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**How did communication  
evolve after writing?**



# 'People Don't Use Words Any More': A Teenager Tells Us How To Use Emojis Properly

**Caroline Moss**

Sun, Oct 6, 2013



10:04

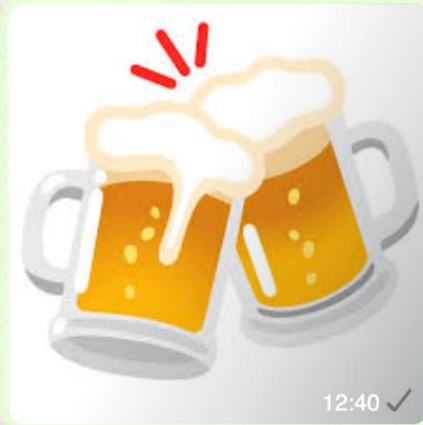
4G

<  **Gabriela**  
online



Where did the boy take you yesterday?

12:40



12:40 ✓



10:04

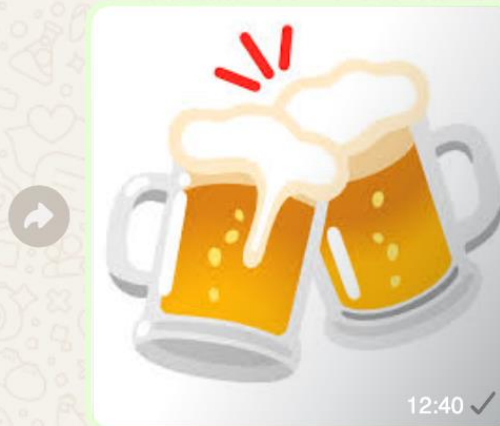
4G

<  **Gabriela**  
online



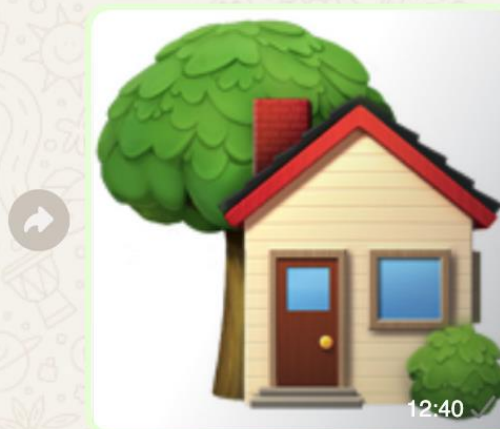
Where did the boy take you yesterday?

12:40



Where did he take you after?

