



 @mr\_foto



 @mr\_foto

# HOW YOU REMEMBER SLOVENIA





HOW I REMEMBER BELARUS



Software Developer

Team Lead

Git Blame Navigator

Time Zone Resolver



A photograph of a person from the waist up, sitting on a bench. They are wearing a dark grey or black hoodie over a white t-shirt and light-colored, possibly white, pants. Their hands are clasped in their lap. The background is a lush, green, leafy area, suggesting an outdoor park or garden setting.

Software Developer

Team Lead

Git Blame Navigator

Time Zone Resolver

Slack Emoji Creator

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Senior Rubber Duck

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mrekar

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EMAIL

SKYPE

WEBSITE

Exclusive access

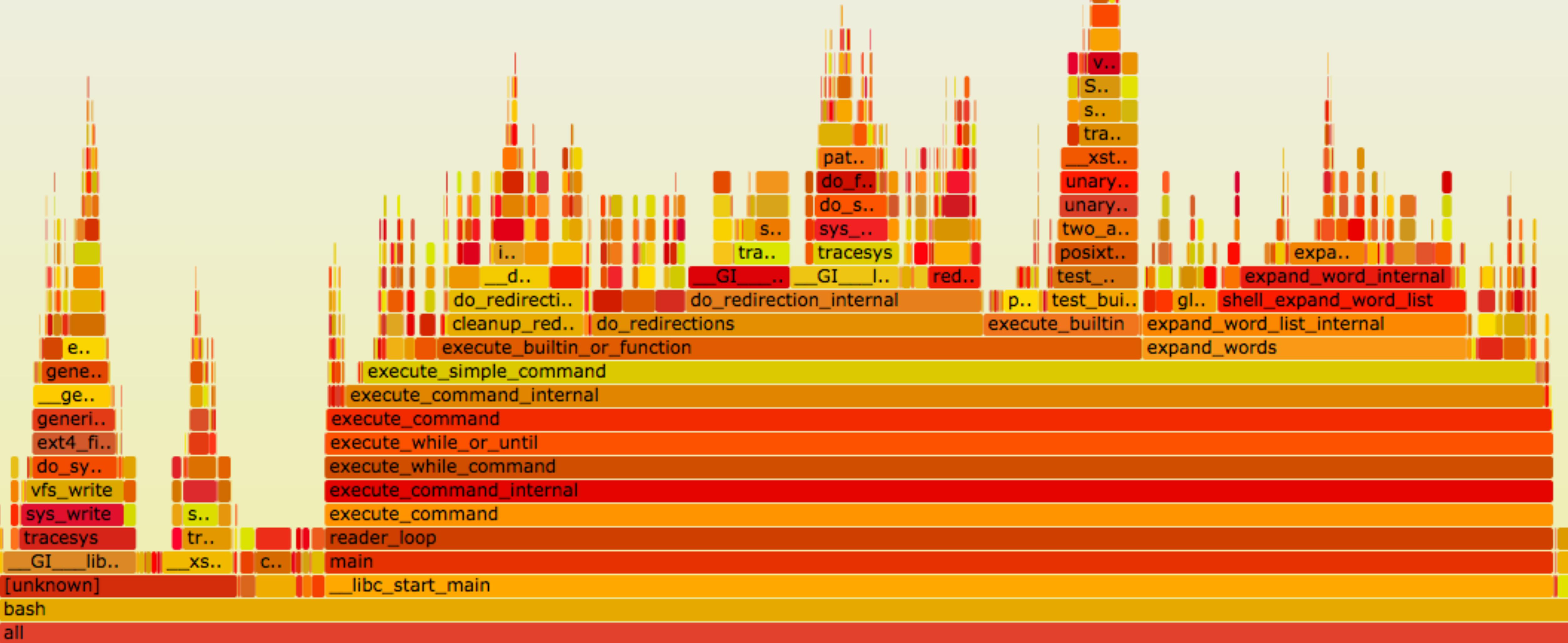


HANS,

A soldier in a green uniform and helmet is spraying a powerful stream of orange and yellow flames from a flamethrower. The flames engulf a large area of ground, casting a bright glow. The background is dark, suggesting night or smoke.

GET THE FLAME GRAPHS

# 🔥 FLAME GRAPHS 🔥



# WHY AND WHAT

Interactive visualization of stack traces

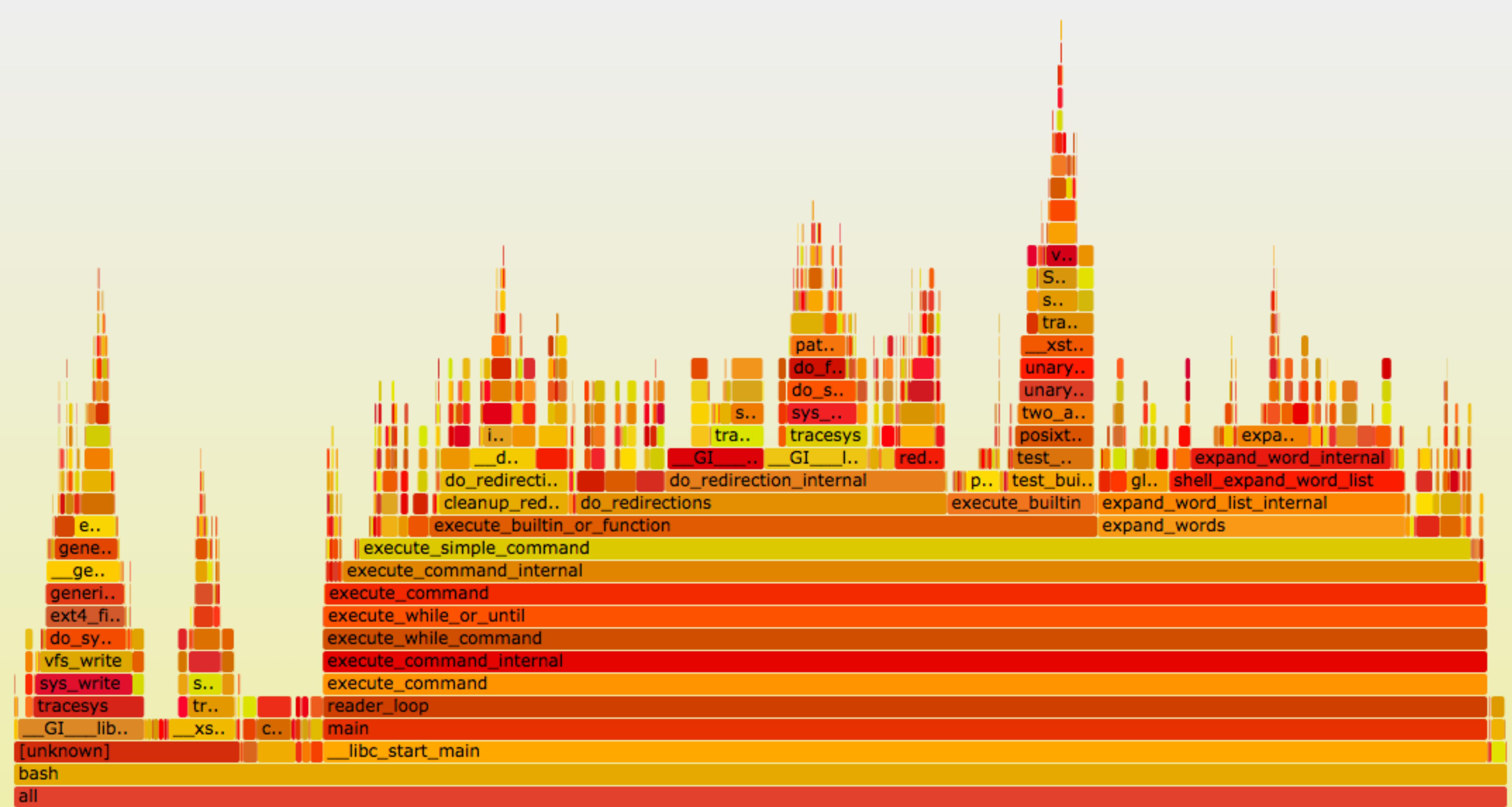
From beginners to experts

How SW is consuming CPU

Brendan Gregg



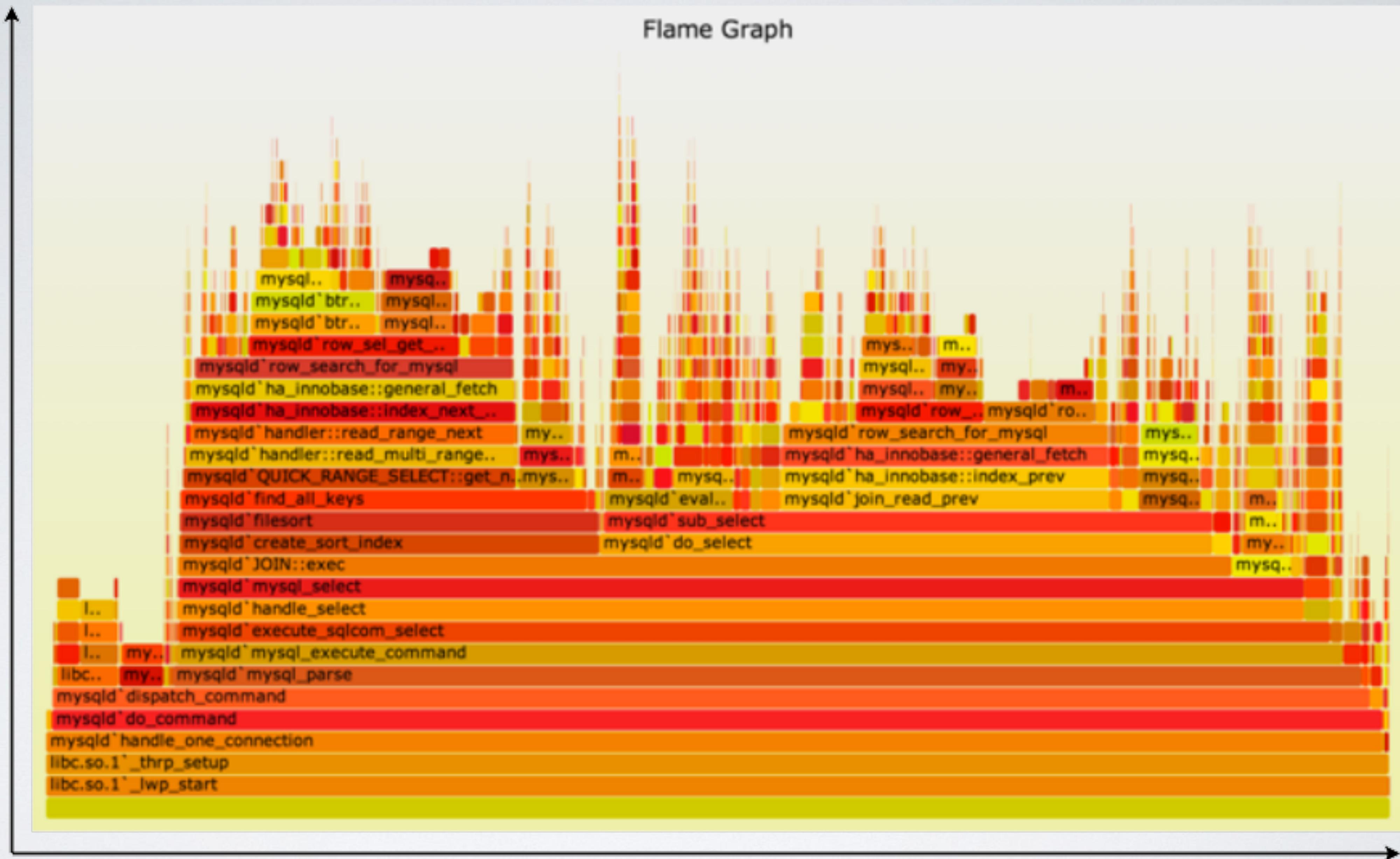
This image is a dense, black-and-white tree diagram, likely a phylogenetic tree or a hierarchical classification chart. The tree is rooted at the top and branches downwards into numerous terminal nodes. Each node is labeled with a short string of text, which appears to be a combination of scientific names and numbers. The labels are in a small, monospaced font. The tree structure is highly complex, with many levels of branching, creating a dense network of lines and labels. The overall appearance is that of a technical or academic diagram.



