Java for Beginners

Level 2

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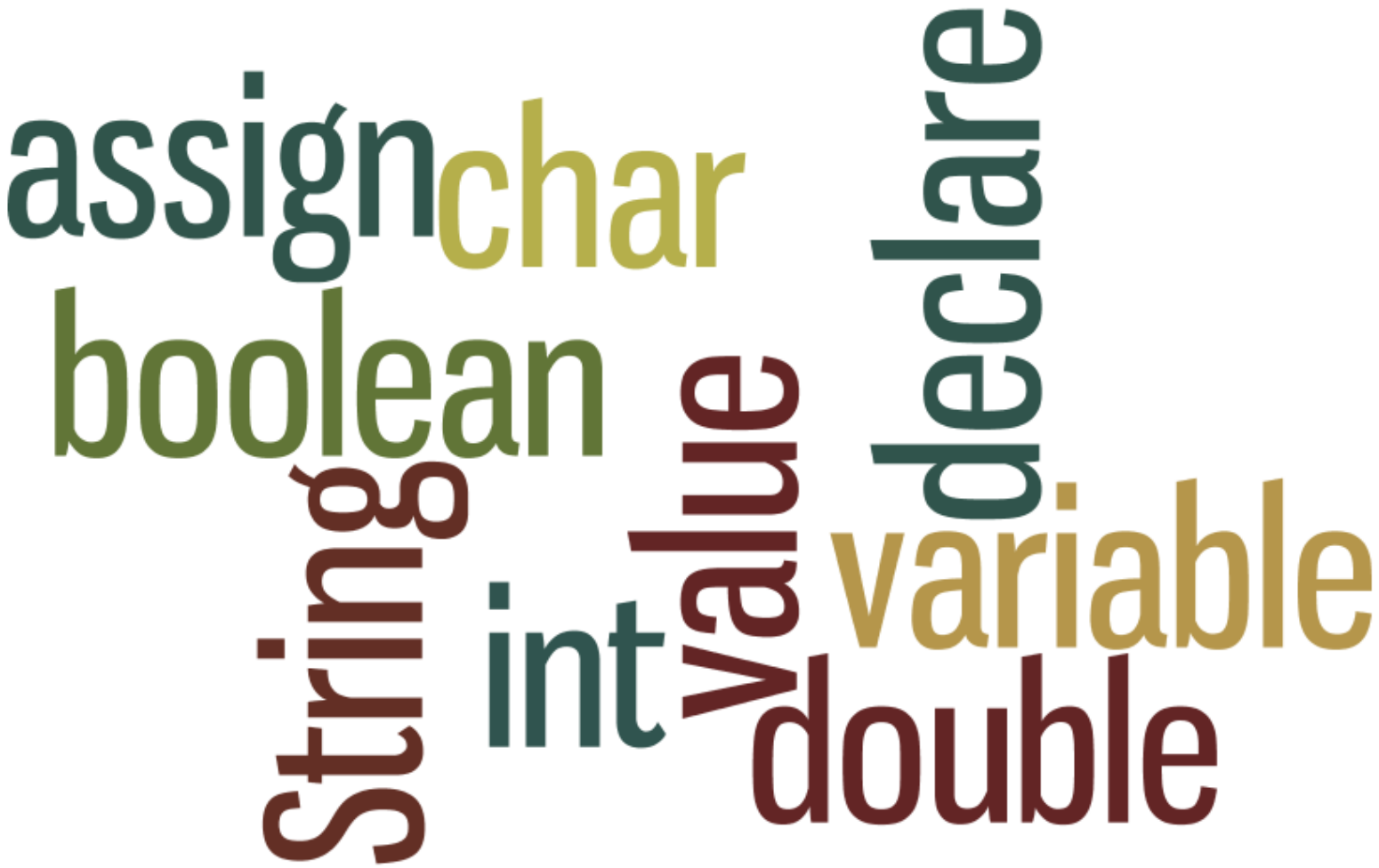
What do you learn last time?

