

Welcome to the **Java** **Course**

Module 1 – Day 04

Content of the course

- Introduction to programming
 - Basic programming concepts
 - Variables and Data Types
 - Conditionals
 - **Loops**
 - **Control Structures**
 - **Introduction to algorithms**
- Day 1
- Day 2
- Day 3
-
-
-

Project Students - Step 3

Modify the program such that it asks for the birth year until the user enters a valid one

```
Enter first name: Ana
Enter last name: Gaggero
Enter birthday (day of month): 22
Enter birth month: 10
Enter birth year: 2027
The birth year cannot be in the future, please enter a valid birth year: 2028
The birth year cannot be in the future, please enter a valid birth year: 1982
Enter course registered: Java
```

```
Student Name: Ana Gaggero
Date of Birth: 22 October 1982
Age: 41
Course Registered: Java
```

Project Tic Tac Toe

Step 3

- Add a loop to allow 9 moves.
- Add a variable to keep track of who's turn it is
- Check if the place is empty before updating the board. If it's not empty, print "Invalid move"

Ana will be X and Juan will be O

1		2		3
4		5		6
7		8		9

Ana choose your move: 5

1		2		3
4		X		6
7		8		9

Juan choose your move: 1

0		2		3
4		X		6
7		8		9

Ana choose your move: 1

Invalid move.

Ana choose your move: 3

0		2		X
4		X		6
7		8		9

Let's **Recap**

- While loop
- String operations
- Type casting

Recap String operations

- `str1 = str1.concat(str2);`
- `str.charAt(2);`
- `str.toLowerCase();`
- `str.toUpperCase();`
- `str1.equals(str2);`
- `str1.equalsIgnoreCase(str2);`
- `str1.contains(str2);`
- `str1.endsWith(str2);`
- `str1.startsWith(str2);`

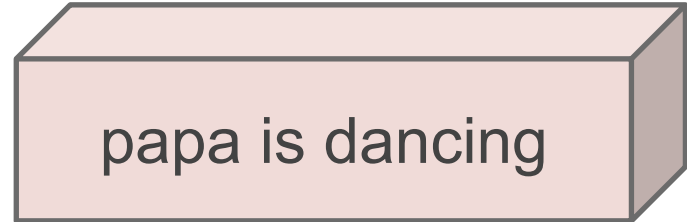
Recap String operations

```
String str = "Papa is dancing";
```

```
if (str.startsWith("p"))  
    System.out.println(str.toLowerCase());  
else  
    System.out.println(str.toUpperCase());
```



PAPA IS DANCING



papa is dancing

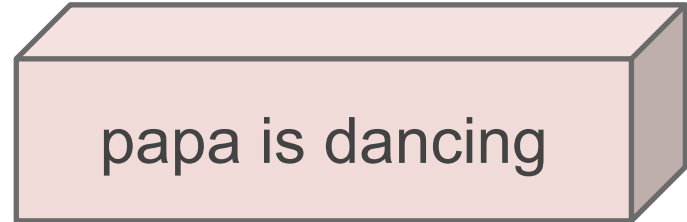
Recap String operations

```
String str = "Papa is dancing";
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```
if (str.startsWith("p"))  
    System.out.println(str.toLowerCase());  
else  
    System.out.println(str.toUpperCase());
```



PAPA IS DANCING

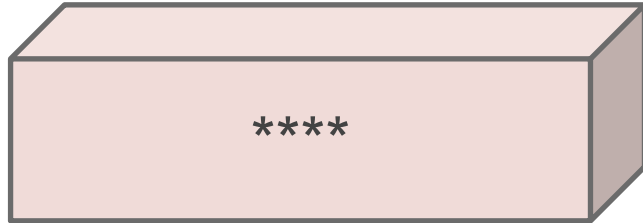


papa is dancing

Recap String operations

```
String str = "Keep coding and never stop learning.";
```

```
if (str.charAt(5) == 'c'){  
    System.out.print(str.charAt(0));  
    System.out.print(str.charAt(6));  
    System.out.print(str.charAt(7));  
    System.out.print(str.charAt(17));  
}
```



Recap String operations

K [0] > e [1] > e [2] > p [3] > [4] > c [5] > o [6] > d [7] > i [8] > n [9] > g [10]

```
String str = "Keep coding and never stop learning.";
```