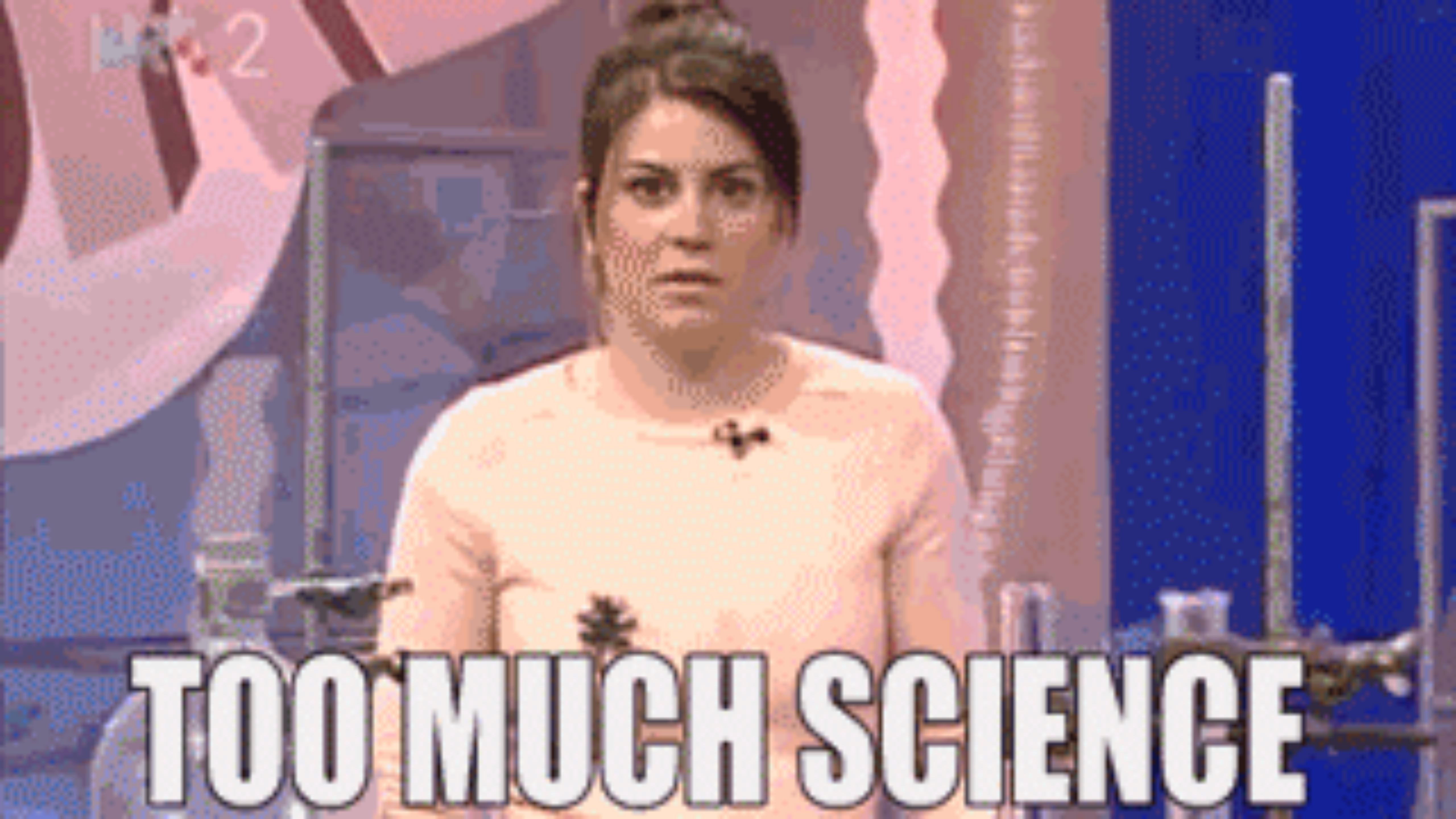


AWESOME.

# Stack Depth



Alphabet



**TOO MUCH SCIENCE**

# SAMPLING



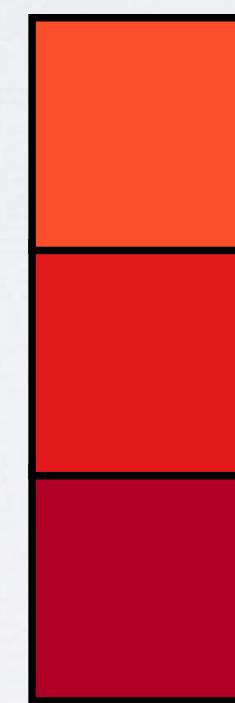
Reading Emails



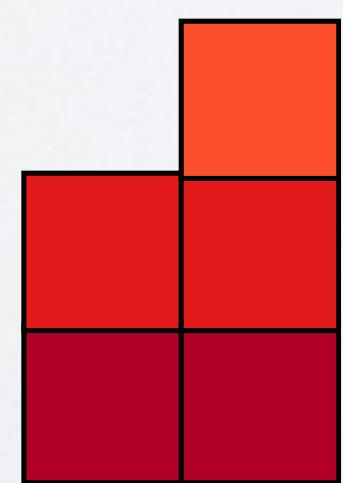
My Day



# SAMPLING



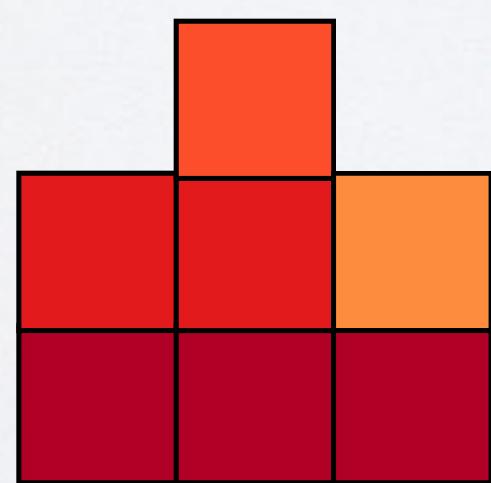
← Replying to Emails  
← Reading Emails  
← My Day



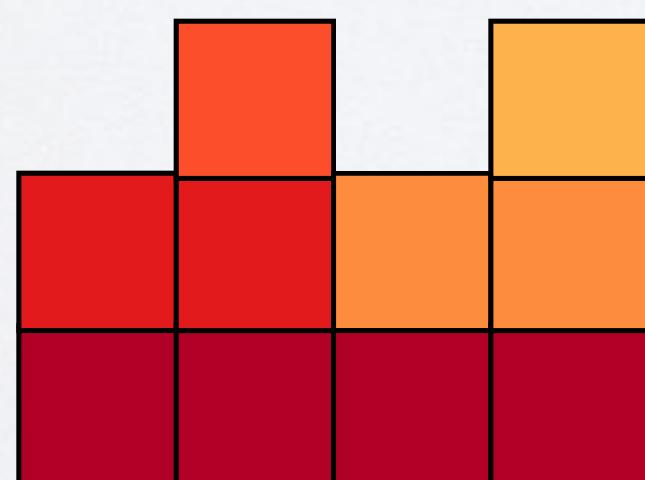
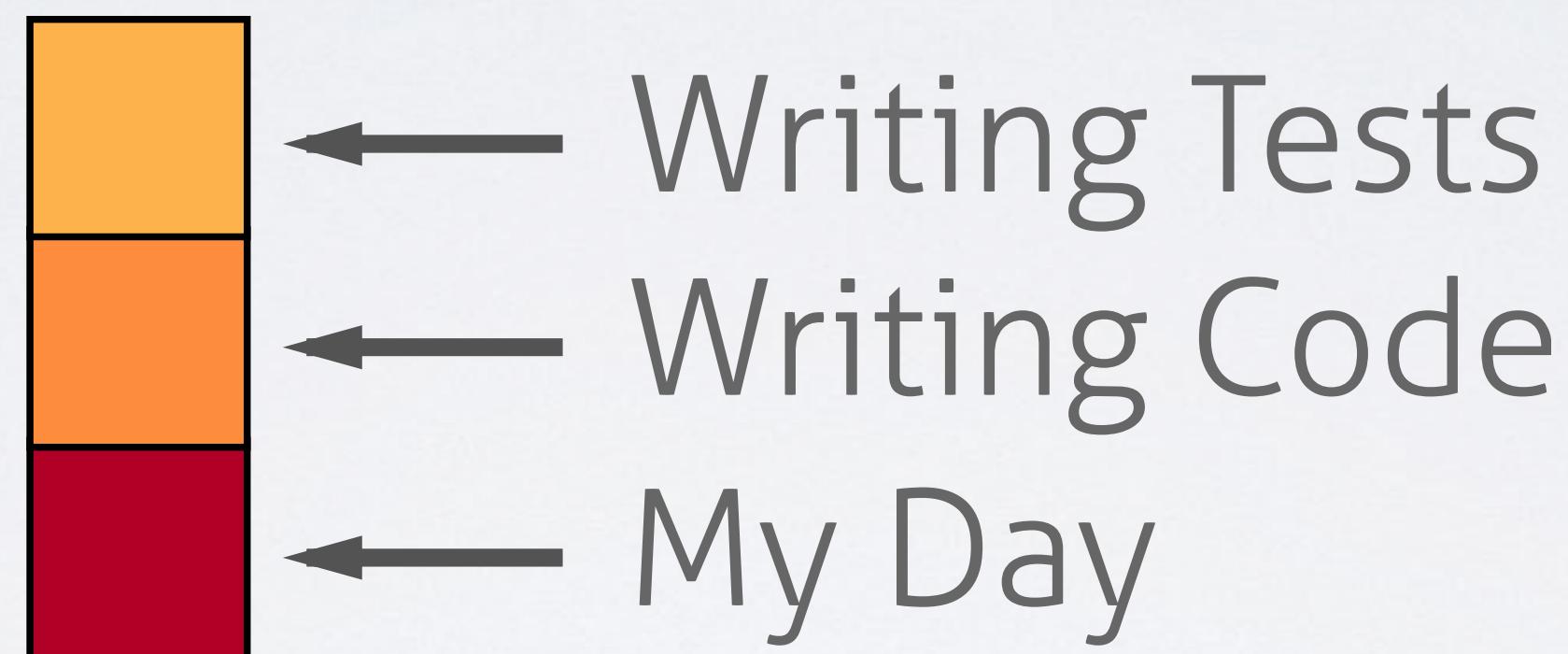
# SAMPLING



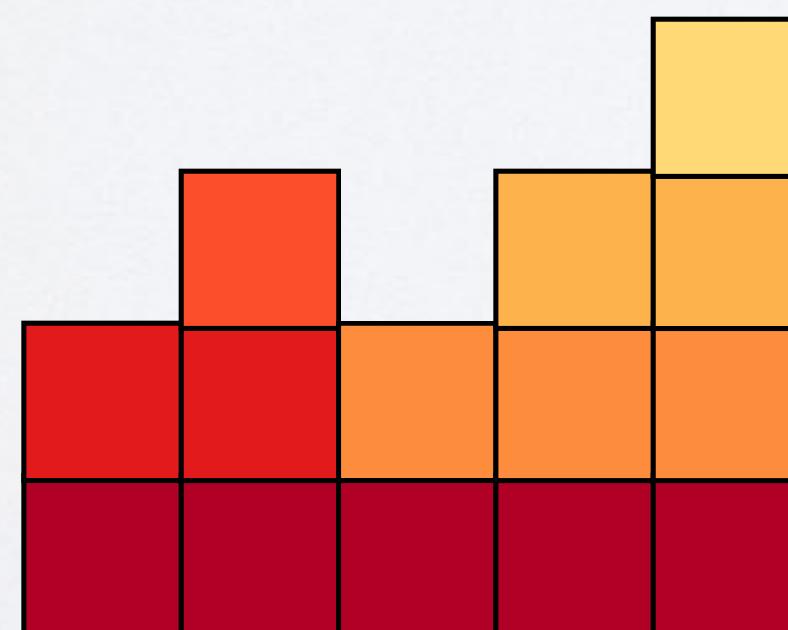
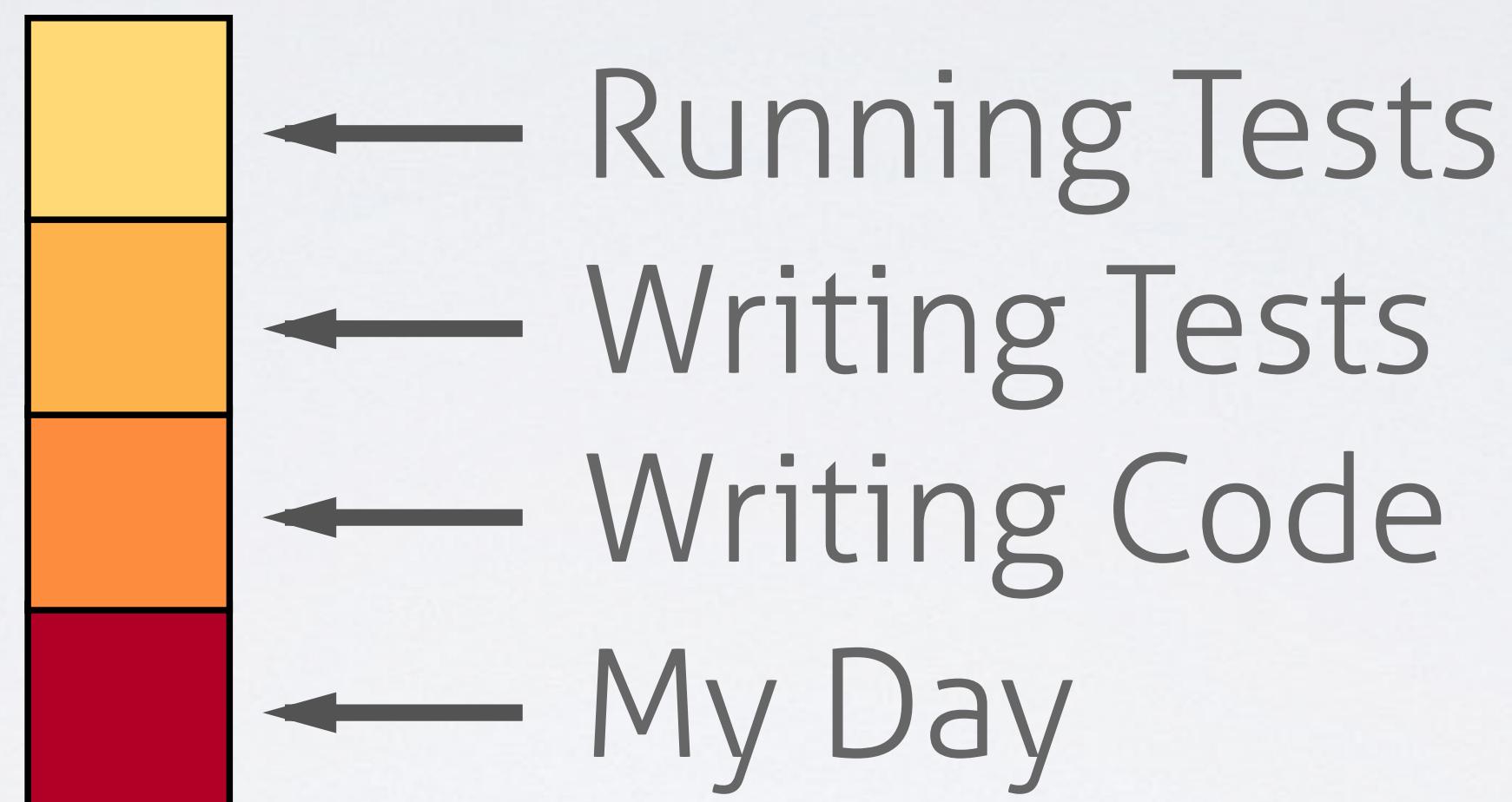
← Writing Code  
← My Day



