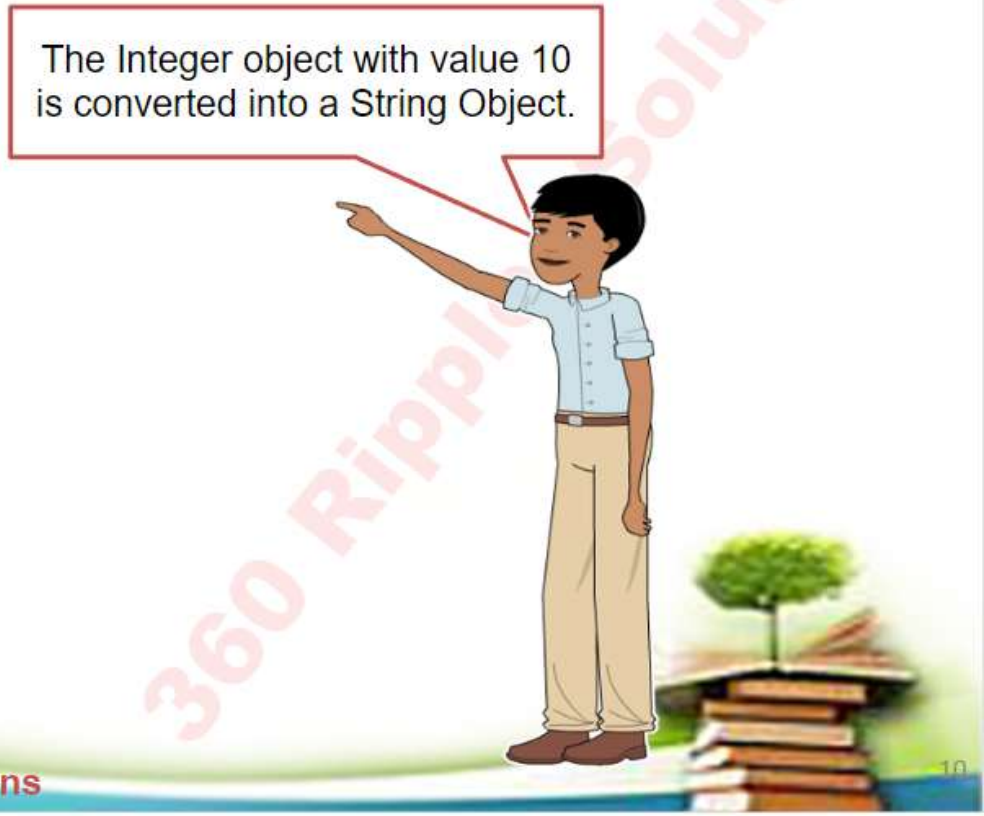
- The Integer class wraps a value of the primitive type int into an object.
- This class also provides several API's for converting int to String and vice versa, as well as other useful methods for processing int value.

Illustration 1: To extract the primitive int value of the Integer object

```
Integer number= new Integer(10);
int intValue = number.intValue();
```

Illustration 2: To get the value of the Integer as a String.

```
Integer number= new Integer(10);
String stringValue = number.toString();
```



1. Create a java class *"IntegerExample"* inside the package com.wrapper.demo.
2. Create a main method and create two Integer Objects"num1" and "num2" with values 1234 and 4321. Implement the following logic,

Problem # 1: Convert num1 as int and num2 as long values and print the values as below.

Output: "The primitive value of the Integer= "<int value> & "The primitive long value of the Integer= "<long value>

Problem # 2: Compares both the Integer variables num1 and num2 using an API and print the bigger value.

Output: " The<value> is bigger than <value>"

Problem # 3: Retrieves and prints the Maximum and minimum value that an int can have.

Output: "Maximum Integer value="<Max Value> "Minimum Integer value="<Min Value>

Problem # 4: Converts a String value of String s = "4321" to an int value and add 200 to it and print it.

Output: The string should be converted into a int incremented to 200 and display it.