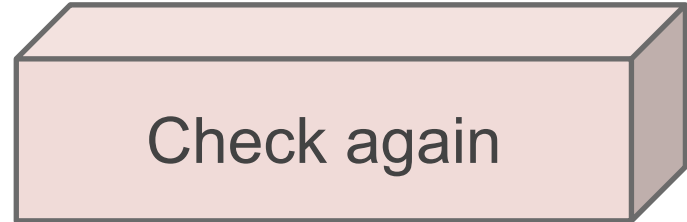
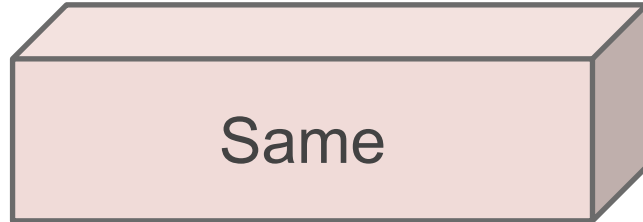
```
if (str.charAt(5) == 'c'){  
    System.out.print(str.charAt(0));  
    System.out.print(str.charAt(6));  
    System.out.print(str.charAt(7));  
    System.out.print(str.charAt(17));  
}
```



Recap String operations

```
String str1 = "I would like a coffee please";  
String str2 = "I would Like a coffee Please";
```

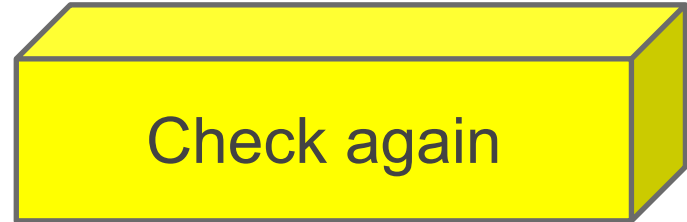
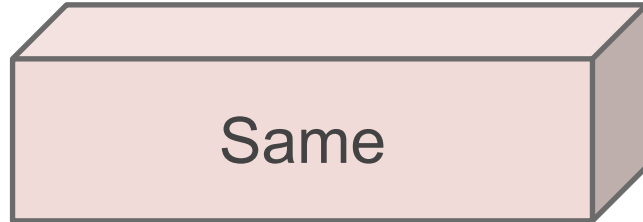
```
if (str1.equals(str2))  
    System.out.println("Same");  
else  
    System.out.println("Check again");
```



Recap String operations

```
String str1 = "I would like a coffee please";  
String str2 = "I would Like a coffee Please";
```

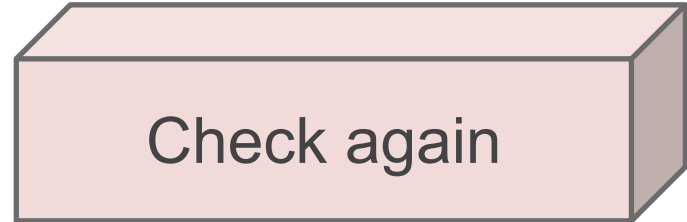
```
if (str1.equals(str2))  
    System.out.println("Same");  
else  
    System.out.println("Check again");
```



Recap String operations

```
String str1 = "I would like a coffee please";  
String str2 = "I would Like a coffee Please";
```

```
if (str1.equalsIgnoreCase(str2))  
    System.out.println("Same");  
else  
    System.out.println("Check again");
```



Recap String operations

```
String str = "Keep coding and never stop learning.";
```

```
if (str.contains("ea")){  
    System.out.print(str.charAt(0));  
} else {  
    System.out.println("It does not");  
}
```



K

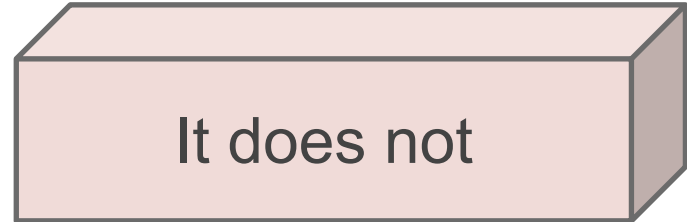


It does not

Recap String operations

```
String str = "Keep coding and never stop learning.";
```