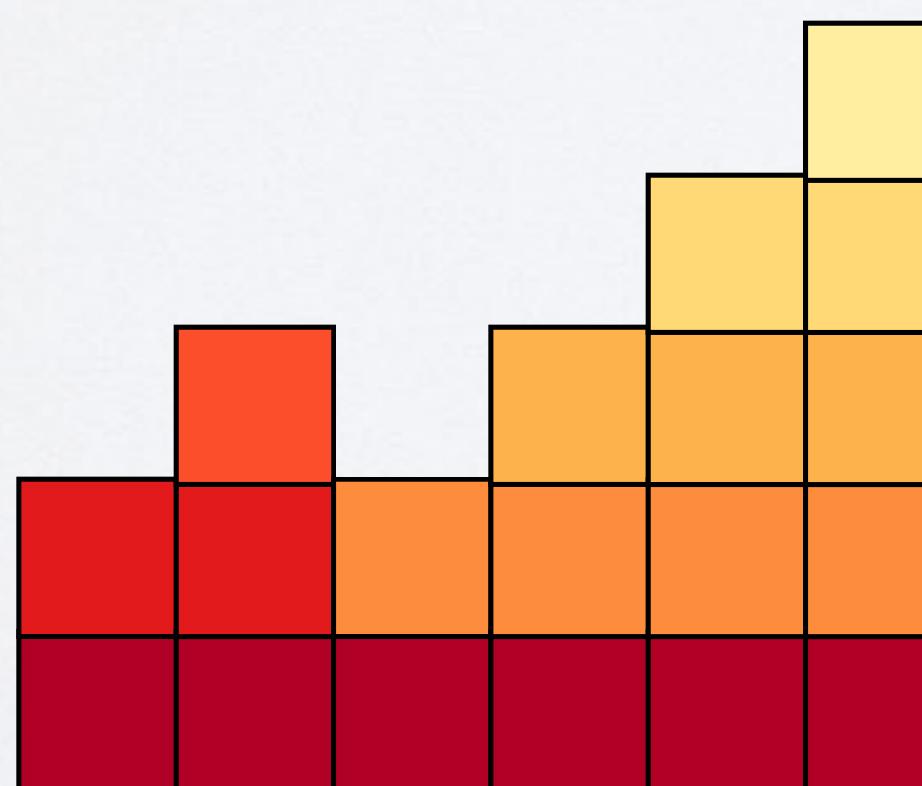
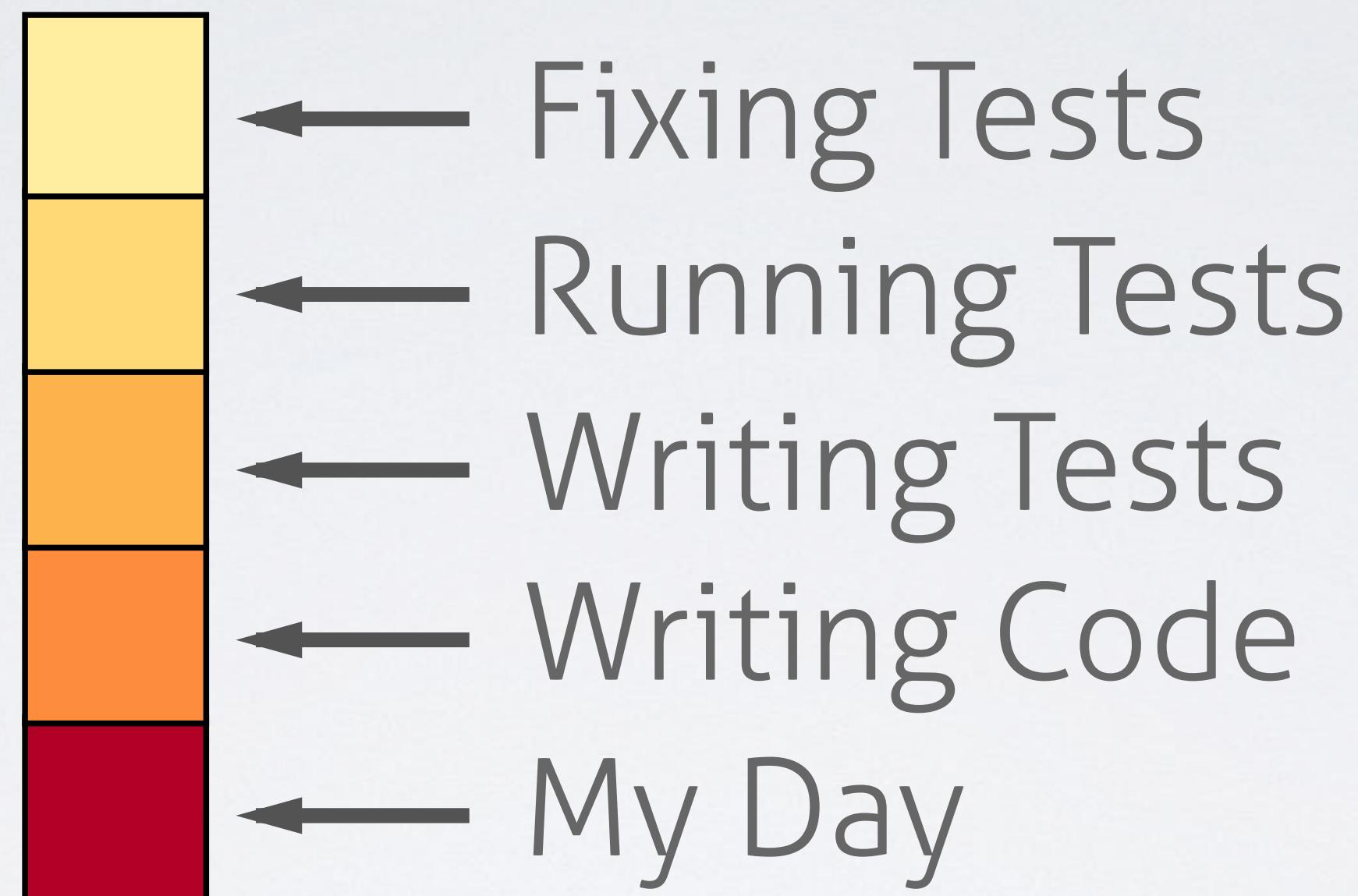
# SAMPLING



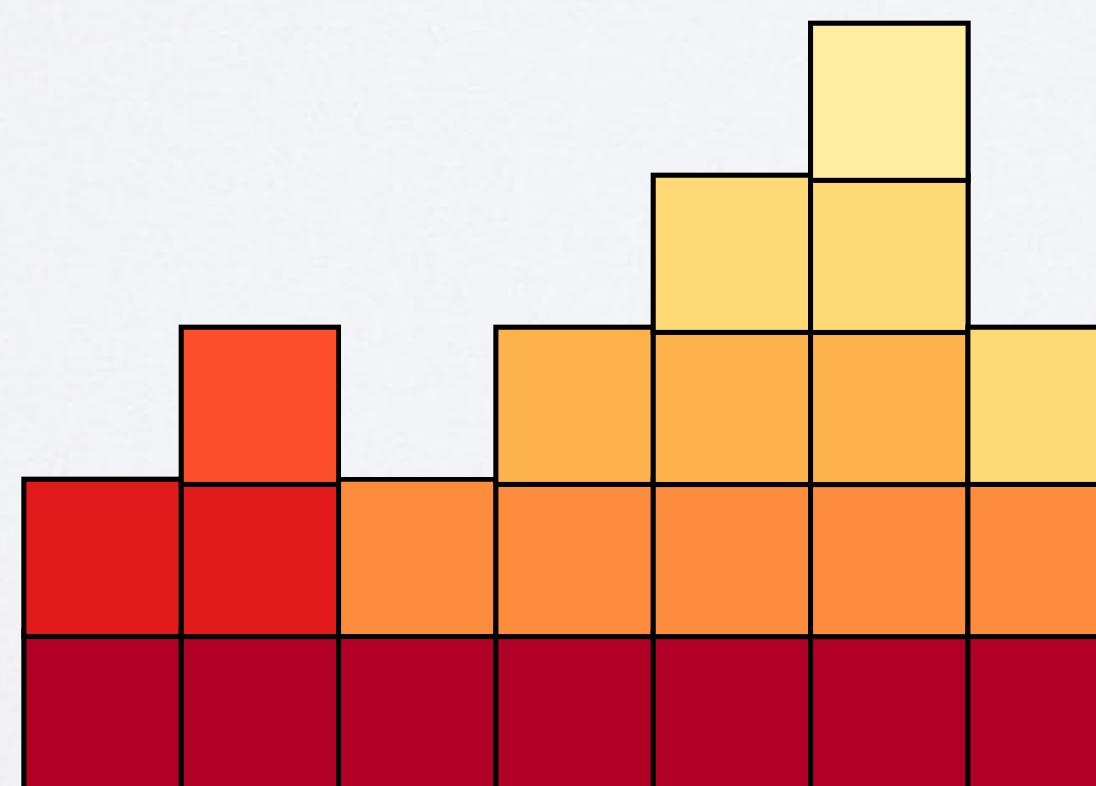
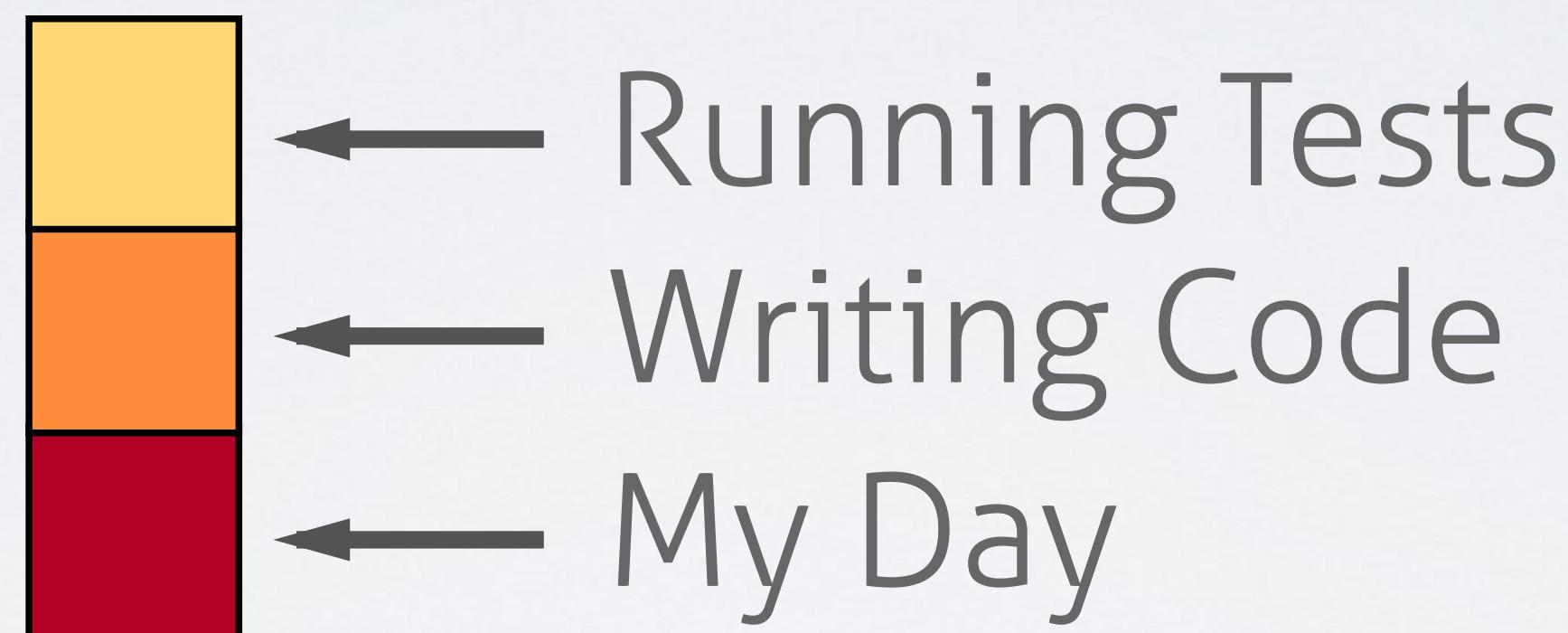
# SAMPLING