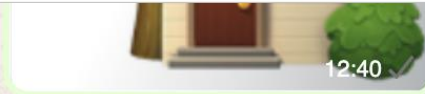
12:41



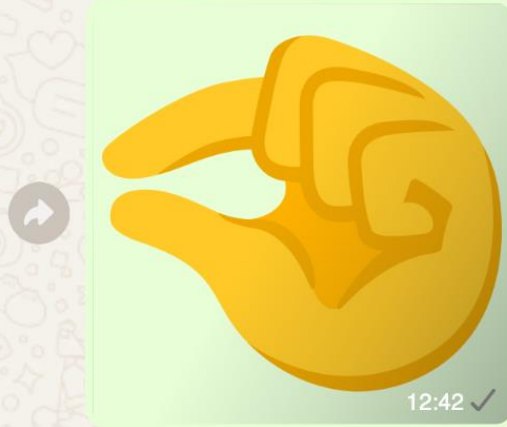
10:04

4G

<  **Gabriela**  
online



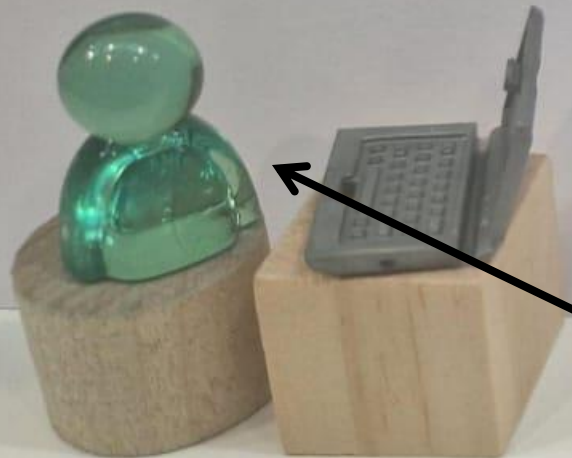
Hoooot! How was he? 12:42



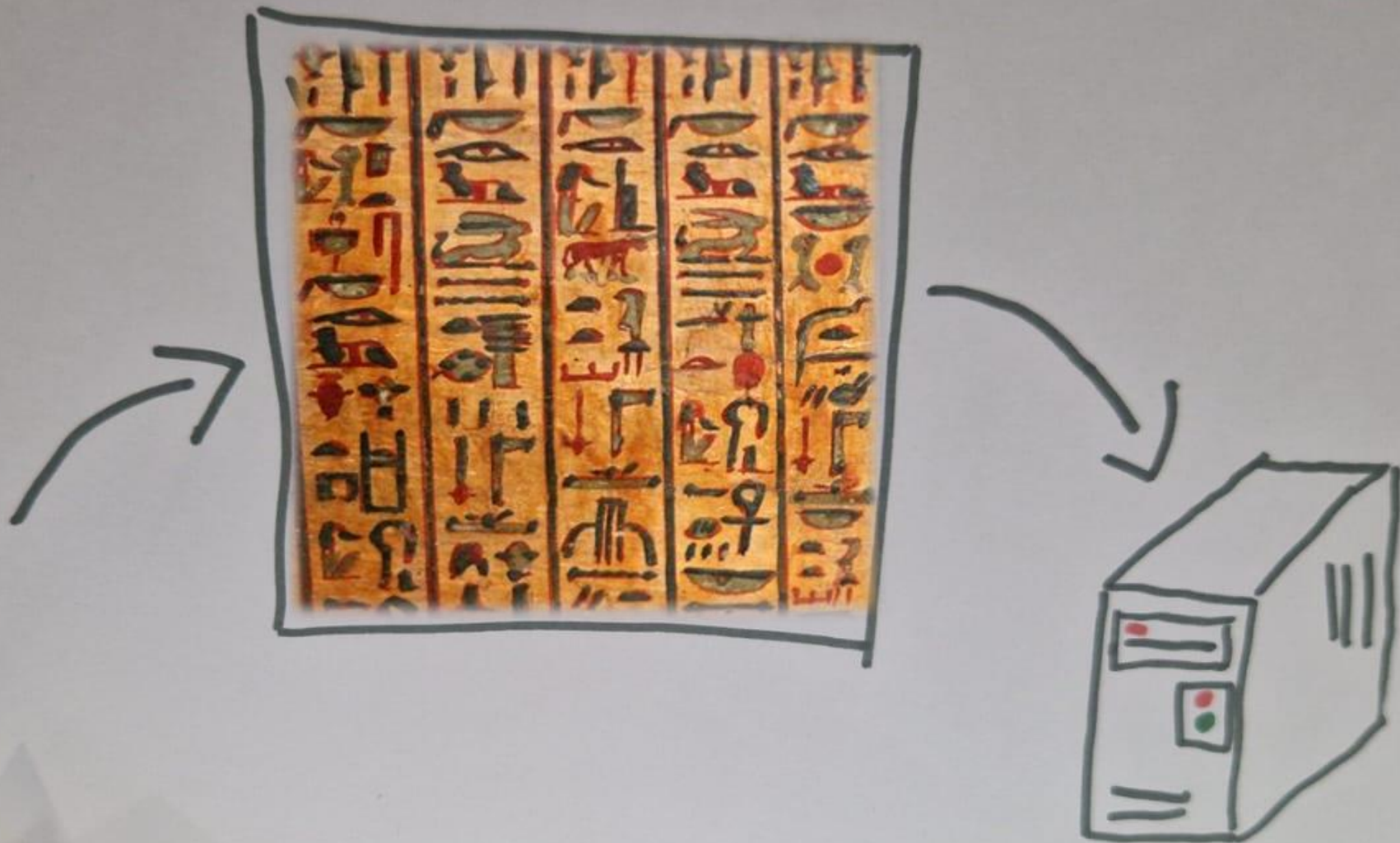
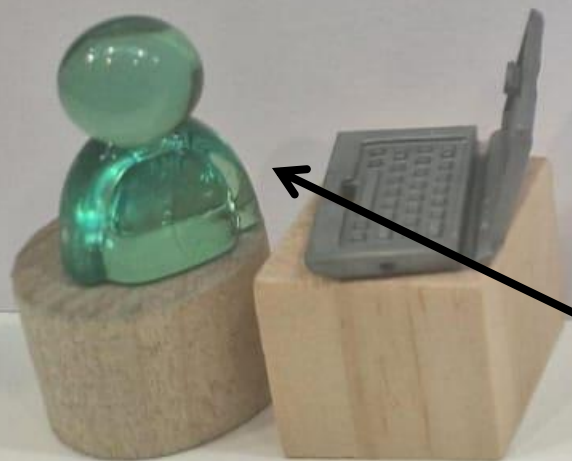
**But I work with  
software engineering!**



```
while (x > 10) {  
  obj.getInfo();  
  obj.call();  
  response(x, obj);  
}
```



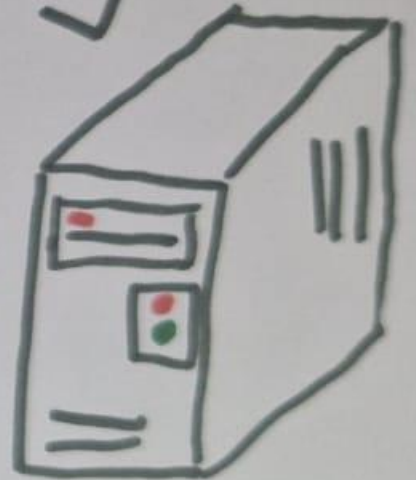
**João**



**João**

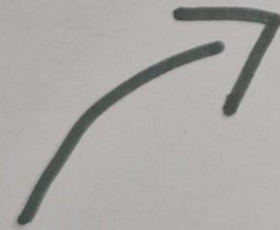
**My goal is to help João  
to understand better  
the code and to make  
better decisions!**

```
while (x > 10) {  
  obj.getInfo();  
  obj.call();  
  response(x, obj);  
}
```





**What if I  
use emojis  
for that?**

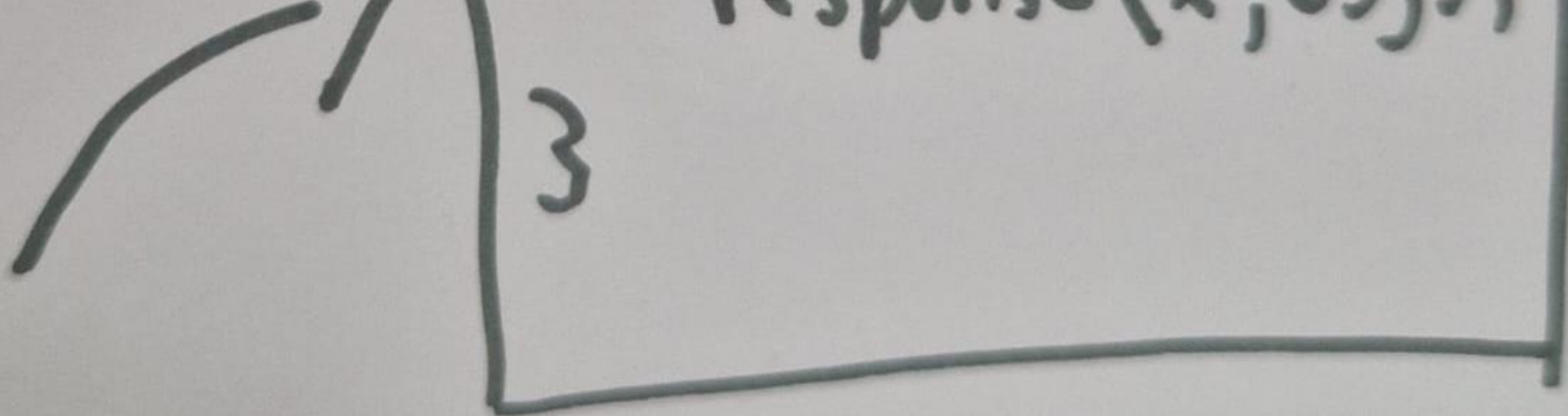


```
while (x > 10) {  
  obj.getInfo();  
  obj.call();  
  response(x, obj);  
}
```





**What?**



identifier

*“gives a name to  
something”*





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**CARTEIRA DE IDENTIDADE**

Nome / Name

Eduardo Martins Guerra

Nome Social / Social Name

NONONONO

Registro Geral - CPF / Personal Number

000.000.000-00

Sexo / Sex

NONONO

Data de Nascimento / Date of Birth

DD / MM / AAAA

Nacionalidade / Nationality

NONONO

Naturalidade / Place of Birth

NONONONO

Data de Validade / Date of Expiry

DD / MM / AAAA



Assinatura do Titular / Cardholder's Signature

Ricercatrici e Ricercatori a tempo determinato

**Eduardo Martins Guerra**



[eduardo.martinsguerra@unibz.it](mailto:eduardo.martinsguerra@unibz.it)

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via Cassa di Risparmio, 21  
39100  
Bolzano

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#### Corsi

##### Advanced Software Design Techniques

76093B · ING-INF/05 · Corso di laurea magistrale in Ingegneria del Software · EN

##### Software as a Research Contribution (seminar)

71077 · INF/01 · Corso di Dottorato di ricerca in Scienze e Tecnologie informatiche · EN