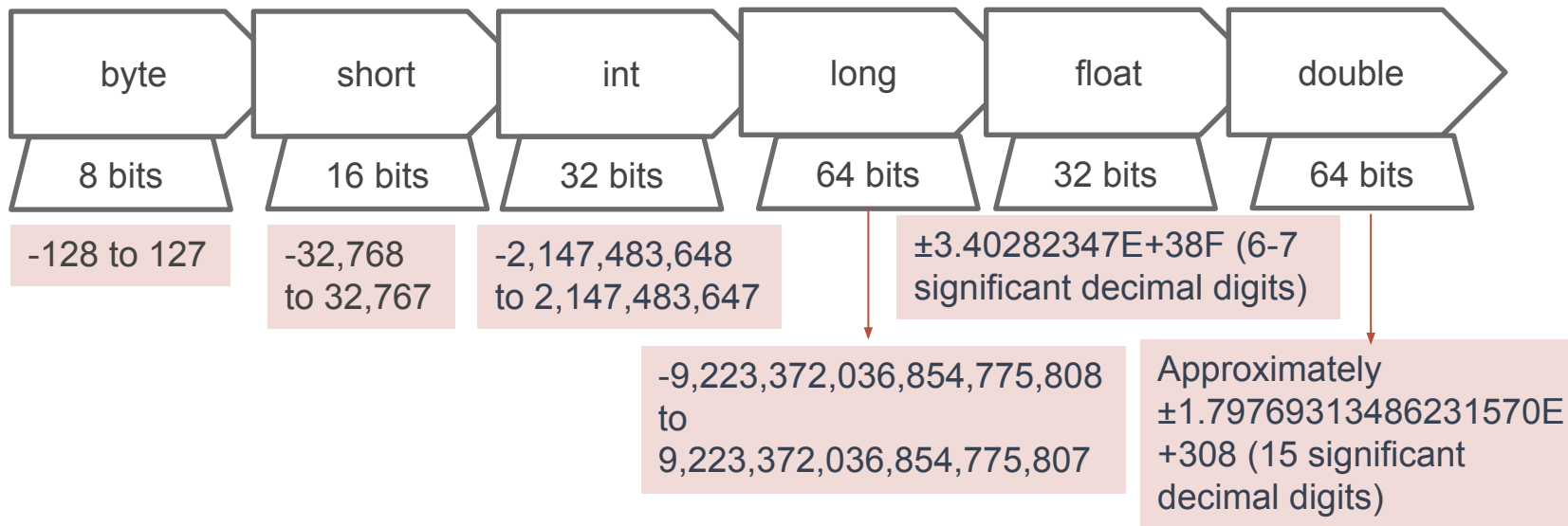
```
if (str.contains("ea")){  
    System.out.print(str.charAt(0));  
} else {  
    System.out.println("It does not");  
}
```



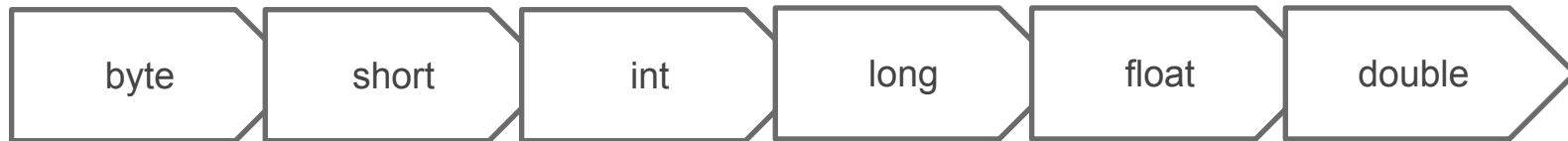
Type casting

Implicit & Explicit

```
1 int myInt = 9;  
2 long myLong = myInt;
```



Type casting

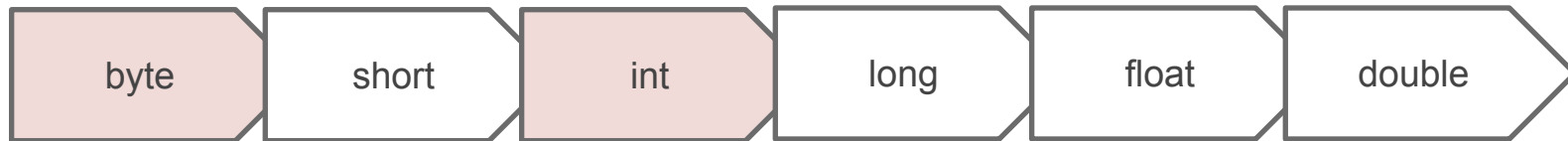


```
1 byte myByte = 100;  
2 int myInt = myByte;
```

Implicit

Explicit

Type casting

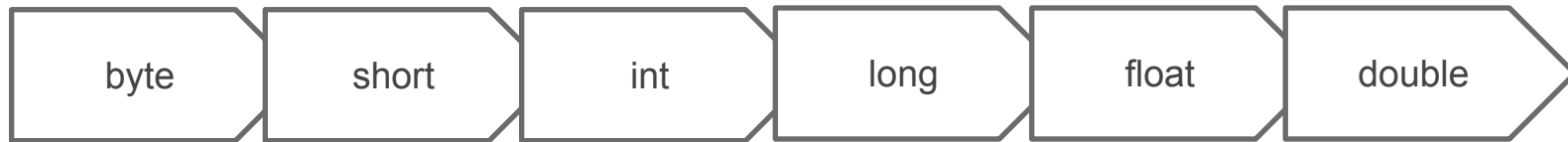


```
1 byte myByte = 100;  
2 int myInt = myByte;
```