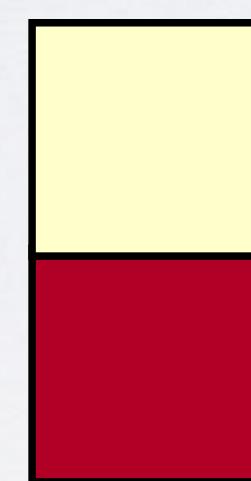
# SAMPLING



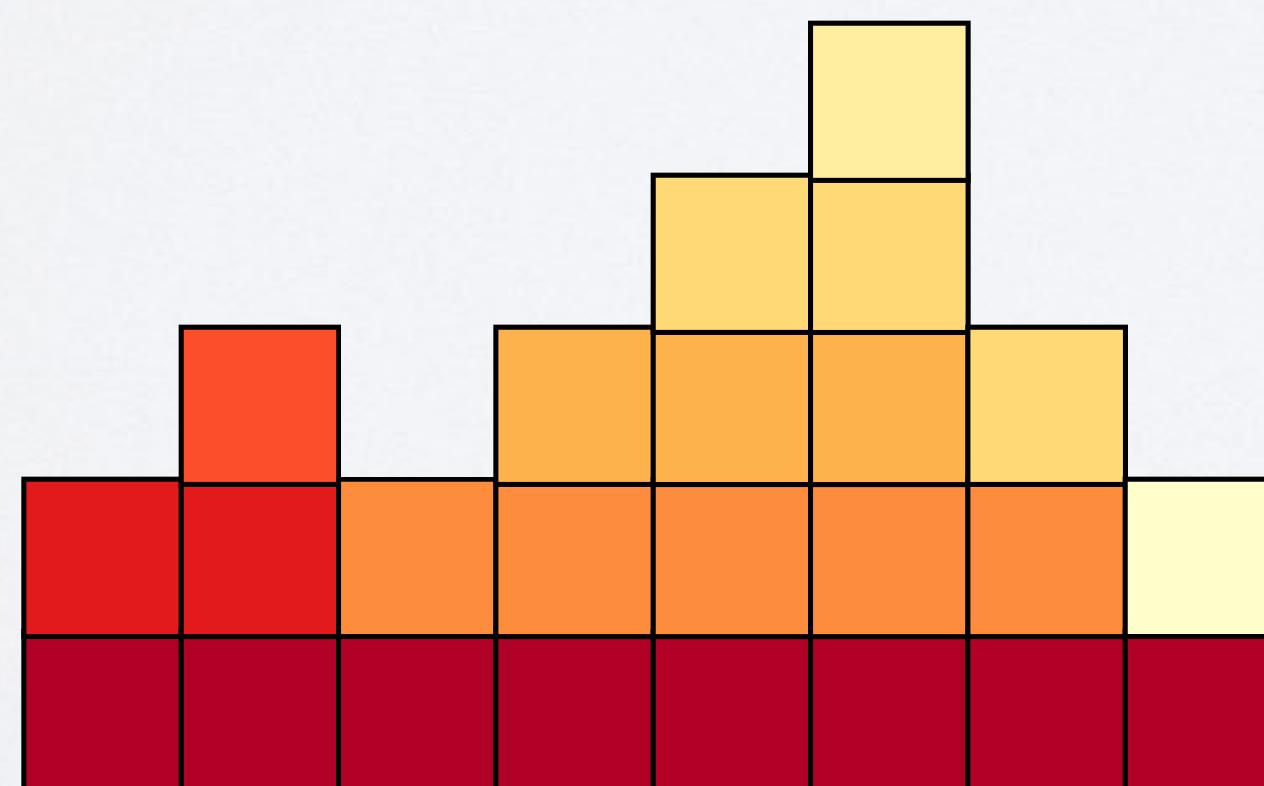
# SAMPLING



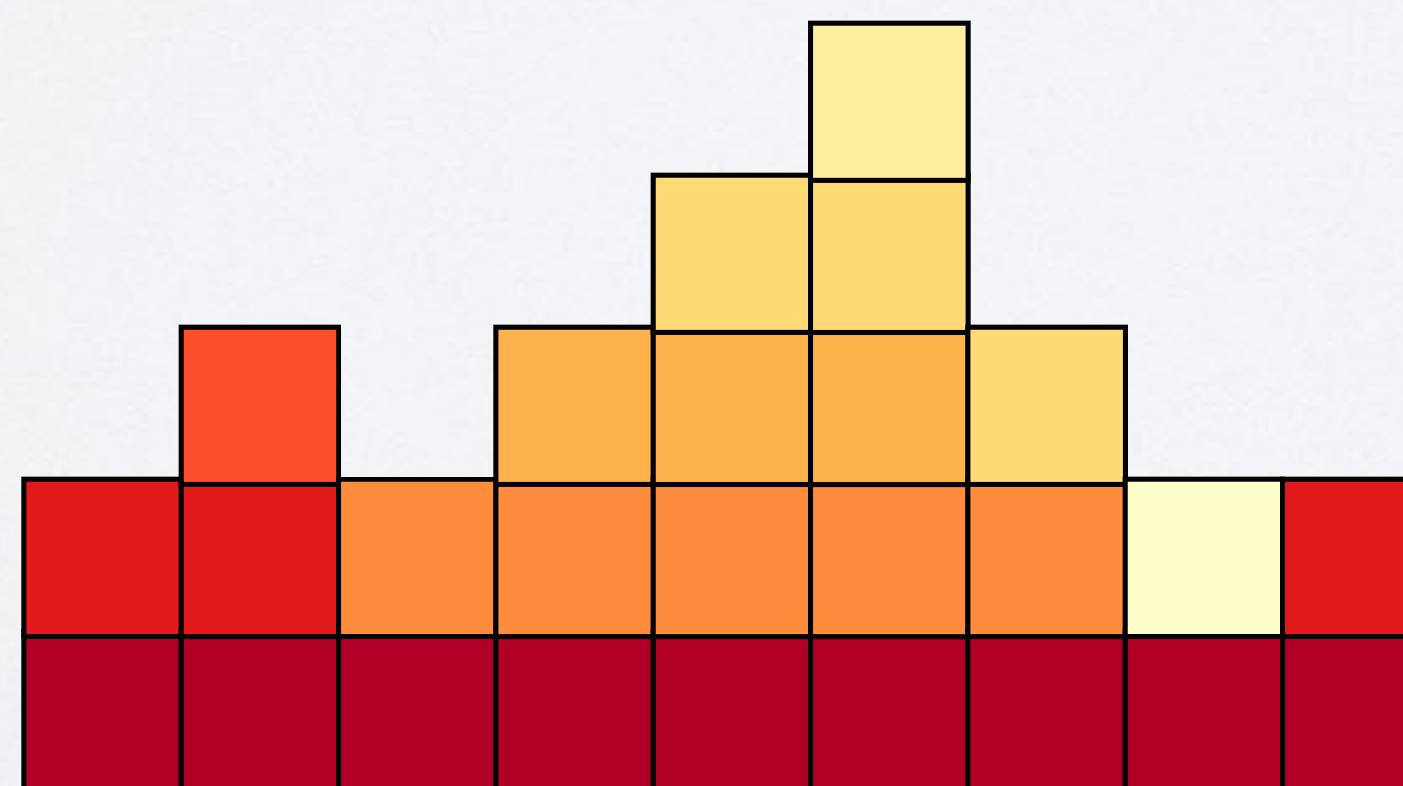
# SAMPLING



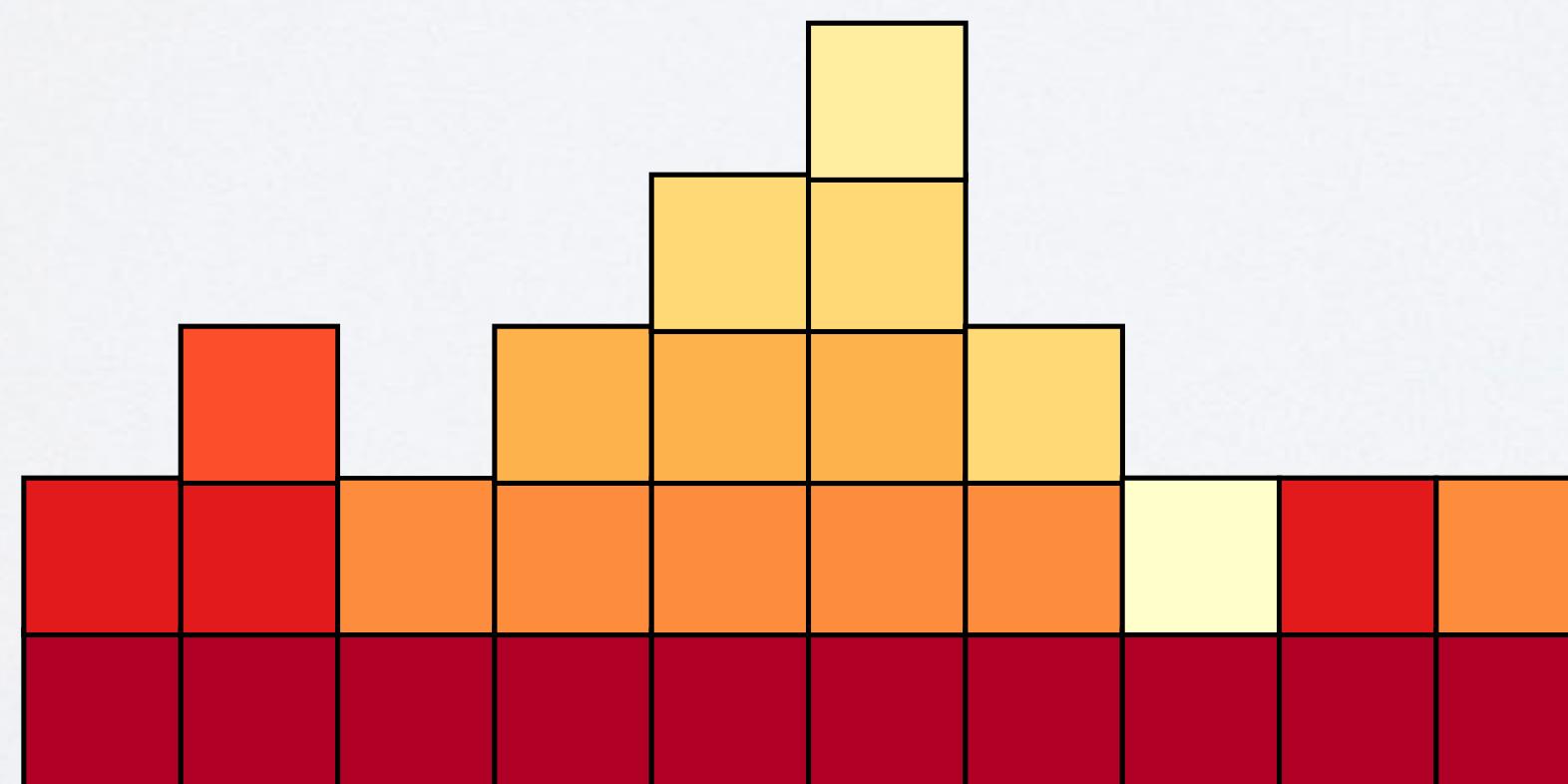
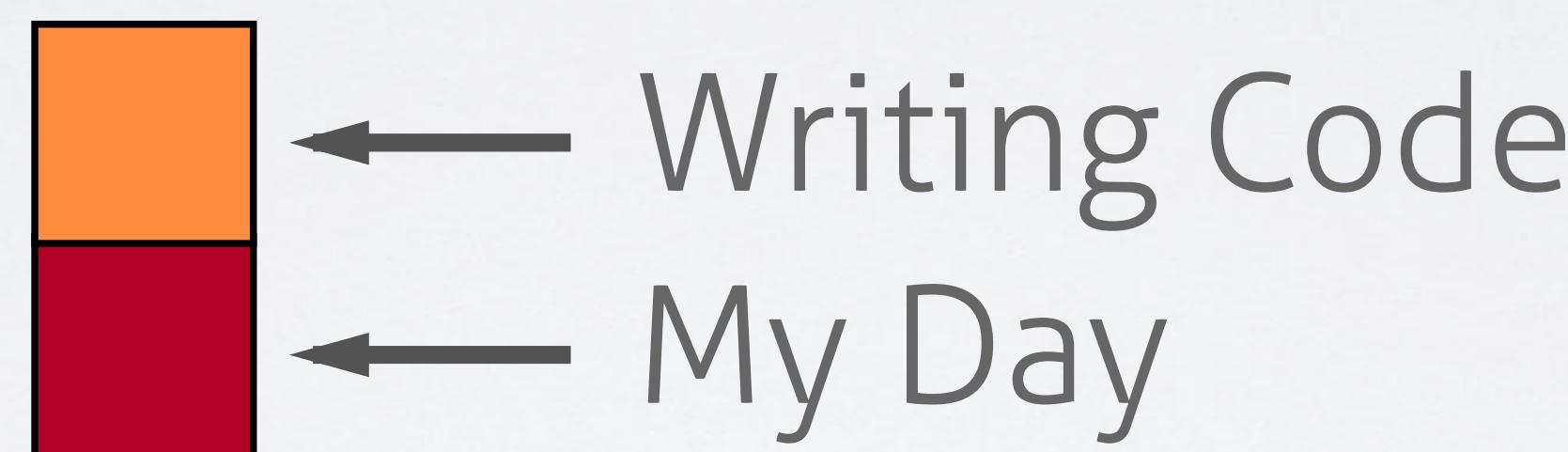
Making Espresso  
My Day