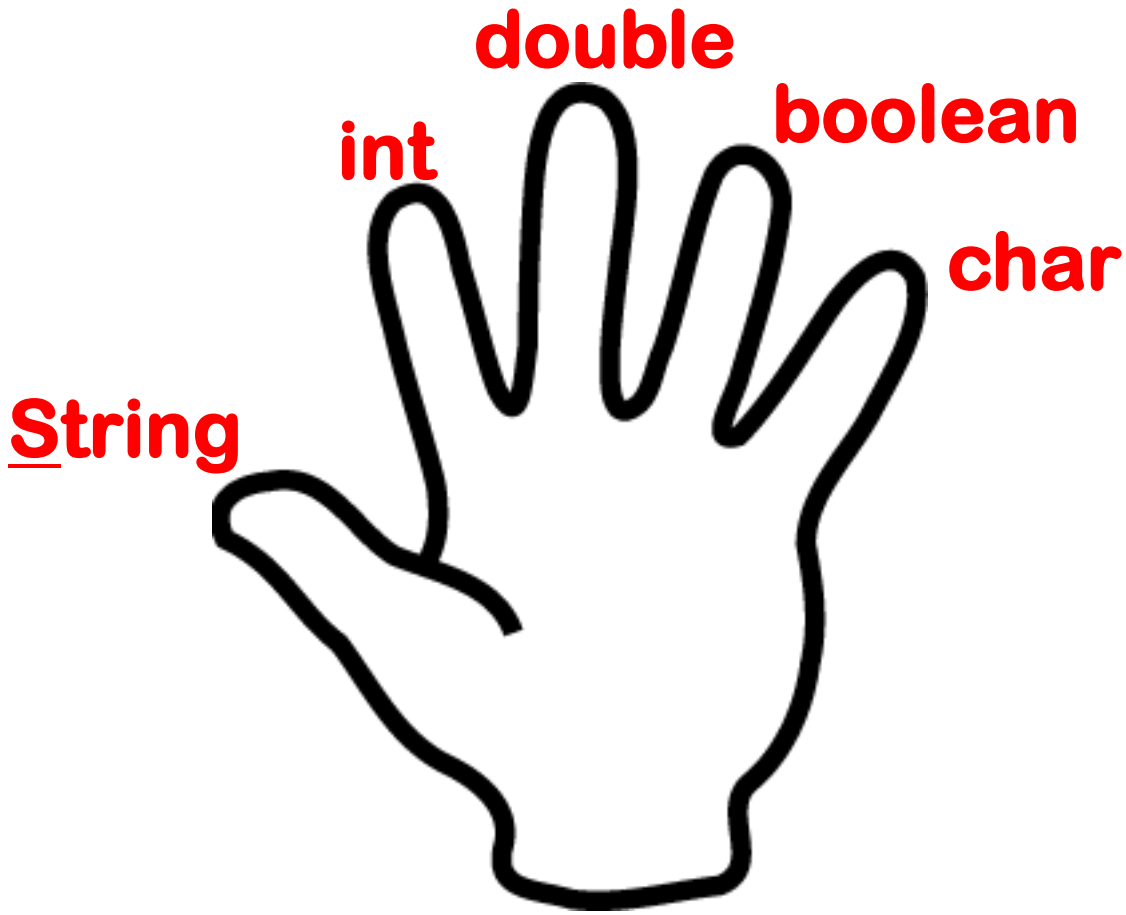


Wordle.org

Levels of Java coding

- 1: Syntax, laws, variables, output
- **2: Input, calculations, String manipulation**
- 3: Selection (IF-ELSE)
- 4: Iteration/Loops (FOR/WHILE)
- 5: Complex algorithms
- 6: Arrays
- 7: File management
- 8: Methods
- 9: Objects and classes
- 10: Graphical user interface elements