##### Software Systems Architecture

76261A · INF/01 · Corso di laurea in Informatica · EN

#### Macroaree di ricerca

Agile Methods

Framework Development

Software Patterns

Dynamic Architectures





POLITIK | WIRTSCHAFT | KULTUR | UMWELT | GESELLSCHAFT | CHRONIK |

SPORT | FREIZEIT | COMMUNITY | PARTNER | **Jobs?**



Kultur | PEOPLE 

## “Il mio gioco preferito?”

Eduardo Guerra è arrivato dal Brasile nell'anno della pandemia e qui si è fermato "incantato dalle opportunità di lavoro e dal buon cibo".

von Mauro Podini

16.03.2024





In the code, we  
use **identifiers**  
to give names  
to things!

```
*User.java *GamificationTest.java
1 package gamification.user;
2
3 import java.util.HashSet;
4
5
6 public class User {
7
8     private String name;
9     private int points = 0;
10    private Set<String> badges =
11        new HashSet<String>();
12
13    private String lastBadge;
14    private int lastPointsGot;
15
16    public User(String name) {
17        this.name = name;
18    }
19
20    public int getPoints() {
21        return points;
22    }
23
```

```
*User.java
21 @Test
22 void basicFrameworkUsage()
23     throws FailedExecutionException {
24
25     //configuring the user
26     User user = new User("Guerra");
27     UserRegistry.setCurrentUser(user);
28
29     //configure the rule
30     GameRule gr = new RecordPoints(10);
31     GamificationFacade.getInstance()
32         .setGameRule(gr, DummyTask.class);
33
34     //execute the tasks
35     GamificationFacade.getInstance()
36         .execute(new DummyTask());
37     GamificationFacade.getInstance()
38         .execute(new DummyTask());
39
40     //Verify the points
41     assertEquals(20, user.getPoints());
42     assertEquals(10, user.getLastPointsGot());
43
44 }
```

**These  
identifiers are  
used to refer to  
these things in  
other parts of  
the code.**



**What if I add in my identifier  
emojis that tell things about me?**



# The information for the emojis can be automatically retrieved!





Work with Computer Science

Eduardo



**Eduardo Guerra**


Researcher, [Free University of Bozen-Bolzano](#)  
Email verificata su unibz.it





**Software Engineering**

[STAI SEGUENDO](#)


ARTICOLI CITATA DA ACCESSO PUBBLICO COAUTORI

<input type="checkbox"/>	TITOLO			CITATA DA	ANNO
<input type="checkbox"/>	<a href="#">Refactoring test code safely</a>			55	2007
	EM Guerra, CT Fernandes International Conference on Software Engineering Advances (ICSEA 2007), 44-44				
<input type="checkbox"/>	<a href="#">Generative Artificial Intelligence for Software Engineering--A Research Agenda</a>			37	2023
	A Nguyen-Duc, B Cabrero-Daniel, A Przybylek, C Arora, D Khanna, ... arXiv preprint arXiv:2310.18648				
<input type="checkbox"/>	<a href="#">A pattern language for metadata-based frameworks</a>			37	2009
	EM Guerra, JT De Souza, CT Fernandes Proceedings of the 16th Conference on Pattern Languages of Programs, 1-				

 BGG



  114  NEXT 


**Eduardo Guerra**  
BGG User: guerraem



4


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**Description** 


He is a Brazilian board game designer. His first game published as PnP was Crop Rotation.


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**Top Games**


**Heróis de San Villano**  
14804 ♥ 2

**Crop Rotation**  
18257 ♥ 7

**Crop Rotation**  
♥ 1

**Breaking News**  
♥ 2

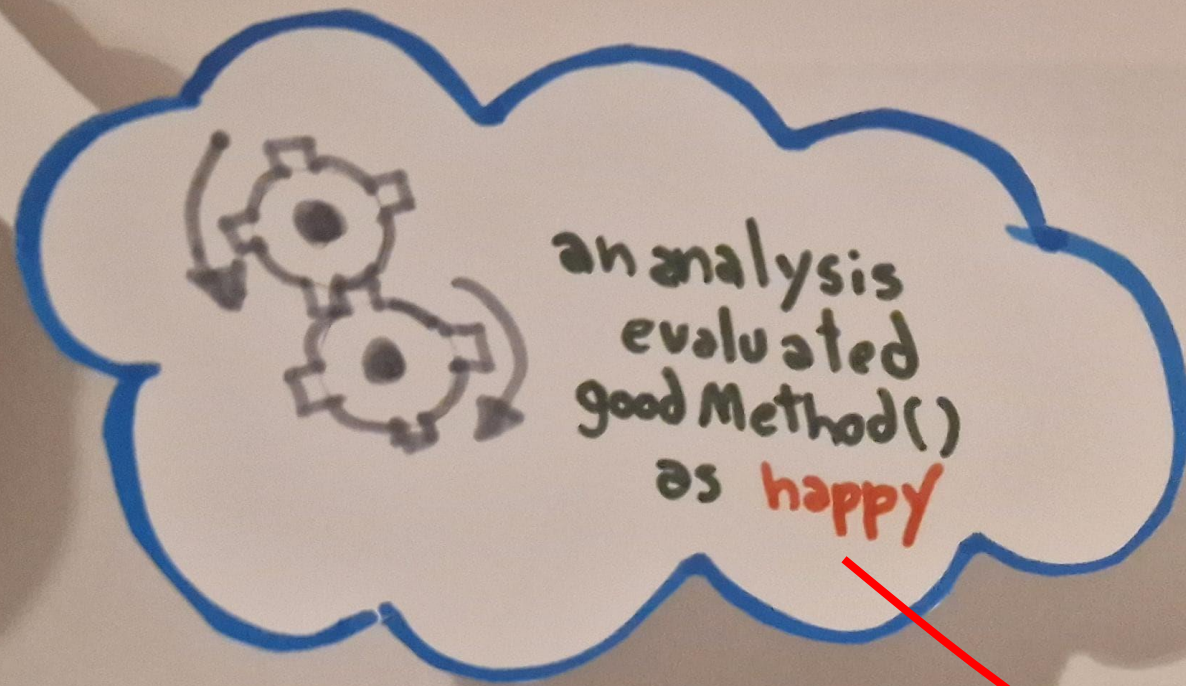
**Revolta em San Villano**  
♥

**Formula**  
♥ 2





**But how would that work  
in programming code?**



```
public class Science{  
    public void goodMethod😊(){  
        ...  
    }  
}
```

**Add emojis  
automatically to  
identifiers to show  
additional information.**





```
...  
doSomething();  
sc.goodMethod😊();  
otherStuff();  
...
```

```
public class Science {  
    public void goodMethod😊() {  
        ...  
    }  
}
```



Not only where **identifiers** are  
defined but also where they are used.