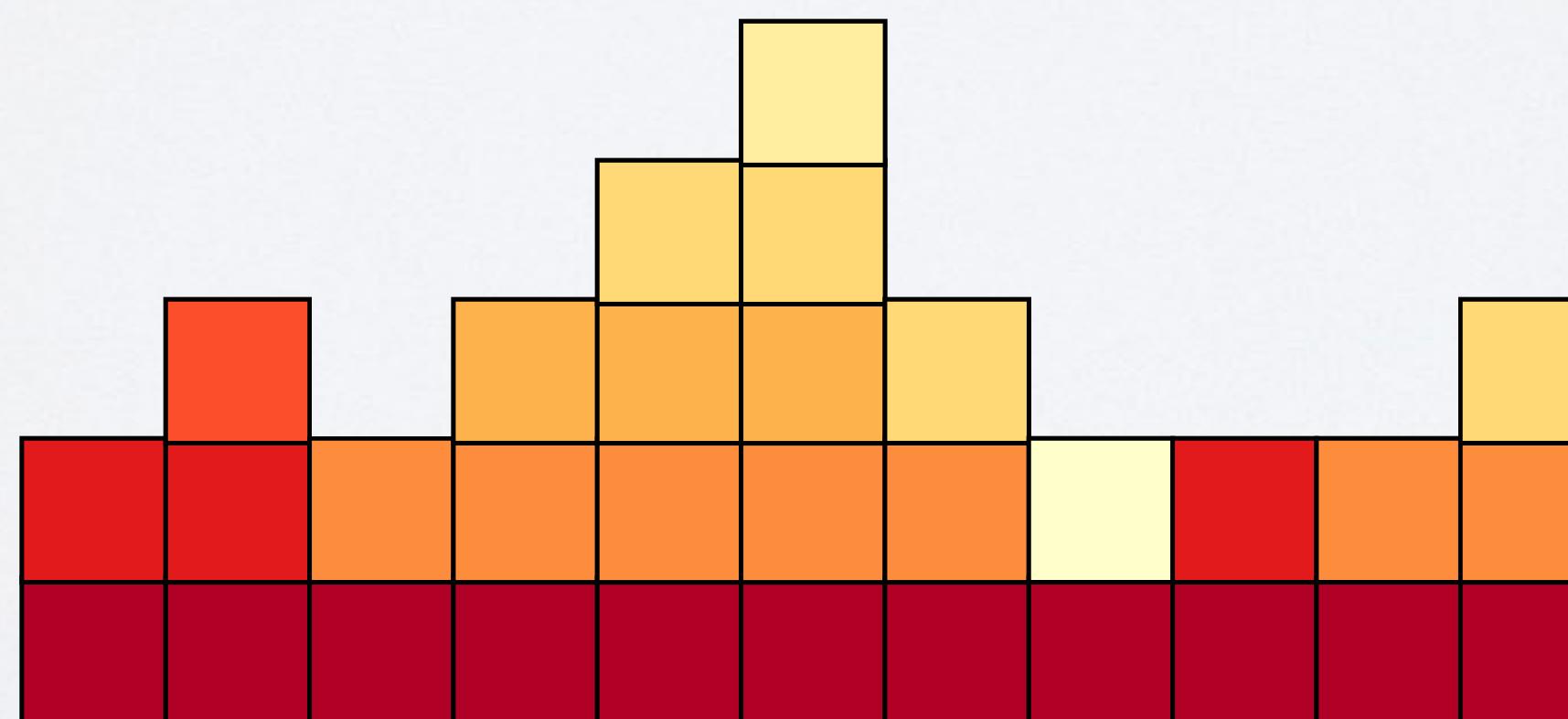
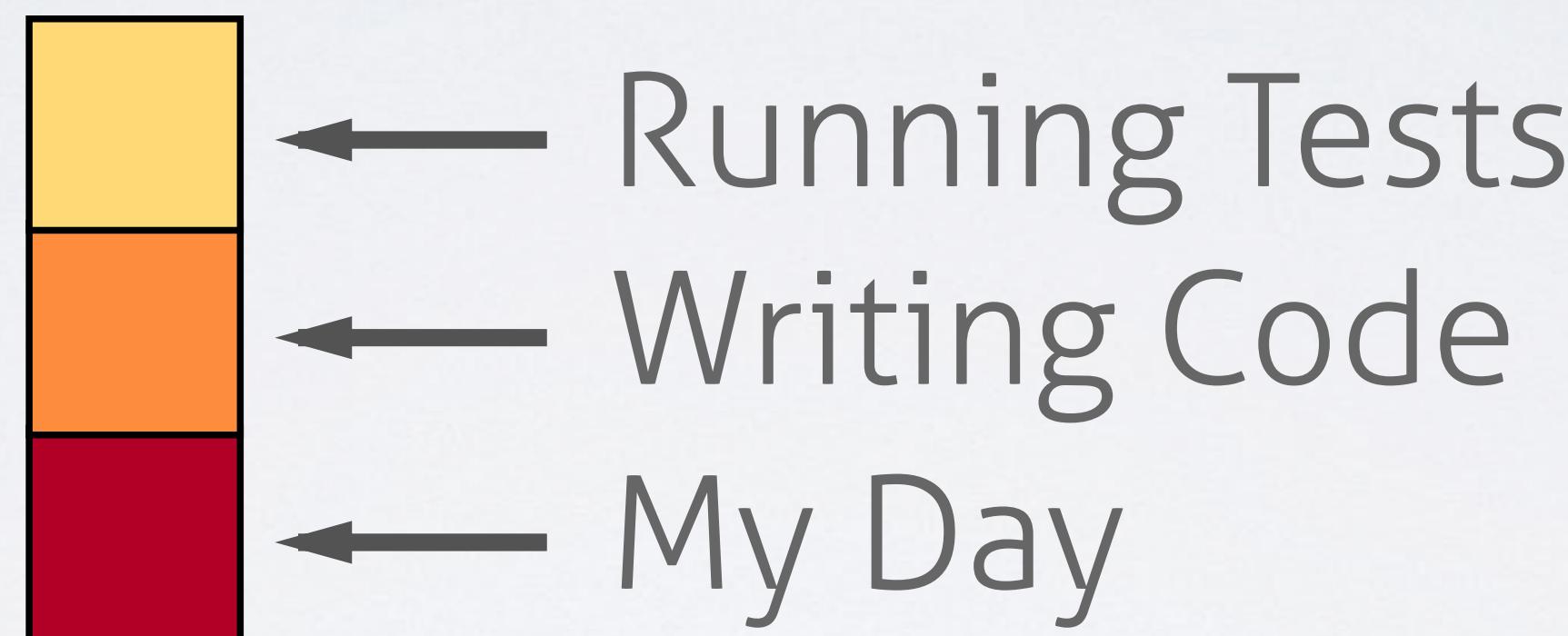
# SAMPLING



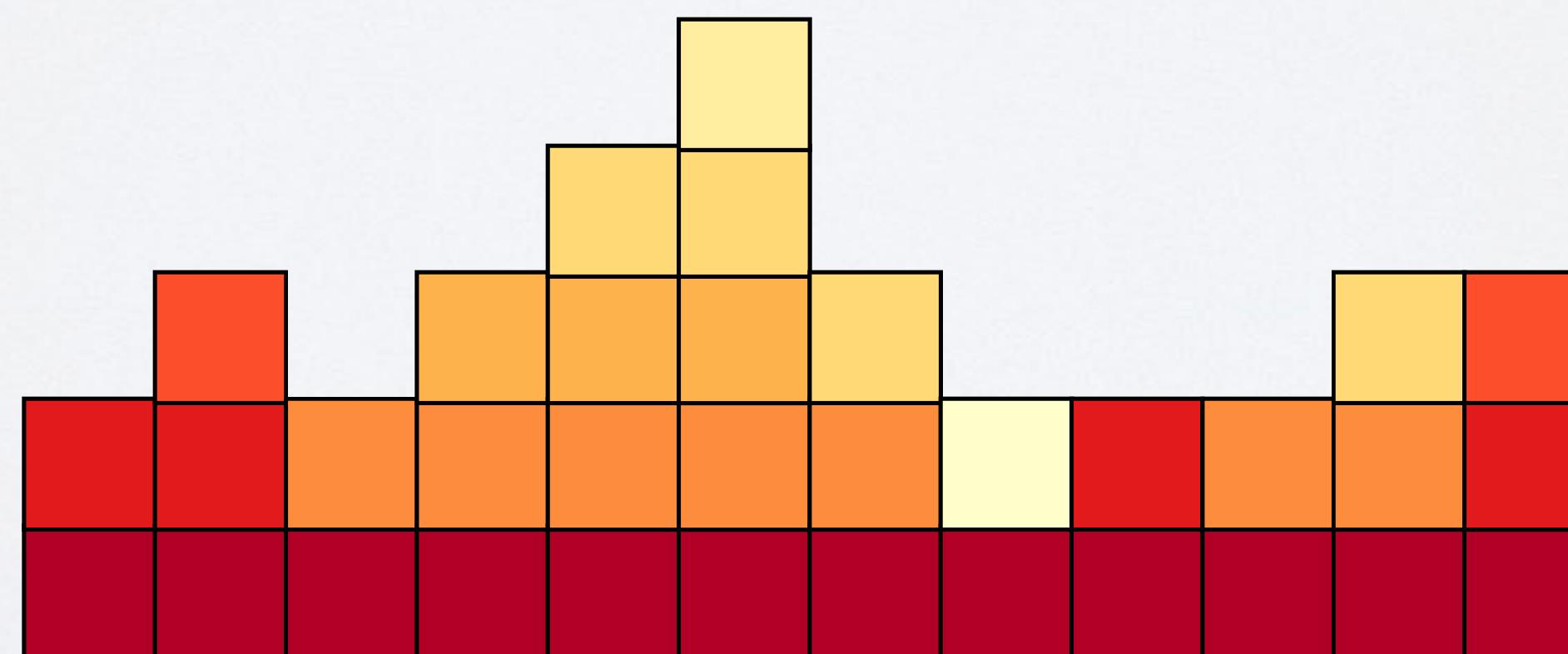
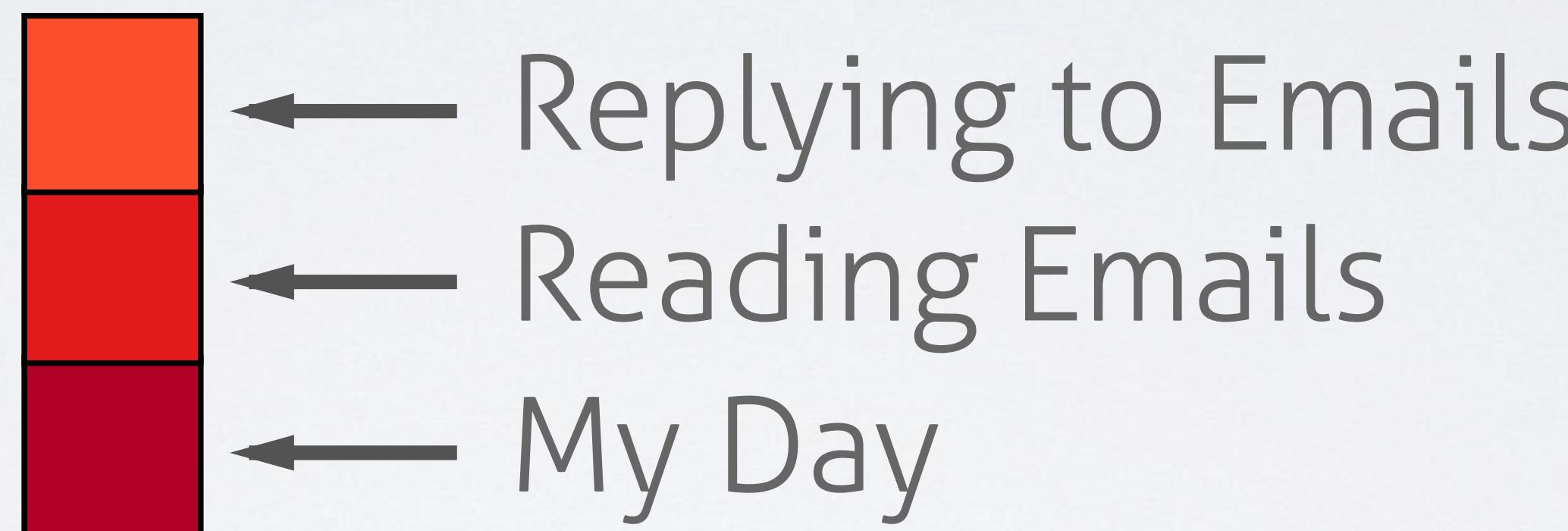
# SAMPLING