5 types of variables



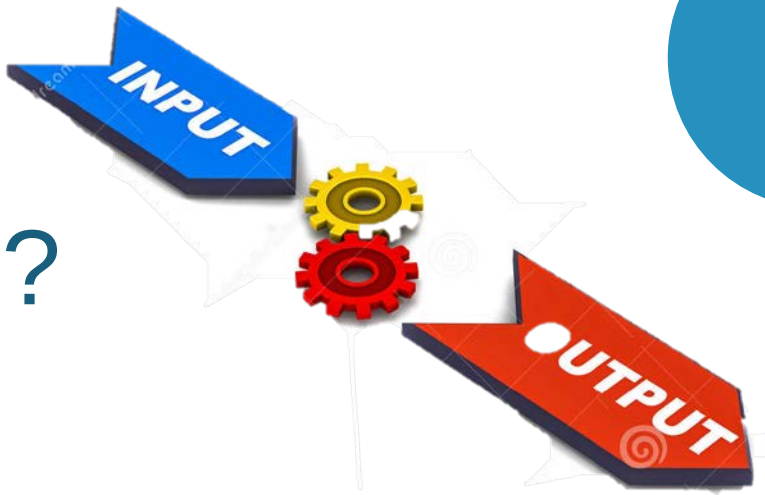
Combining values and variables

```
int num1 = 5;
int num2 = 10;
System.out.println(num1+num2);
System.out.println(num1+" + "+num2);
```

Output

```
15
5 + 10
```

Input



- From **keyboard**?
- From **mouse**?
- From **microphone**?
- From **scanner**?

*Links to **2.1.2 (Hardware)***

Four and ½ steps to keyboard input

- Import **`java.util.*`** BEFORE main()
- Declare a **`Scanner`**
- Declare a **`String`** variable to catch input
- Use the Scanner to assign input from keyboard to variable

- Convert to **`int/char/double`** (*if necessary*)

Keyboard input

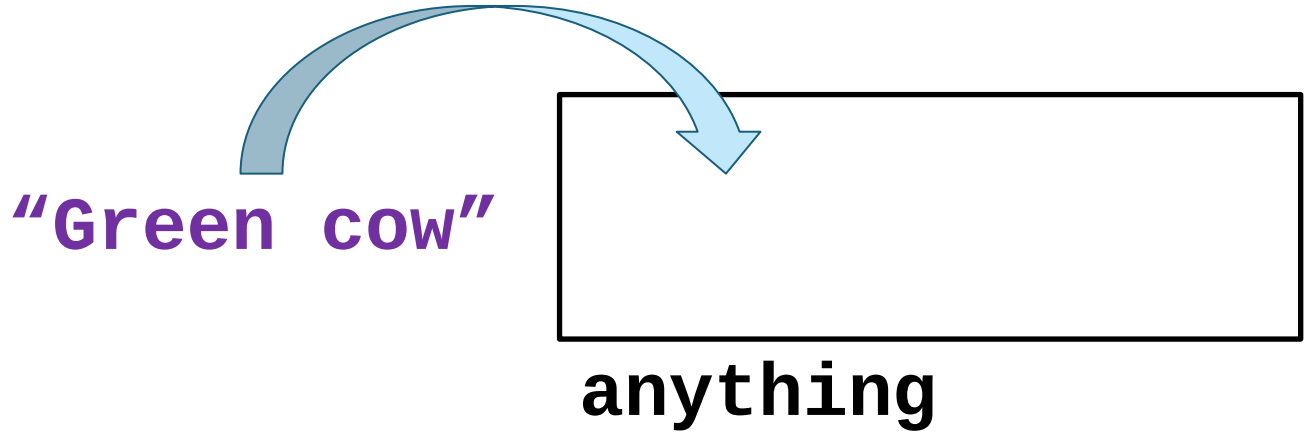
```
import java.util.*;

public class HappyTime
{
    public static void main (String args[])
    {
        Scanner keyboard = new Scanner (System.in);
        System.out.println("When is your happy time?");
        String answer;
        answer = keyboard.nextLine();
        System.out.println("Your happy time is: "+answer);

    }//end of main
}//end of class
```

Important notes:

Input is best received as a String

We use:

```
String anything = kb.nextLine();
```

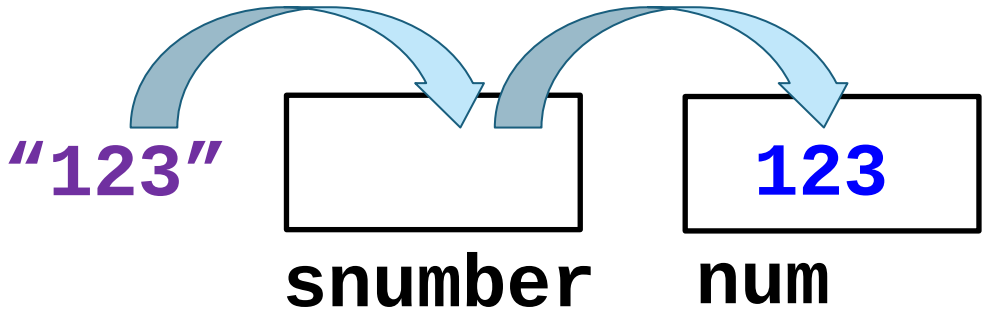


Converting String to int

To convert String to int, we use a function called **`Integer.parseInt( )`**;

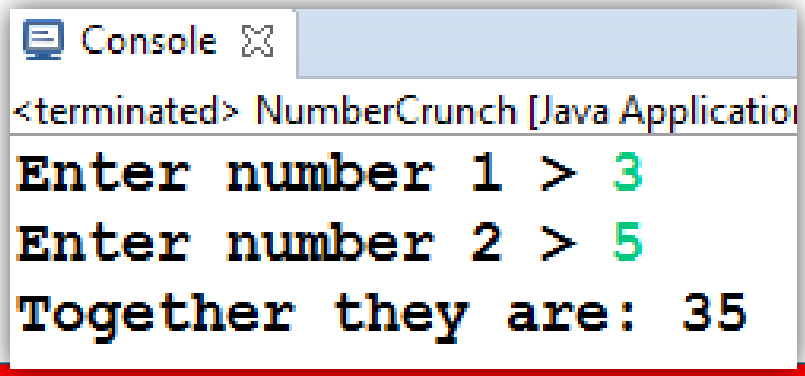
Example:

```
String snumber = kb.nextLine();
int num = Integer.parseInt(snumber);
```



```java
import java.util.*;
public class NumberCrunch
{
    public static void main(String[] args)
    {
        Scanner kb = new Scanner (System.in)
        System.out.print("Enter number 1 > ")
        String answer1 = kb.nextLine();
        int num1 = Integer.parseInt(answer1);
        System.out.print("Enter number 2 > ")
        String answer2 = kb.nextLine();
        int num2 = Integer.parseInt(answer2);
        System.out.print("Together they are: "+num1+num2);
    }
}
```

Output

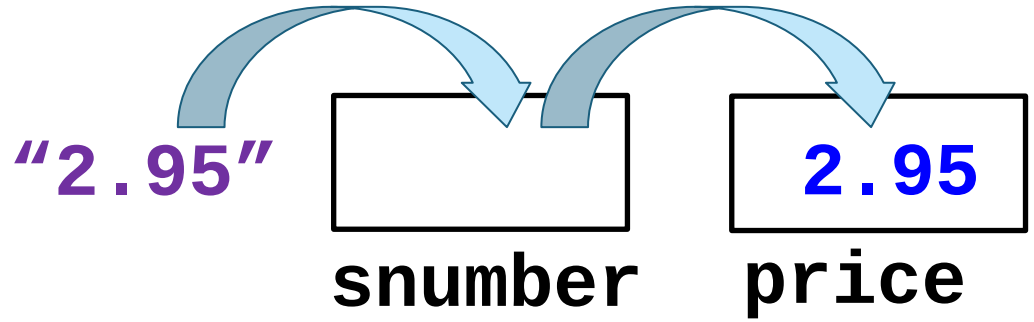


Converting String to double

To convert String to double, we use a function called **`Double.parseDouble( );`**