actual  
code!

```
public class Science {  
    public void goodMethod(){  
        ...  
    }  
}
```

```
public class Science {  
    public void goodMethod😄(){  
        ...  
    }  
}
```

**The code does  
not change!**

**The emojis are  
added in how  
developers see  
the code.**





```
public class Science {  
    public void goodMethod 😊() {  
        ...  
    }  
}
```

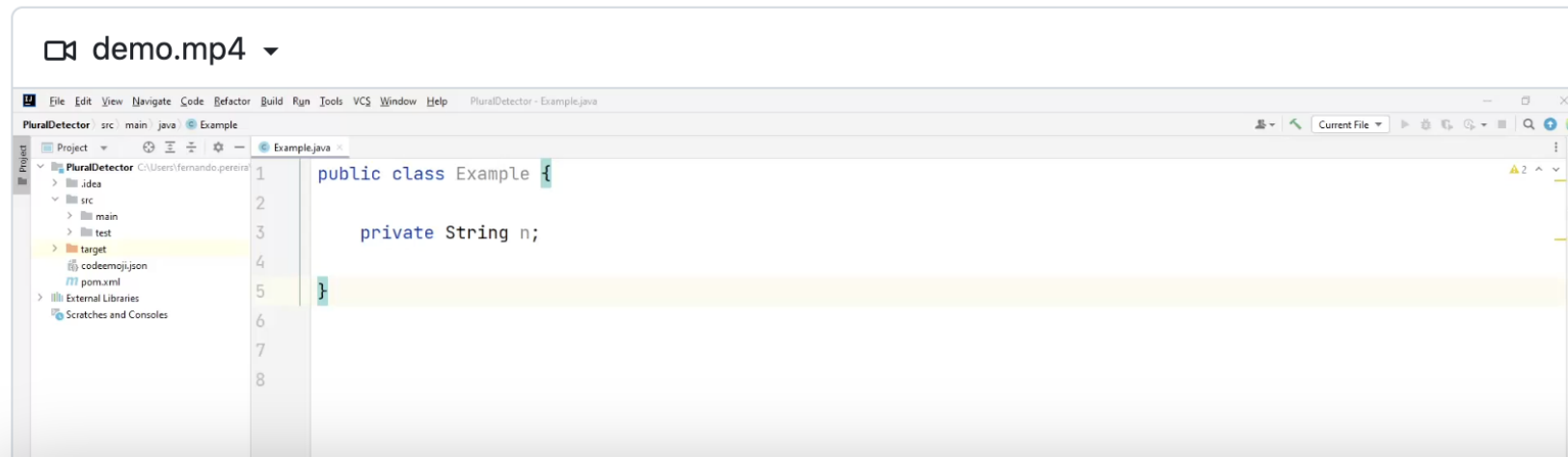
**Each developer can choose which emojis to turn on and off.**



# codeEEmoji

## *IntelliJ Plugin*

**codeEEmoji** is a plugin made for IntelliJ Idea and useful for Java programming. The plugin defines new sets of inlay hints in the context of code augmentation. The new inlay hints use emojis in an innovative way to help the developer. Emojis are displayed for anti-pattern cases such as naming violations or bad programming practices. The plugin can also show emojis in the editor indicating the presence of modifiers for classes, fields, methods, parameters or local variables that are being used. Likewise, the developer can indicate emojis to display for all these elements, according to a rule, for example, for a class being instantiated that implements a specific interface, for a method being invoked that is annotated by a certain annotation, a local variable of a given type, and so on. Furthermore, the plugin has the capability to display implicit annotations for the JakartaEE and Spring frameworks.





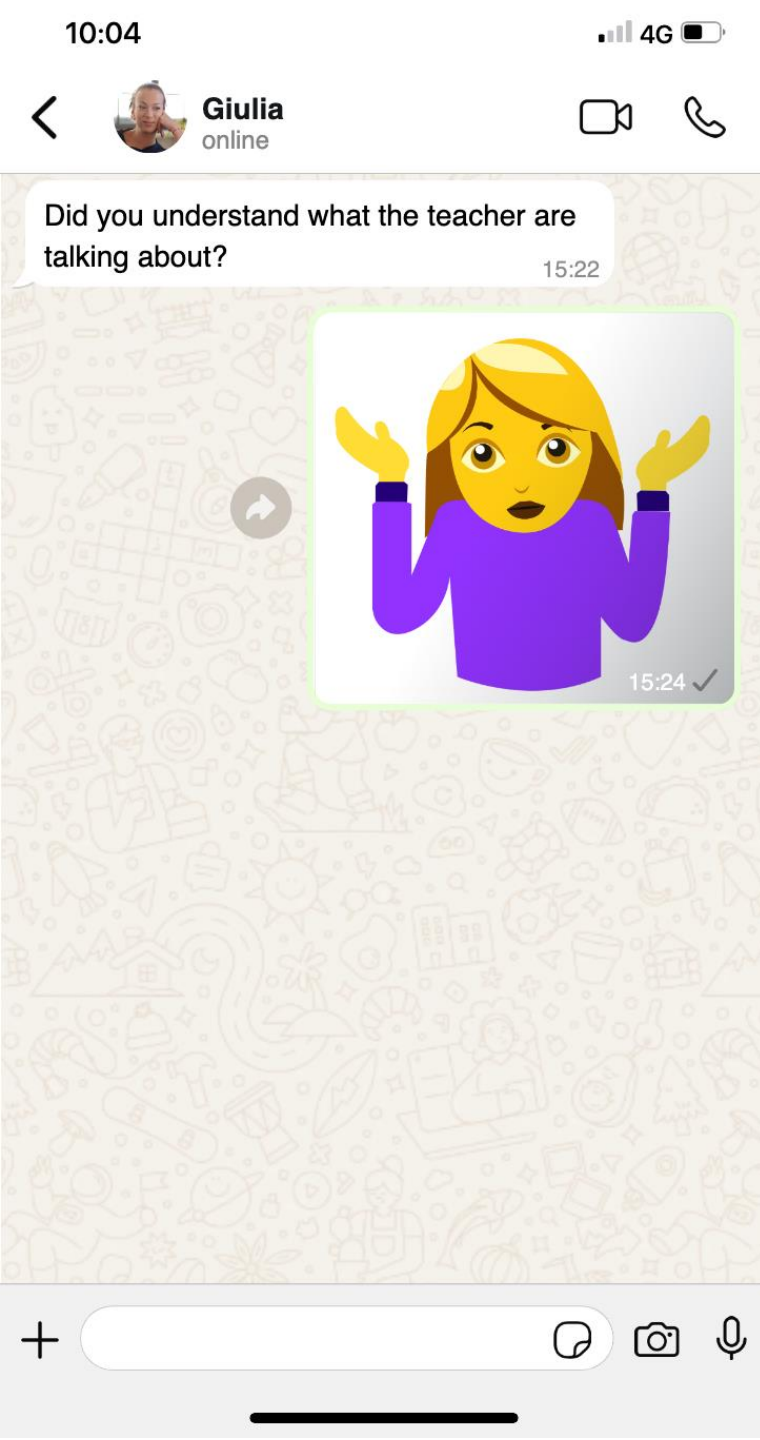
A photograph of a stage with a large, closed red curtain. The curtain is a deep red color with vertical folds. Above the curtain, a dark metal rig is visible. The stage floor is a light brown color. The text "Welcome to..." is overlaid on the lower half of the curtain in a large, white, bold font with a black outline.