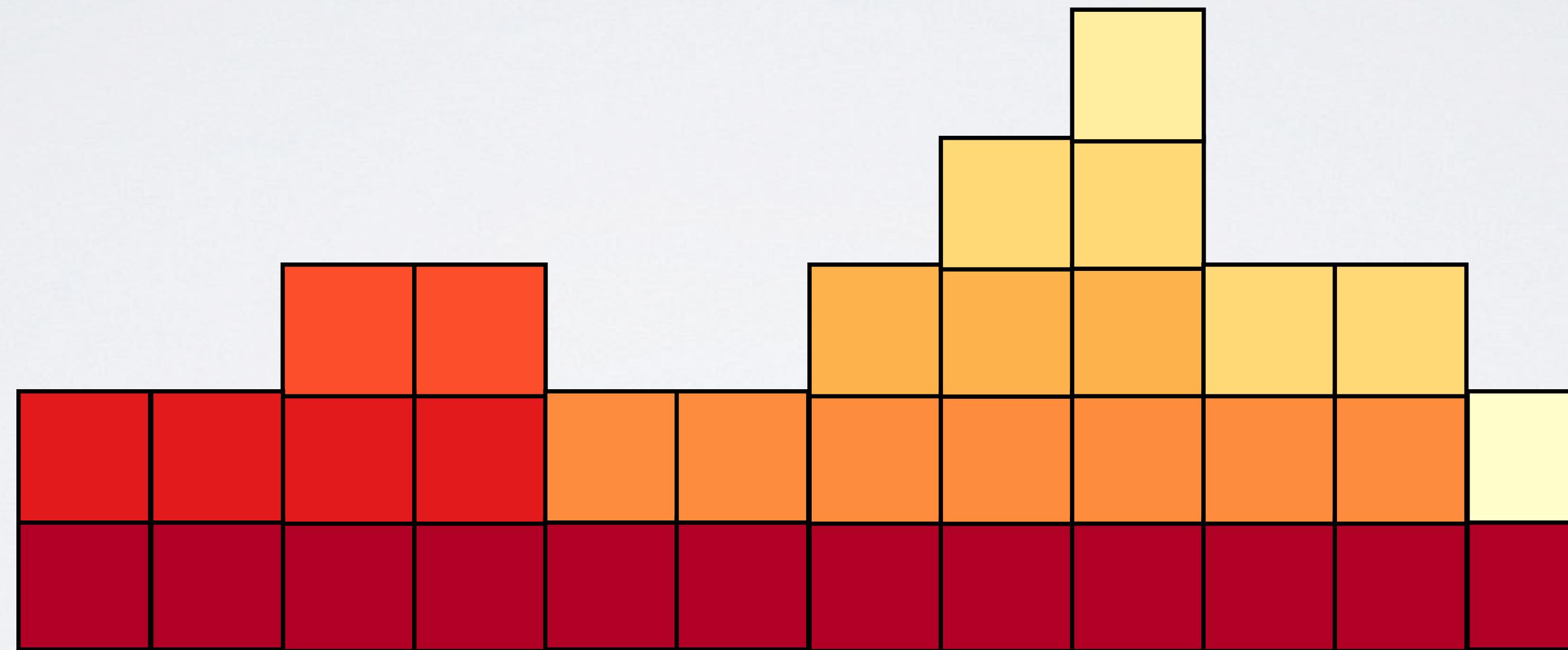
# SAMPLING



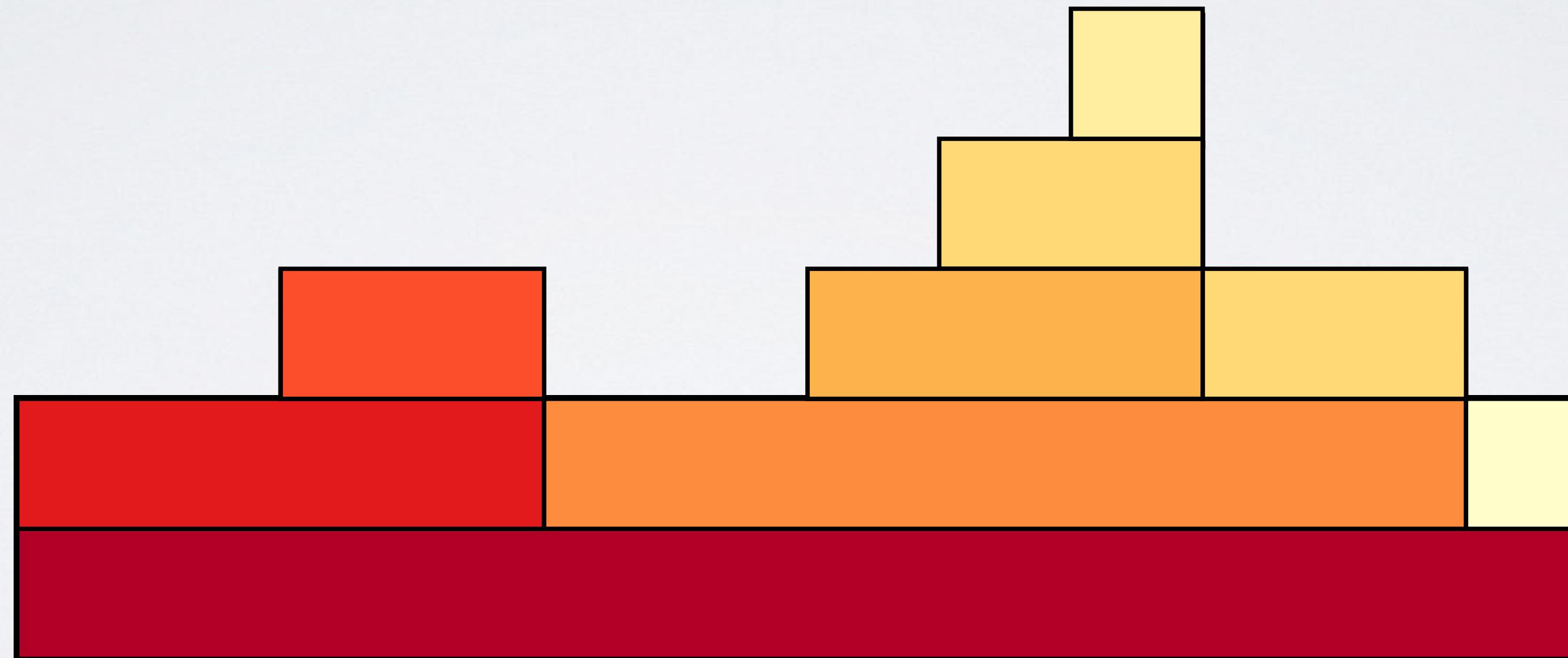
# SAMPLING



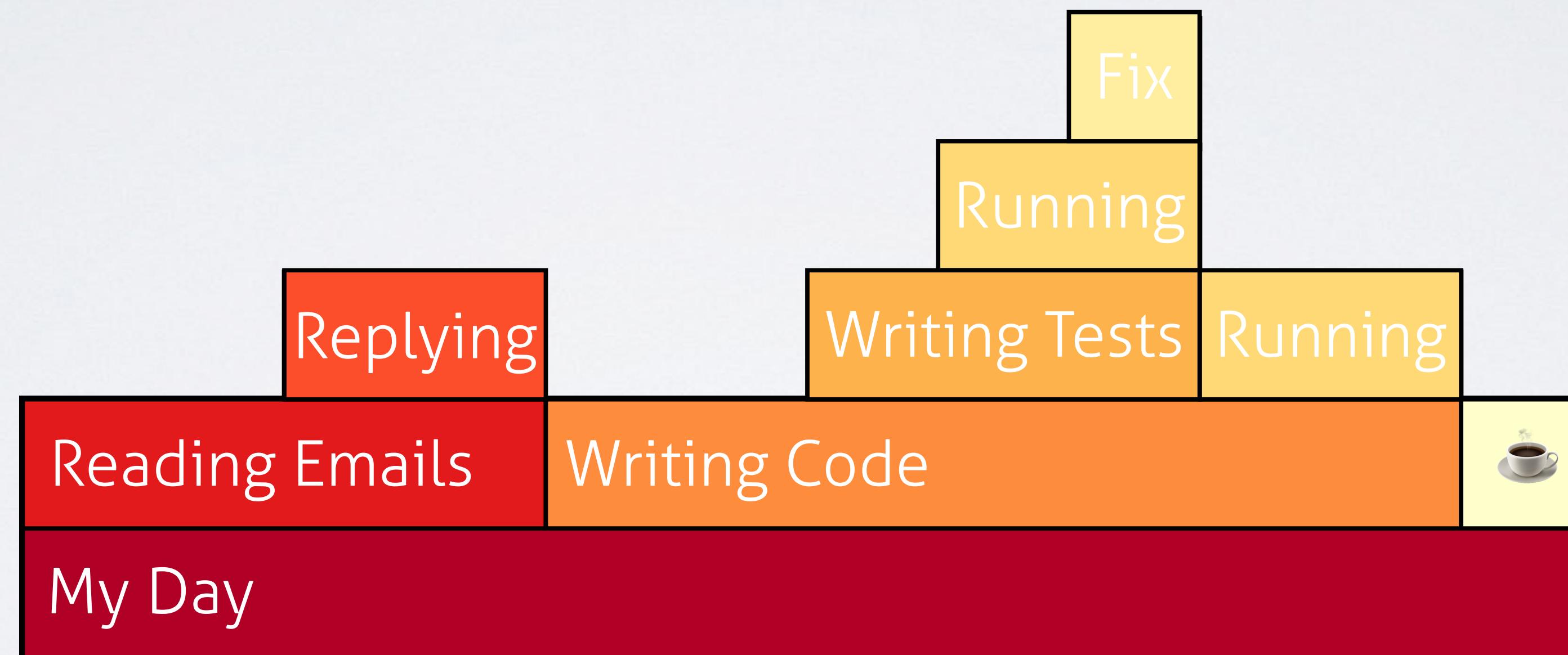
# GROUPING



# GROUPING

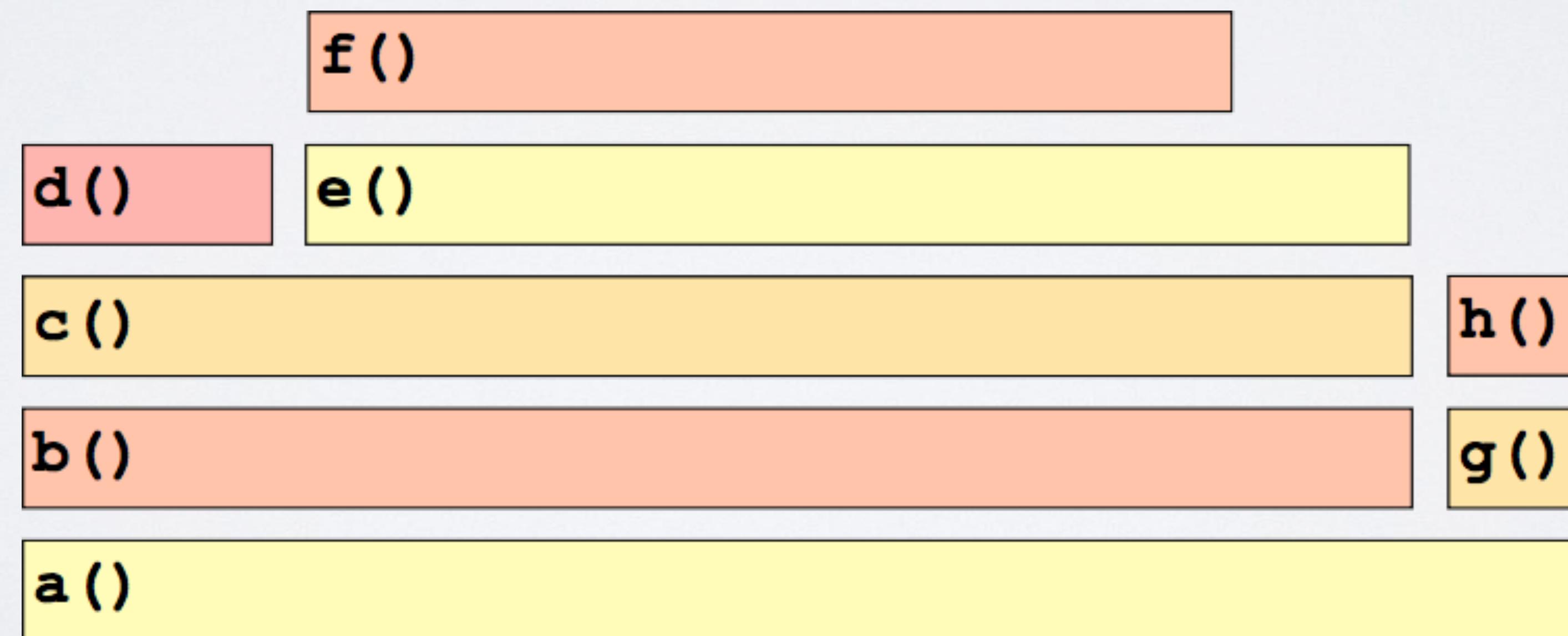


# GROUPING



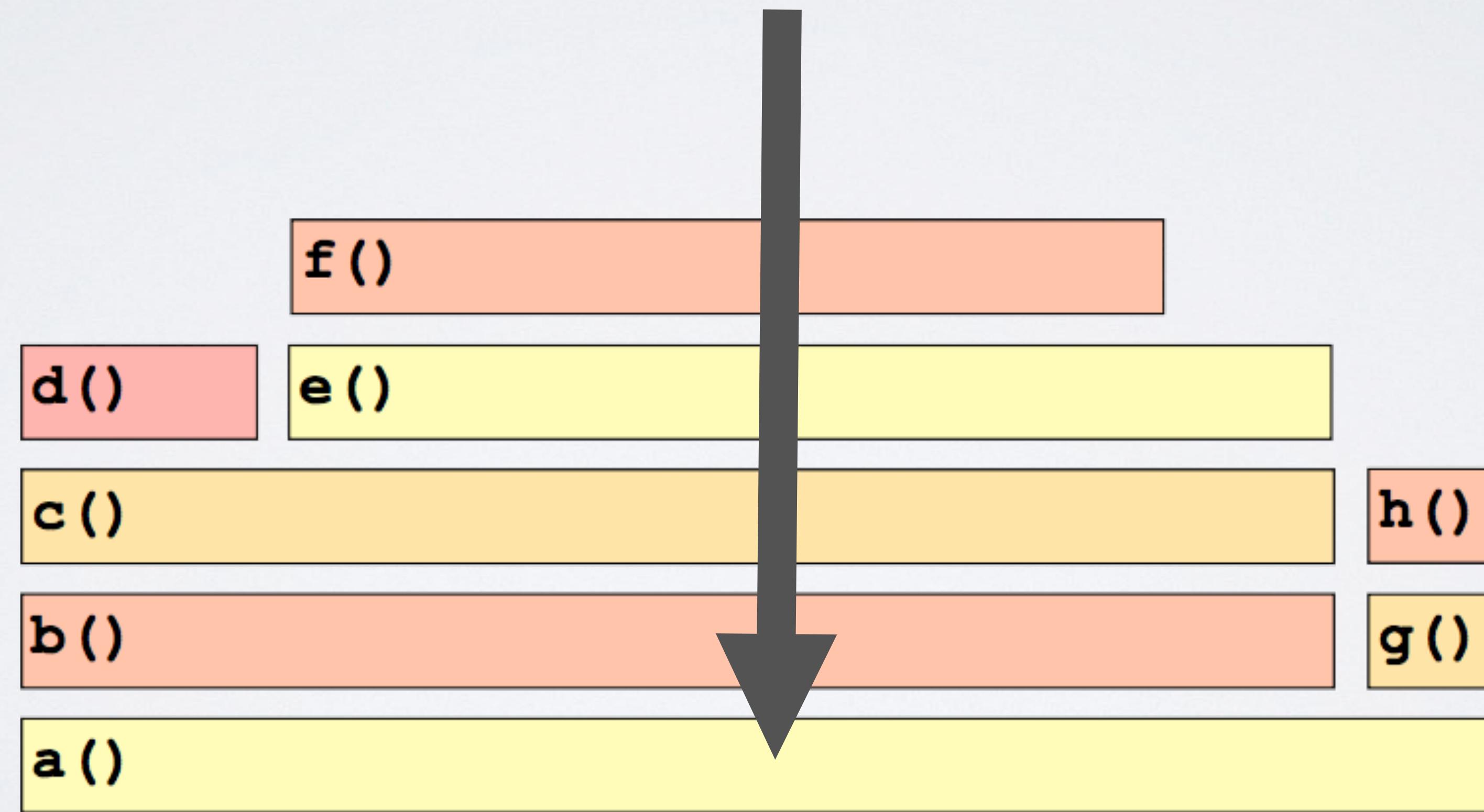
# FLAME GRAPH

Function