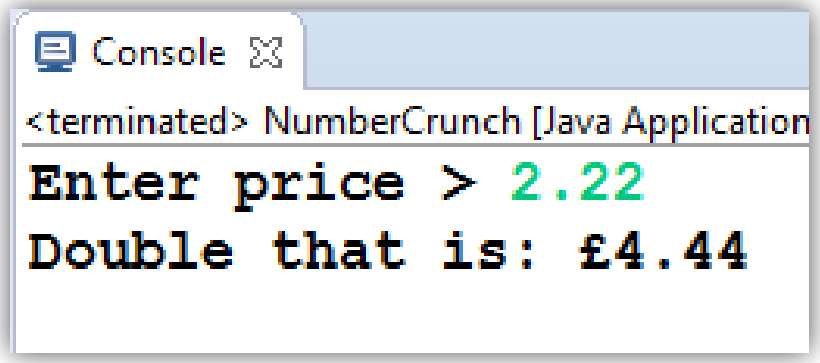
Example:

```
String snumber = kb.nextLine();
double price = Double.parseDouble(snumber);
```



```
1  import java.util.*;
2  public class NumberCrunch
3  {
4      public static void main(String[] args)
5      {
6          Scanner kb = new Scanner (System.in);
7          System.out.print("Enter price > ");
8          String answer = kb.nextLine();
9          double price = Double.parseDouble(answer);
10         System.out.print("Double that is: £"+ (price*2) );
11     }
12 }
```

Output



Calculations in Java

Operator	Function	Example	Result
+	Add	`int i = 10 + 2;`	12
-	Subtract	`int j = i – 3;`	9
/	Divide	`double k = j / 3;`	3.00
*	Multiply	`int product = i * j;`	108
++	Add 1	`i++;`	13
--	Subtract 1	`j--;`	8
%	Modulus	`int m = 12 % 5;`	2

Good practice

Don’t do calculations and output in the same line:

Work out the answer first

THEN **display the answer**

```
Scanner kb = new Scanner (System.in);
System.out.print("Enter price > ");
String answer = kb.nextLine();
double price = Double.parseDouble(answer);
System.out.print("Double that is: £"+ (price*2) );
```

```
Scanner kb = new Scanner (System.in);
System.out.print("Enter price > ");
String answer = kb.nextLine();
double price = Double.parseDouble(answer);
double total = price * 2;
System.out.print("Double that is: £"+ total);
```

What students struggle with

```
int x = 1;
int y = 3;
x = 3;
int total = x + y;
```

Answer: **6**

```
int h = 4;
h++;
```

Answer: **5**

```
int k = 7;
k = k + 2;
```

Answer: **9**

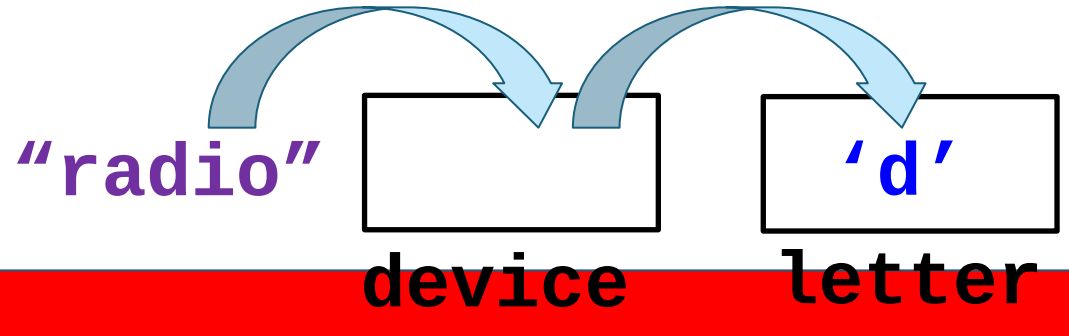
More about Strings

```
String device = “radio”;
```

r	a	d	i	o
0	1	2	3	4

To get a specific character from a String, we use the `.charAt( )` function

```
char letter = device.charAt(2);
```



String methods

There are many functions we can use to **manipulate Strings**. They are called the '**String methods**'

Method	Function	Example
`.charAt(x)`	returns the char from a specified index	`String colour = "blue";` `char letter = colour.charAt(0);`
`.toUpperCase()`	returns the String in UPPER CASE	`String name = "bob";` `bob = bob.toUpperCase();`
`.toLowerCase()`	returns the String in lower case	`String pet = "DOG";` `pet = pet.toLowerCase();`
`.subString(x,y)`	returns String portion between two indexes	`String s = "I love hats";` `String snip = s.substring(2,6);`
`.length()`	returns how many characters there are in a String	`String h = "radar";` `int size = h.length();`