**Welcome to...**



What the 🍌  
is that emoji?

SHOW

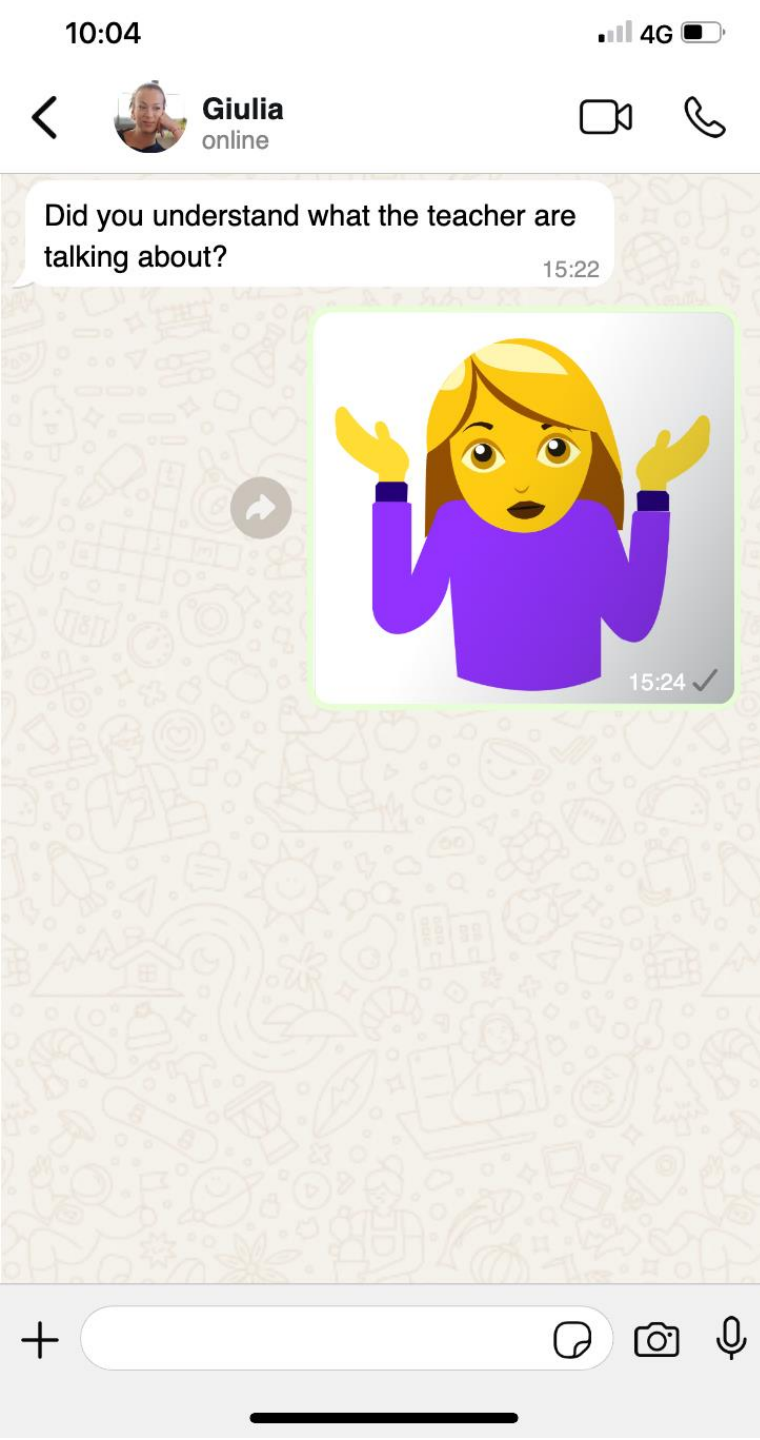


# WT ? Show

**What this emoji means?**

- 1 She is holding something**
- 2 She wants to dance**
- 3 She doesn't know**
- 4 She is about to clap**