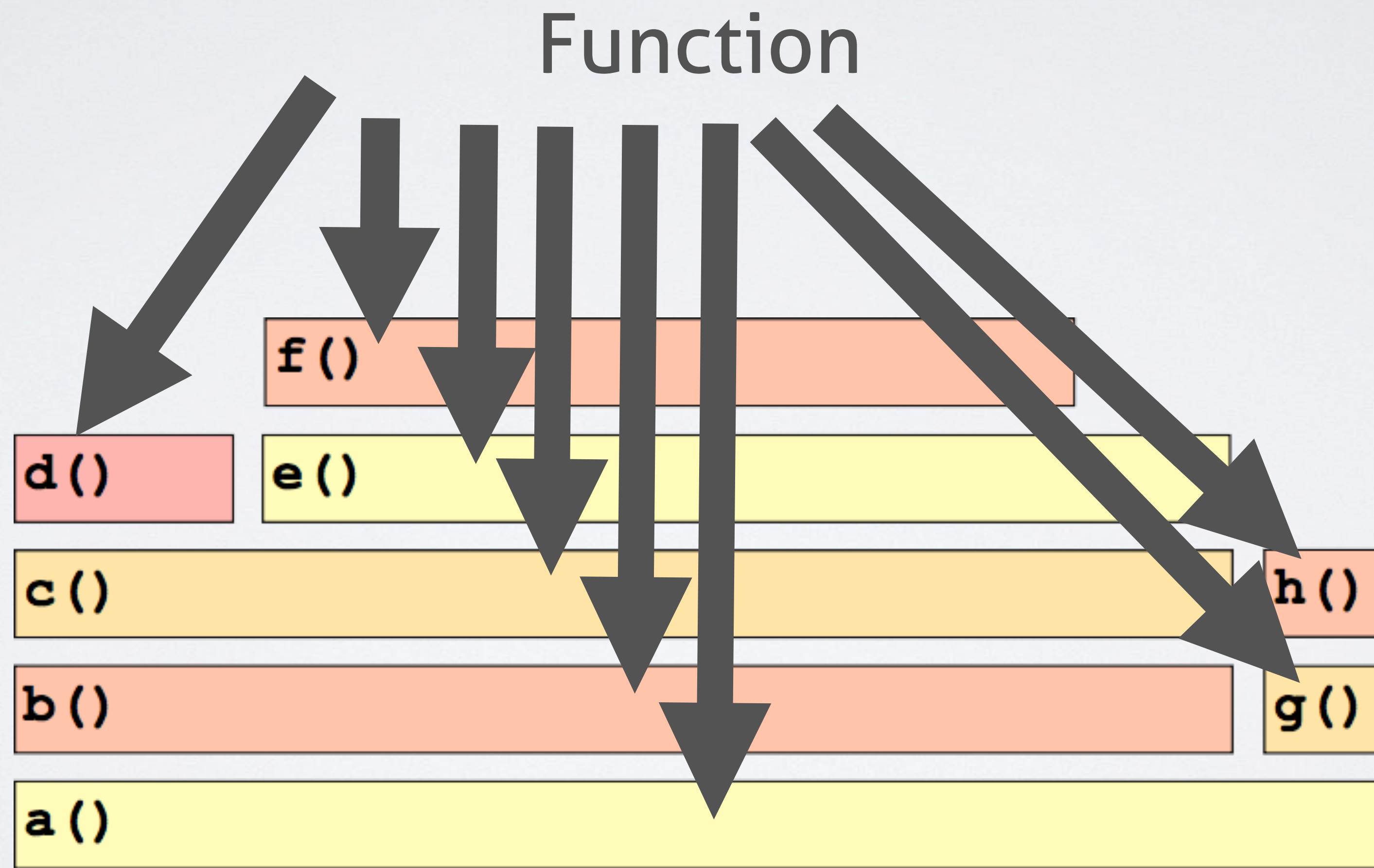


# FLAME GRAPH

Function

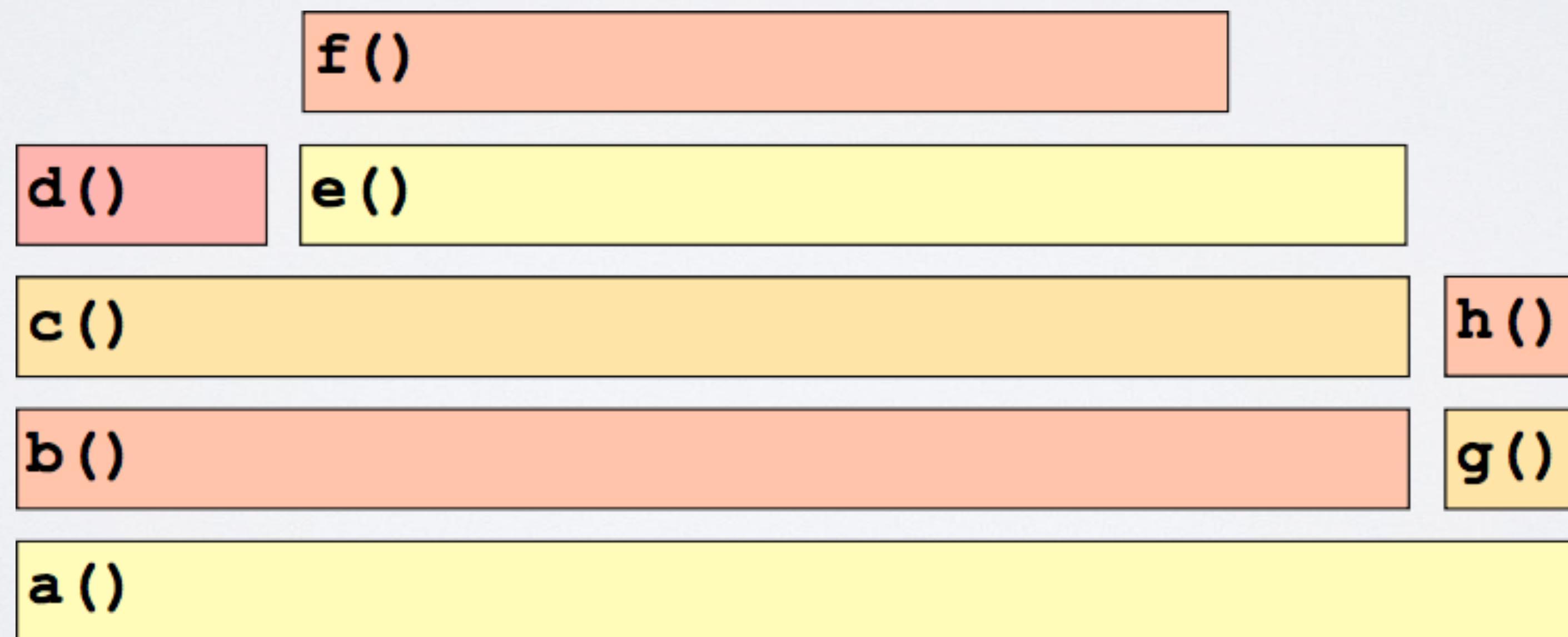


# FLAME GRAPH



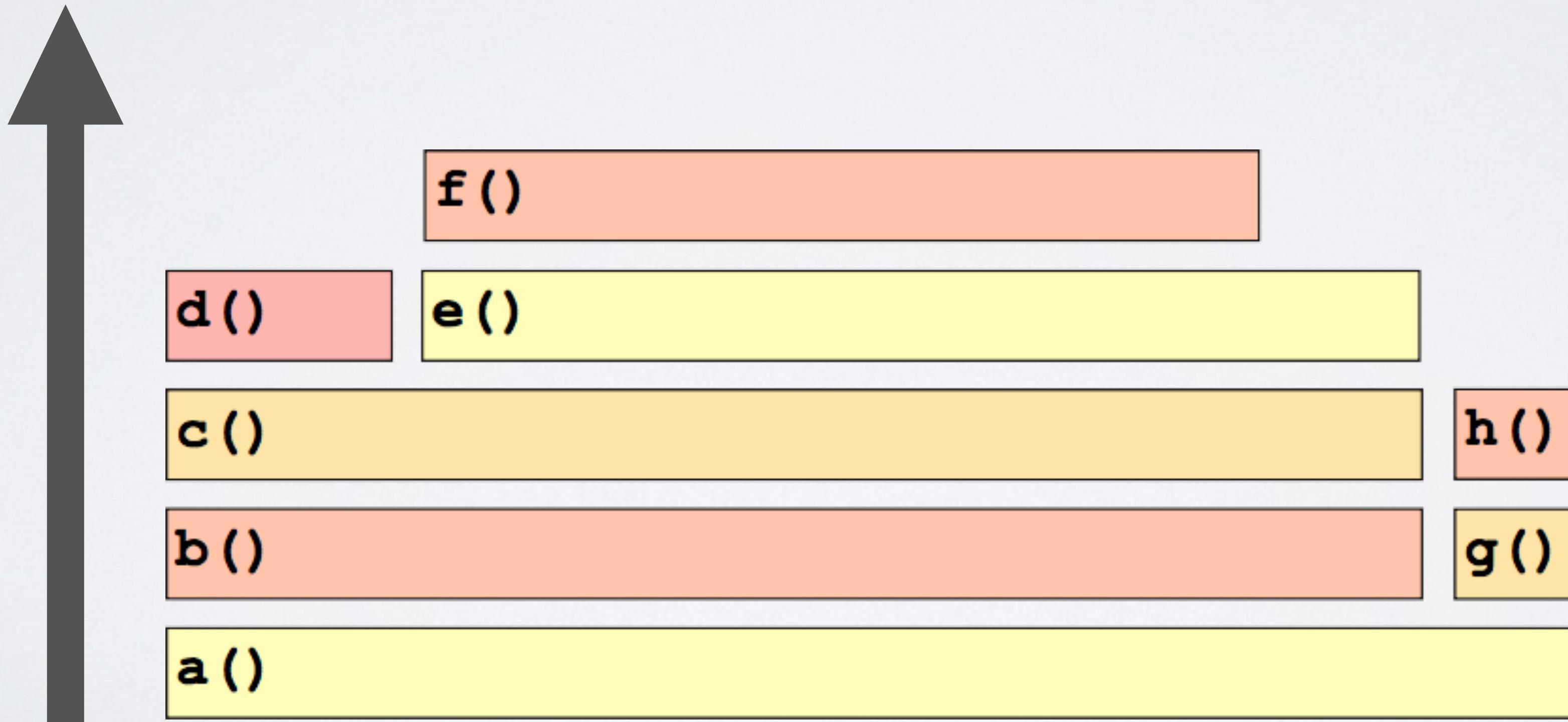
# FLAME GRAPH

Stack Depth



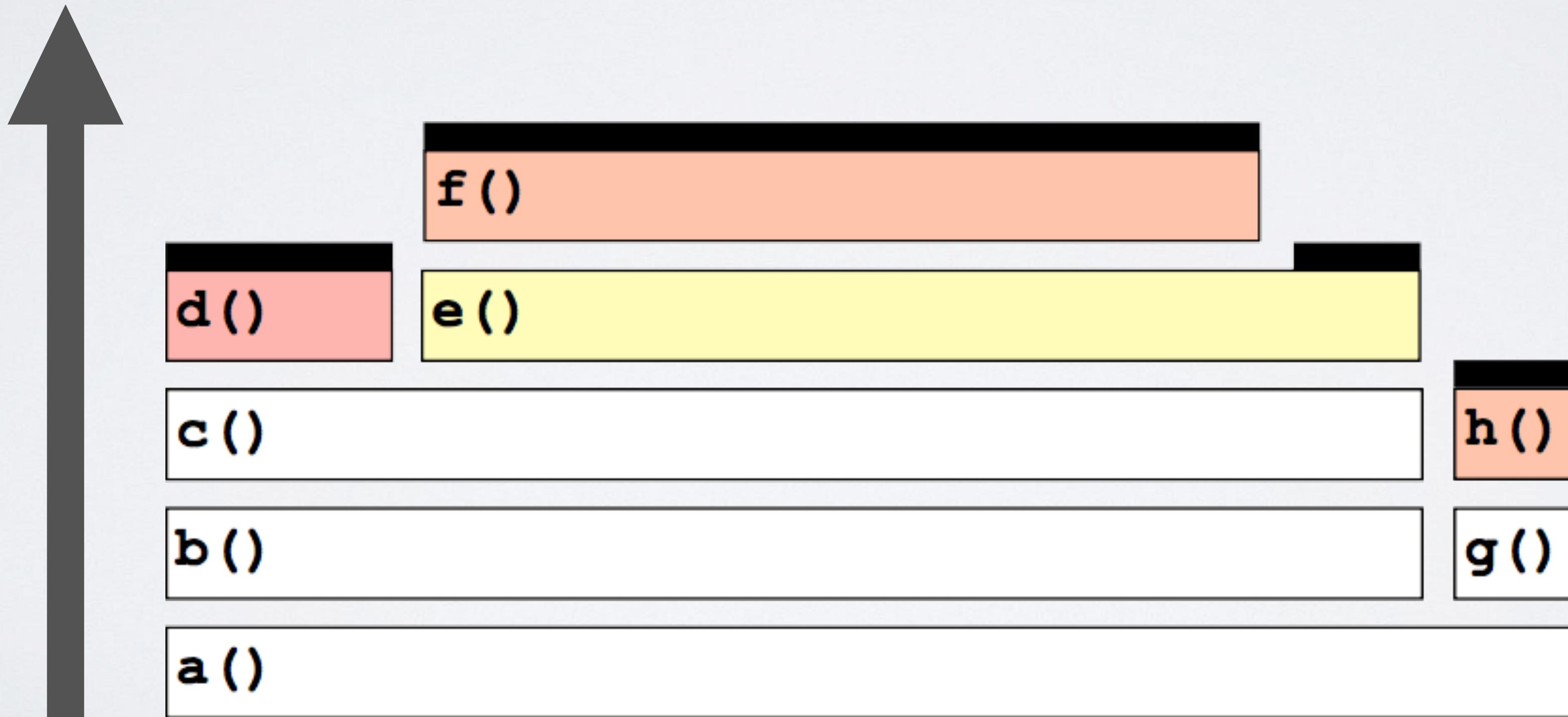
# FLAME GRAPH

Stack Depth



