

# Teaching Erlang

## Adult Learning



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# Quick Poll

- \* ) No programming
- \* ) No Erlang
- \* ) Beginner
- \* ) Intermediate
- \* ) Fluent



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Teaching and Learning.  
Why do we care?





**Francesco Cesarini**

@FrancescoC

Following



The biggest obstacle to the adoption of Erlang in the Bay Area is lack of programmers. Hoping to solve that soon

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Why do we care?  
Teach you some  
Erlang for fun and  
profit potentials.





# Inspiration:

\*) Misconceptions

\*) Erlang Solutions



# Inspiration:

\*) Misconceptions

\*) Erlang Solutions







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Discover



Search

4 Jun

@zedshaw the vague description of the tech to come reminds me of Erlang :-P

Details



zedshaw

@zedshaw



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Except Erlang is very douchebag functional, not usable, hard to teach and has no signal flow concepts really.



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https://en.twitter.com/zedshaw/status/209825915604189184



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# Discover



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**Mawuli Adzaku**

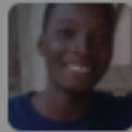
@mawuli\_ypa

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”[#Erlang](#) is designed for people who are willing to RTFM“, which may be true, but lord, does it need to be so hard? Richard O’Keefe

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**Mawuli Adzaku**  
@mawuli\_ypa

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”#Erlang is designed for people who are willing to RTFM“, which may be true, but lord, does it need to be so hard? Richard O’Keefe

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Erlang: Does it have to be  
so difficult?



Erlang: Does it have to be  
so difficult?

**NO.**



# Inspiration:

\*) Misconceptions

\*) Erlang Solutions







- Adult Learning
- Teaching Programming
- Teaching Erlang





# Adult Learning



# Principles:

- \*.) Relevance
- \*.) Consilience
- \*.) Reflection



Principles of Adult Learning

# Relevance



Principles of Adult Learning

# Consilience



Principles of Adult Learning

# Reflection



# Principles:

- \*.) Relevance
- \*.) Consilience
- \*.) Reflection







- Adult Learning
- Teaching Programming
- Teaching Erlang



# Teaching Programming



# Teaching Programming

\*) Existing Methods

\*) Experiential Learning

\*) [star]Games



Teaching Programming

# Existing Methods



Teaching Programming

# Existing Methods

Books, Lectures, Talks, Presentations



Teaching Programming

# Existing Methods

Tutorials, Code Katas, Code Academy



Teaching Programming

# Experiential Learning





Teaching Programming

# Experiential Learning

Gamification



Teaching Programming

# [star]Games

## \*Games



Teaching Programming

# \*Games

Facilitated Experiential Learning



Teaching Programming

# \*Games

Teach Some Concept



Teaching Programming

# \*Games

Teach Some Concept  
*[Really Just Programming]*



Teaching Programming

# \*Games

Best Practices:



Teaching Programming

# \*Games

Best Practices:  
Test-Driven Development



Teaching Programming

# \*Games

Best Practices:  
Paired Programming





Teaching Programming

# \*Games

Best Practices:  
Peer Review



Teaching Programming

# \*Games

Best Practices:  
Algorithmic Communication



Teaching Programming

# \*Games

Best Practices:  
Refactoring



Teaching Programming

# \*Games

Best Practices:  
Constructive Problem Solving?



Teaching Programming

# \*Games

Best Practices:  
Competition?



Teaching Programming

# \*Games

Process:



Teaching Programming

# \*Games

Process:  
Introductions



Teaching Programming

# \*Games

Process:  
Inverse Pairing





Teaching Programming

# \*Games

Process:  
Provide a Test



Teaching Programming

# \*Games

Process:  
Facilitate Solution of Test



Teaching Programming

# \*Games

Process:  
Facilitate Interruptions



# Teaching Programming

\*) Existing Methods

\*) Experiential Learning

\*) [star]Games





- Adult Learning
- Teaching Programming
- Teaching Erlang



# Teaching Erlang



# Teaching Erlang

- \*) Special Considerations
- \*) ErlangGames Example
- \*) [star]Games in Practice





Teaching Erlang

# Special

Learning Functional Programming  
is Fundamentally Different



Teaching Erlang

# Special

Learning Functional Programming  
is Fundamentally Different

**BAD**



Teaching Erlang

# Special

Functional vs Object Oriented is  
Academic Distinction



Teaching Erlang

# Special

Functional vs Object Oriented is  
Irrelevant to Learning



Teaching Erlang

# Special

This is unlike anything you've ever  
learned before.



Teaching Erlang

# Special

This is unlike anything you've ever  
learned before.

**BAD**



Teaching Erlang

# Special

Syntax Aesthetics



## Teaching Erlang

`factorial(0) ->`

`1;`

`factorial(X) when X > 0 ->`

`X * factorial(X - 1).`



# Teaching Erlang

**format**(FmtStr, Args, MaxLen) ->

format(FmtStr, Args, MaxLen, []).

**format**(FmtStr, Args, MaxLen, Opts) ->

Options = make\_options(Opts, #options{}),

Cs = collect(FmtStr, Args),

{Cs2, MaxLen2} = build(Cs, [], MaxLen, Options),

*%% count how many terms remain*

{Count, StrLen} = lists:foldl(

**fun**({\_C, \_As, \_F, \_Adj, \_P, \_Pad, \_Enc}, {Terms, Chars}) ->

    {Terms + 1, Chars};

  (\_, {Terms, Chars}) ->

    {Terms, Chars + 1}

**end**, {0, 0}, Cs2),

build2(Cs2, Count, MaxLen2 - StrLen).

# Teaching Erlang

```
collect([$~|Fmt0], Args0) ->  
  {C,Fmt1,Args1} = collect_cseq(Fmt0, Args0),  
  [C|collect(Fmt1, Args1)];  
collect([C|Fmt], Args) ->  
  [C|collect(Fmt, Args)];  
collect([], []) -> [].
```

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# Special

Jargon:



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# Special

Jargon:

*Concurrency*



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# Special

Jargon:

*Parallelism*



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# Special

Jargon:

*Multi{Process/Thread/Core}*



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# Note on Processes: “A Visual Tour of Erlang”

[http://www.youtube.com/watch?  
v=IH0WfeNuAN8](http://www.youtube.com/watch?v=IH0WfeNuAN8)



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# ErlangGames Example





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# \*Games in Practice



Teaching Erlang

# \*Games in Practice

Choosing Problems



Teaching Erlang

# \*Games in Practice

Time Flies



Teaching Erlang

# \*Games in Practice

Reception





- Adult Learning
- Teaching Programming
- Teaching Erlang



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# Teaching Erlang

## Adult Learning