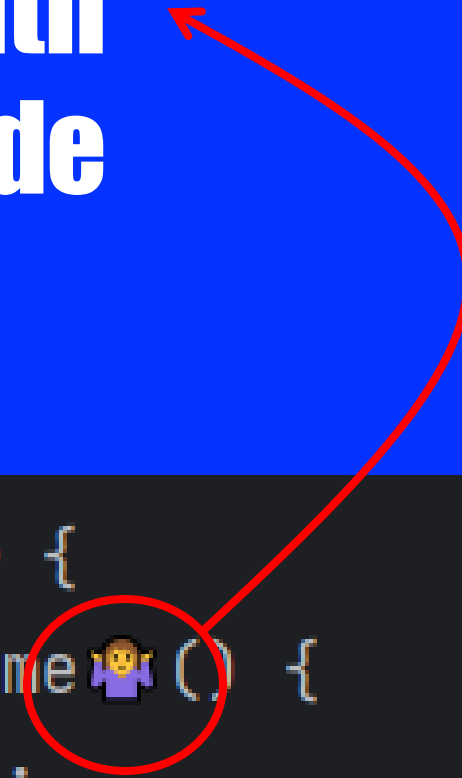
# WT 💩 ? Show

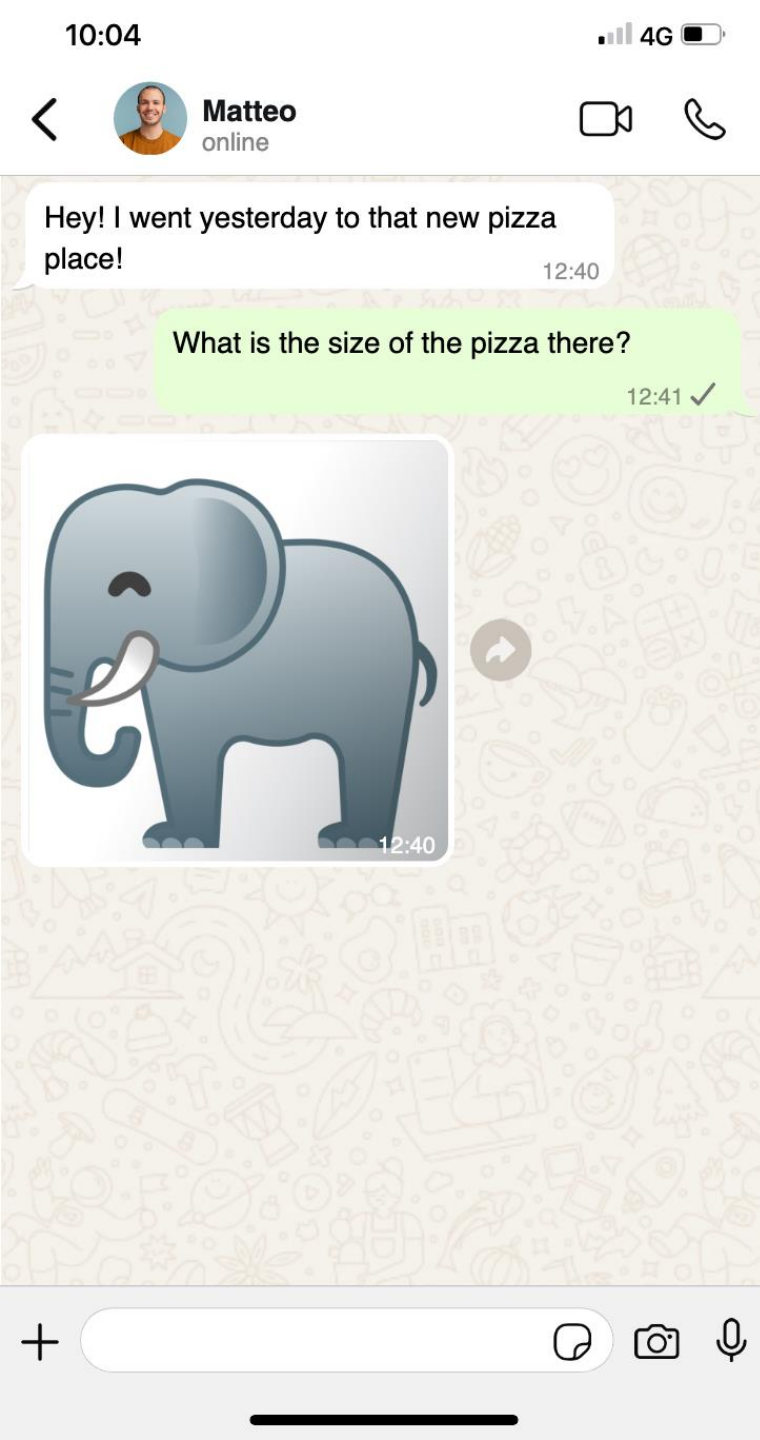
**What this emoji means?**

- 1 She is holding something**
- 2 She wants to dance**
- 3 She doesn't know**
- 4 She is about to clap**

**represent when some  
name is inconsistent with  
what is in the code**

```
public class Customer {  
    public void getName🙌() {  
        doSomething();  
    }  
}
```



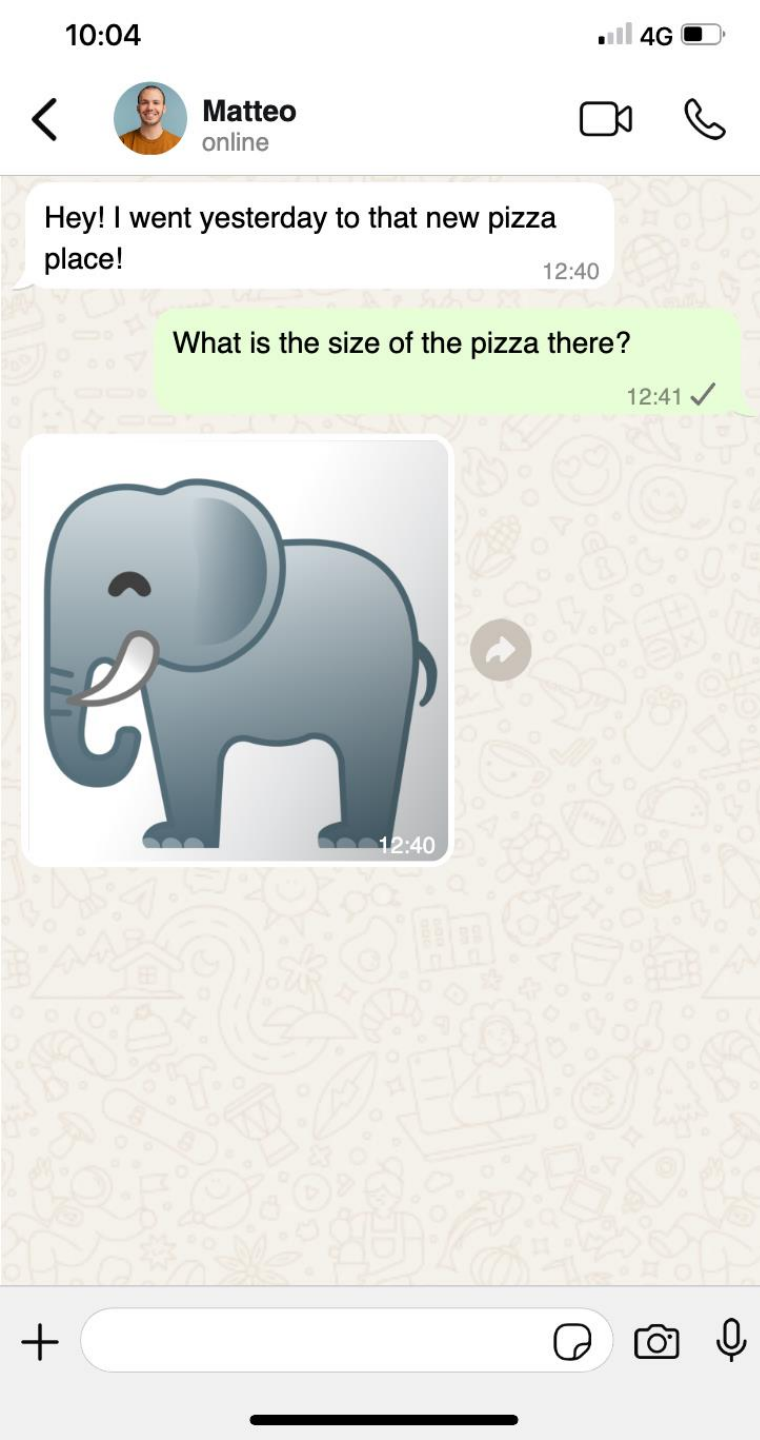


# WT 🍌 ? Show

**What this emoji means?**

- 1 Pizza was big**
- 2 Pizza had elephant meat**
- 3 The Pizza was sacred**
- 4 An elephant eat his pizza**