Implicit

Explicit

Type casting

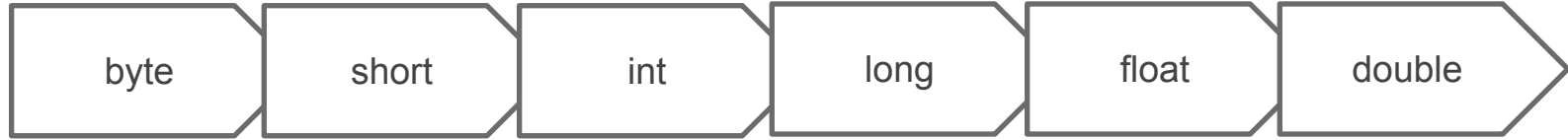


```
1 double myDouble = 9.78;  
2 int myInt = myDouble;
```

Implicit

Explicit

Type casting



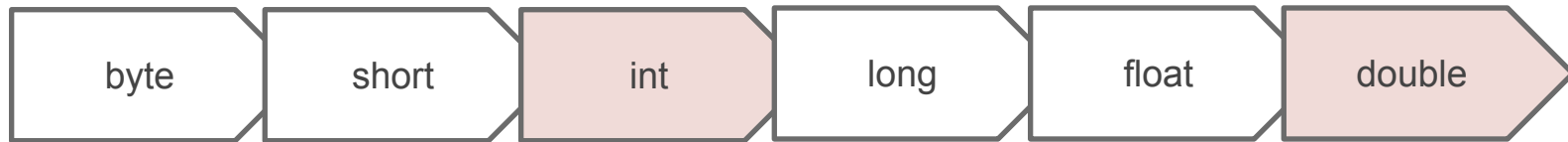
```
1 double myDouble = 9.78;  
2 int myInt = myDouble;
```

Exception in thread "main" java.lang.Error: Unresolved
compilation problem:
Type mismatch: cannot convert from double to int

Implicit

Explicit

Type casting



```
1 double myDouble = 9.78; // Outputs 9.78  
2 int myInt = (int) myDouble; // Outputs 9
```

Implicit

Explicit

While Loop

When you don't know how many times you have to perform a block of code, you need the while loop:

```
1 while (condition) {  
2 // Code to be executed  
3 }
```

Let's **Learn**

- Do-while
- For loop

Do-While Loop

If you want to execute the code in any case at least 1 time and then check the condition, you can use a do-while loop:

```
1 do{  
2 // Code to be executed  
3 }while (condition);  
4
```




Now YOUR TURN !

Ask the birth year until it's not above the current year.



Now YOUR TURN !

Let's do exercise number 1

Loop

A loop is a sequence of actions repeated a known or unknown number of times.

For Loop

When you know how many times you have to perform a block of code, you need the for loop:

```
1 for(initialization;condition;update){  
2   // Code to be executed  
3 }
```

For Loop

```
1 for ( int i=0 ; i<5 ; i++) {  
2     System.out.println("Hello");  
3 }
```

For Loop

output:

Hello

Hello

Hello

Hello

Hello

Now YOUR TURN !

Let's do exercises number 2

Project Students - Step 4

Modify the program to allow the registration of more students. Then print the list of all students.

```
How many students do you want to register? 3
>>> Student 1 <<<
Enter first name: Ana
Enter last name: Gaggero
Enter birthday (day of month): 22
Enter birth month: 10
Enter birth year: 1982
Enter course registered: Java
>>> Student 2 <<<
Enter first name: Carol
Enter last name: Muller
Enter birthday (day of month): 12
...
```


Project Students - Step 4

```
...  
>>> Student 3 <<<  
Enter first name: Tom  
Enter last name: Grass  
Enter birthday (day of month): 7  
Enter birth month: 1  
Enter birth year: 1980  
Enter course registered: Java  
  
List of registered students:  
Ana Gaggero, 22 October 1982, Java  
Carol Muller, 12 April 1990, Python  
Tom Grass, 7 January 1980, Java
```

Project Tic Tac Toe

Step 4

- Check if someone won. Print the winner and exit the game.
- Otherwise, print that it was a tie

```
Juan choose your move: 7
```

X		2		3
0		X		6
0		8		9

```
Ana choose your move: 9
```

X		2		3
0		X		6
0		8		X

```
Ana won!
```