# WT 🍌 ? Show

**What this emoji means?**

**1 Pizza was big**

**2 Pizza had elephant meat**

**3 The Pizza was sacred**

**4 An elephant eat his pizza**

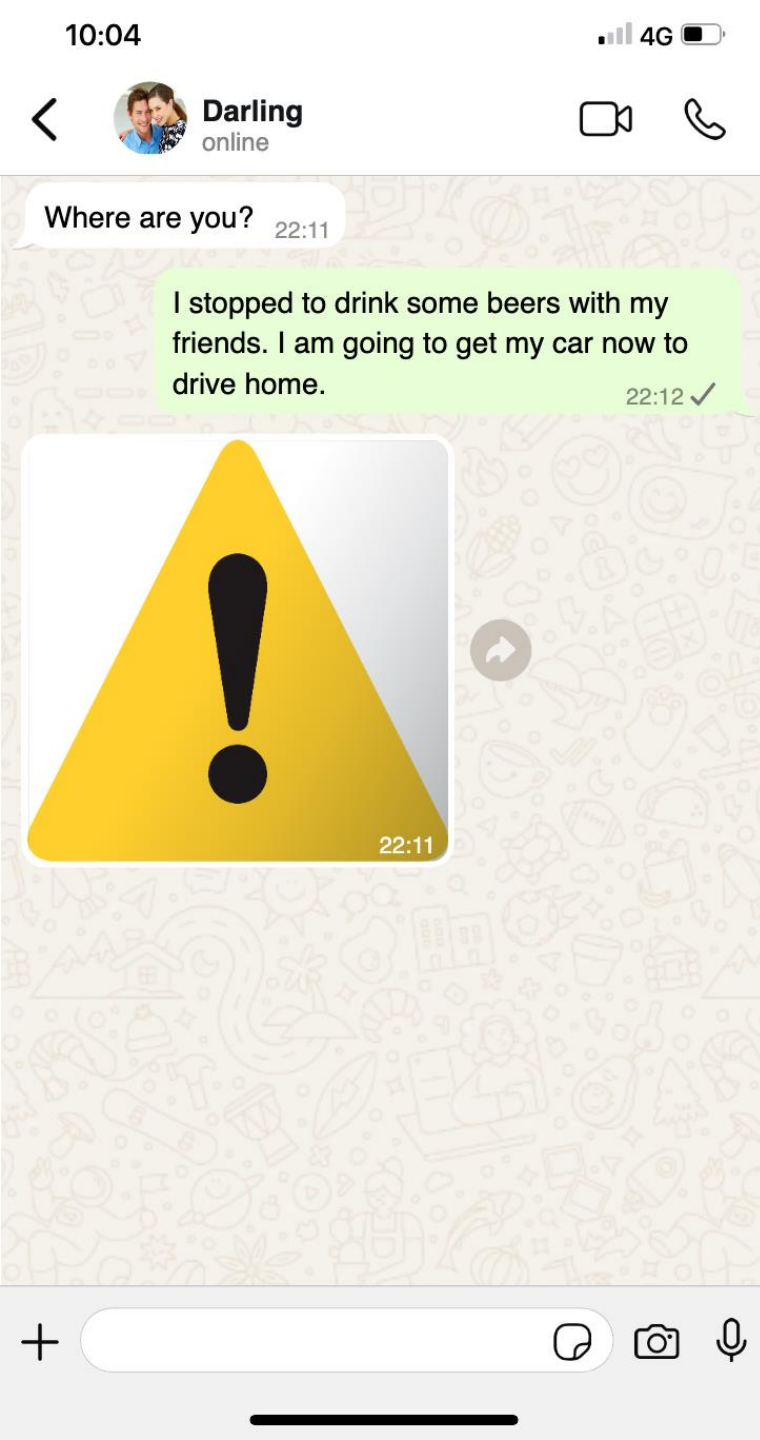
```

3 public class LargeLineCountMethodExample {
4
5     public void largeLineCountMethod AA(int num) {
6         if (num > 0) {
7             System.out.println("Positive number");
8         } else if (num < 0) {
9             System.out.println("Negative number");
10        } else {
11            System.out.println("Zero");
12        }
13
14        for (int i = 0; i < num; i++) {
15            if (i % 2 == 0) {
16                System.out.println(i + " is even");
17            } else {
18                System.out.println(i + " is odd");
19            }
20        }
21
22        int sum = 0;
23        for (int i = 1; i <= num; i++) {
24            sum += i;
25        }
26        System.out.println("Sum of numbers up to " + num + " is: " + sum);
27
28        int factorial = 1;
29        for (int i = 1; i <= num; i++) {
30            factorial *= i;
31        }
32        System.out.println("Factorial of " + num + " is: " + factorial);
33
34        int fib1 = 0, fib2 = 1, fibonacci;
35        System.out.println("Fibonacci Series up to " + num + ": ");
36        for (int i = 1; i <= num; ++i) {
37            System.out.print(fib1 + " ");
38            fibonacci = fib1 + fib2;
39            fib1 = fib2;
40            fib2 = fibonacci;
41        }
42
43        System.out.println("\nEnd of largeLineCountMethod method.");
44    }
45 }

```

**represent a large  
and complex  
method**

Method ~~AA~~(int num) {

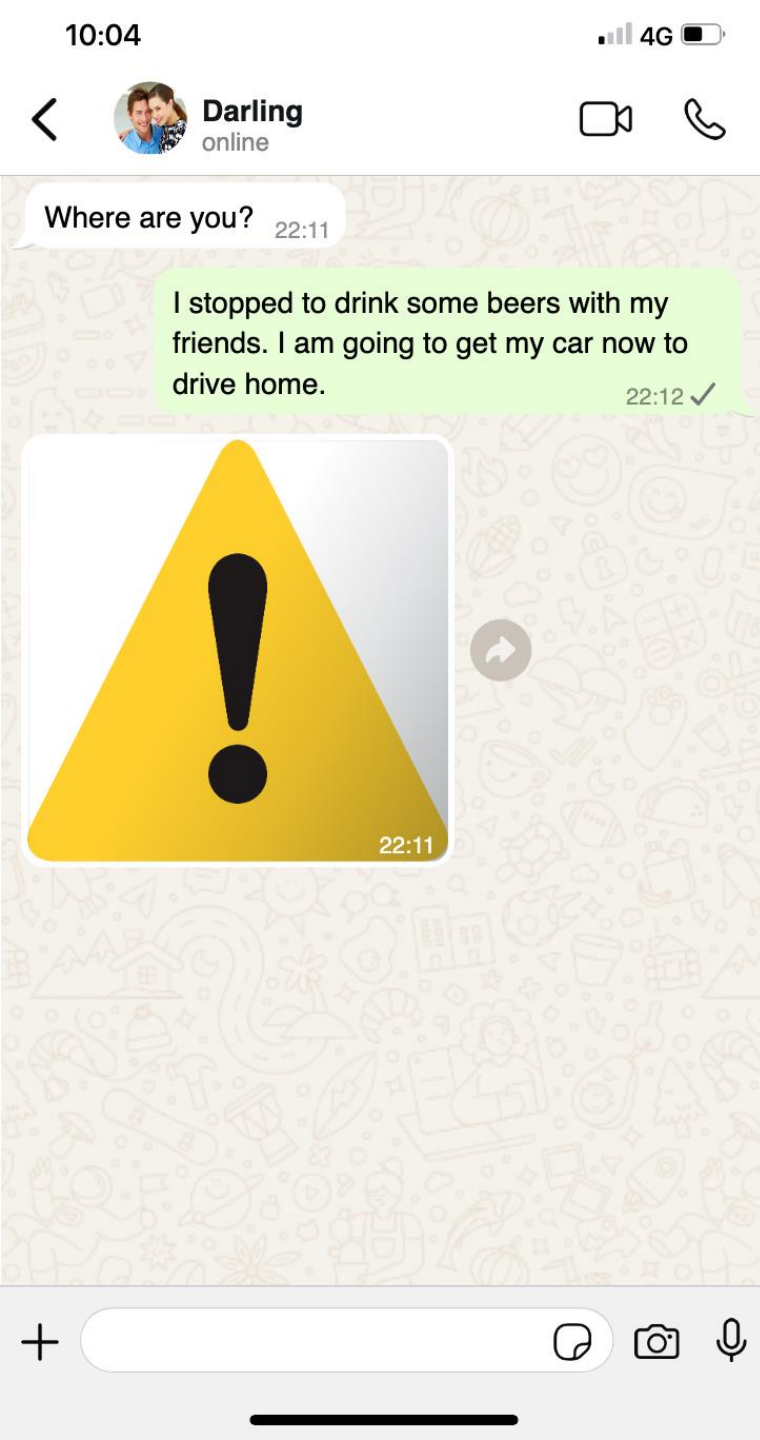


# WT ? Show

**What this emoji means?**

- 1 He used a wrong punctuation**
- 2 This is dangerous**
- 3 He will see signs like this**
- 4 She likes triangles**





# WT ? Show

**What this emoji means?**

- 1 He used a wrong punctuation**
- 2 This is dangerous**
- 3 He will see signs like this**
- 4 She likes triangles**

The method is using 1 vulnerable dependency

1 usage

```
public void justAnExampleFunction ⚠️ () {  
    String exampleHtml = "<p>Just a HTML example</p>";  
    String exampleString = StringEscapeUtils.escapeHtml4 💀 (exampleHtml);  
    System.out.println("Just a print out: " + exampleString);  
}
```

**methods that use  
vulnerable  
dependencies**

```
package org.evaluation;
```

```
import org.apache.commons.text.StringEscapeUtils;
```

2 usages

```
public class Evaluation {
```

no usages

```
    public void imUsingTheExampleFunction() {
```

```
        justAnExampleFunction();
```

```
    }
```

1 usage

```
    public void justAnExampleFunction() {
```

```
        String exampleHtml = "<p>Just a HTML example</p>";
```



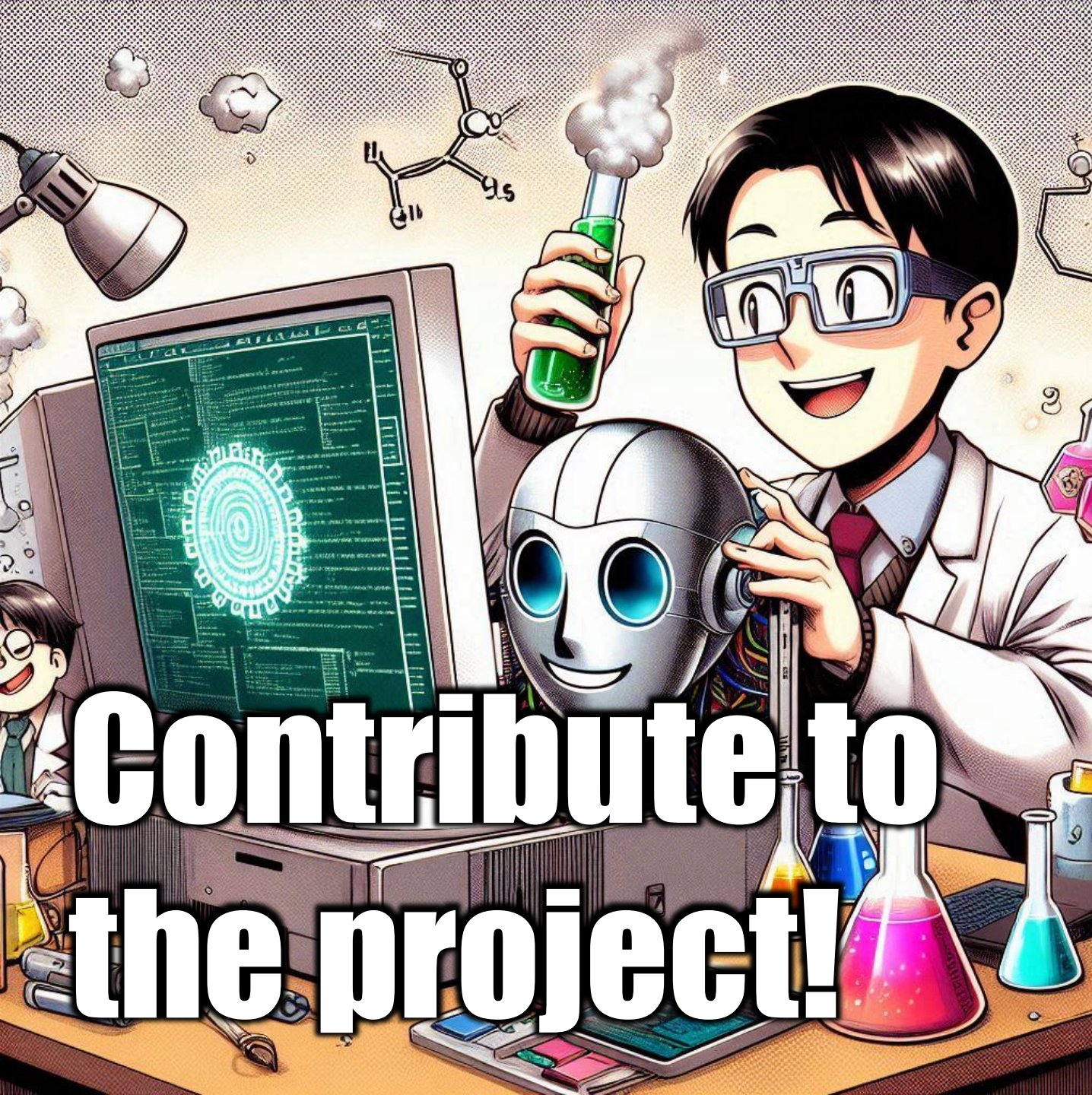
```
        // String exampleString = StringEscapeUtils.escapeHtml4(exampleHtml);
```

```
    }
```

```
I
```

```
}
```





**Contribute to  
the project!**

**technology  
innovation**

**communication  
and cognition**

**high impact on  
software development**

**case studies  
and surveys**





# Future?

*“different  
kinds of  
hieroglyphs in  
the code”*