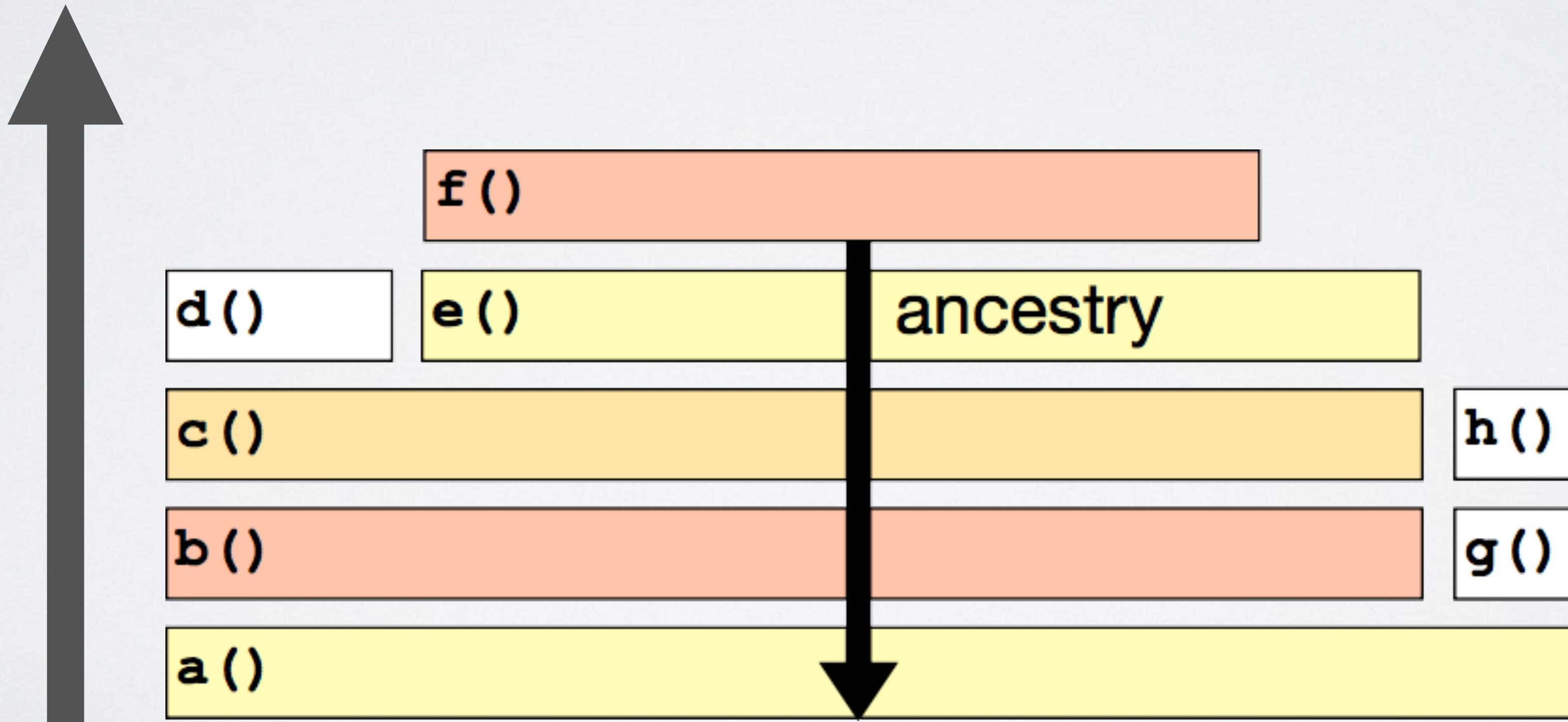
# FLAME GRAPH

Stack Depth



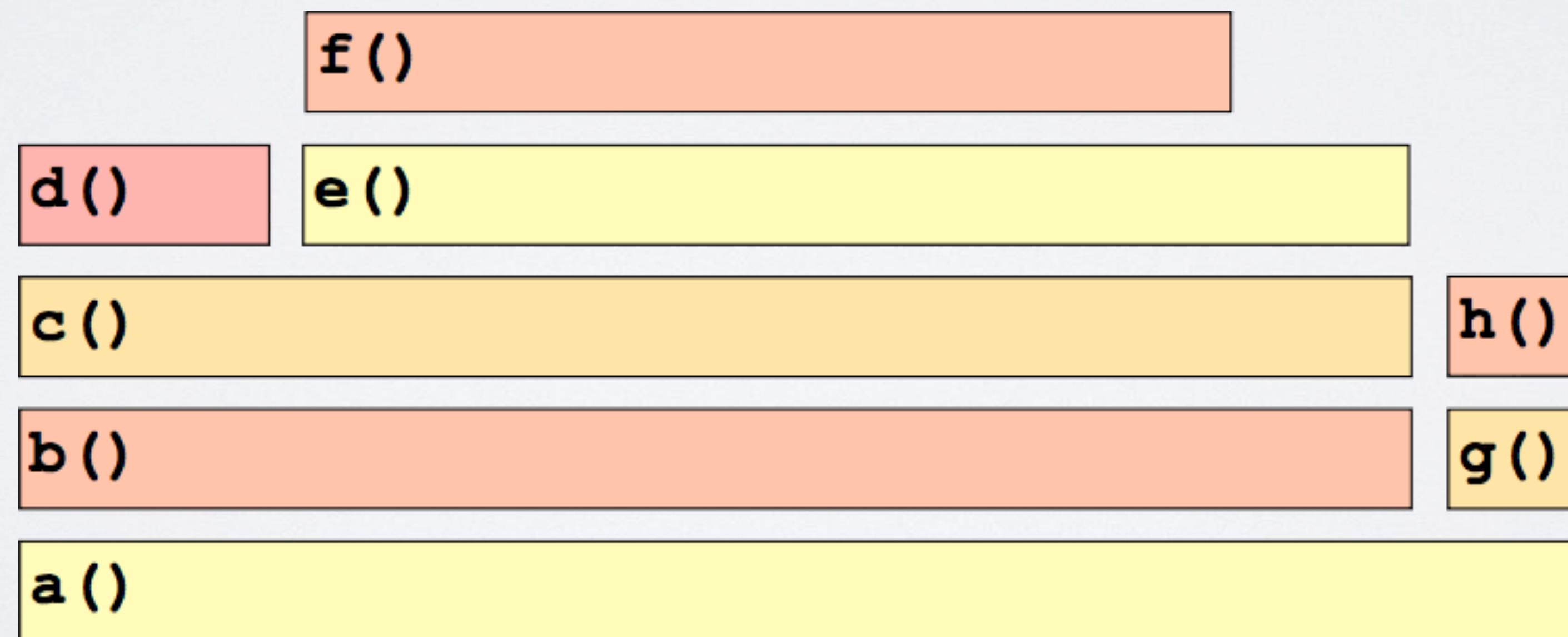
# FLAME GRAPH

Stack Depth



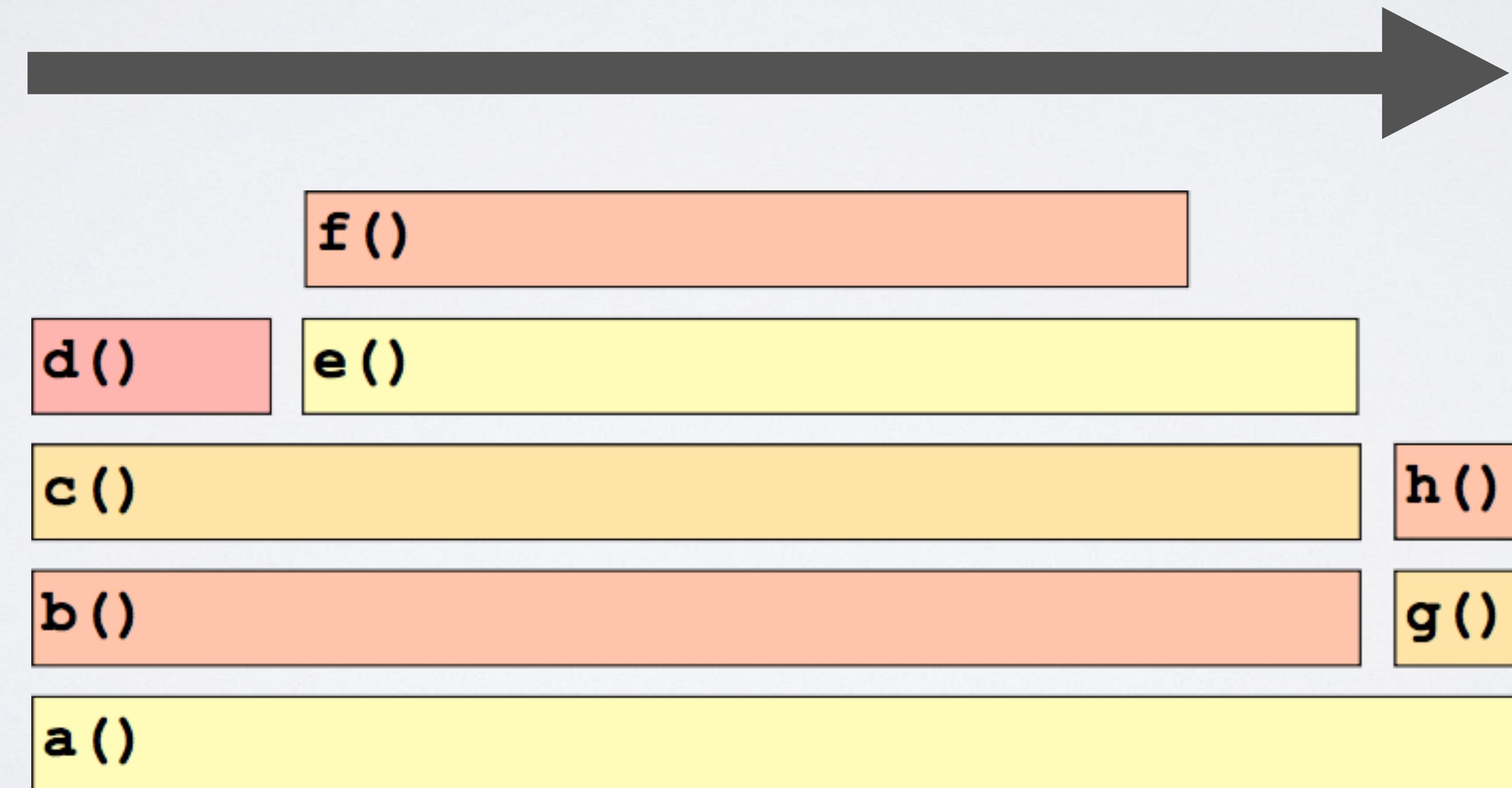
# FLAME GRAPH

Ordered by Alphabet



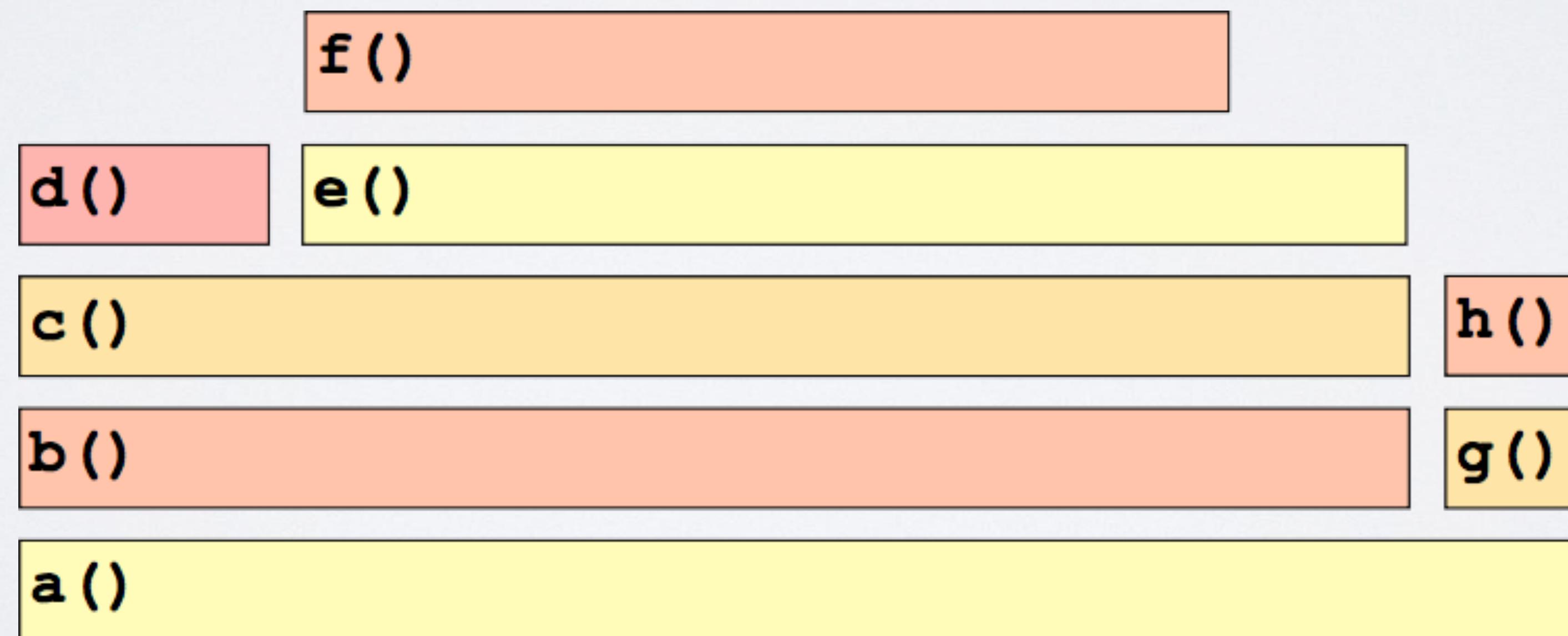
# FLAME GRAPH

Ordered by Alphabet



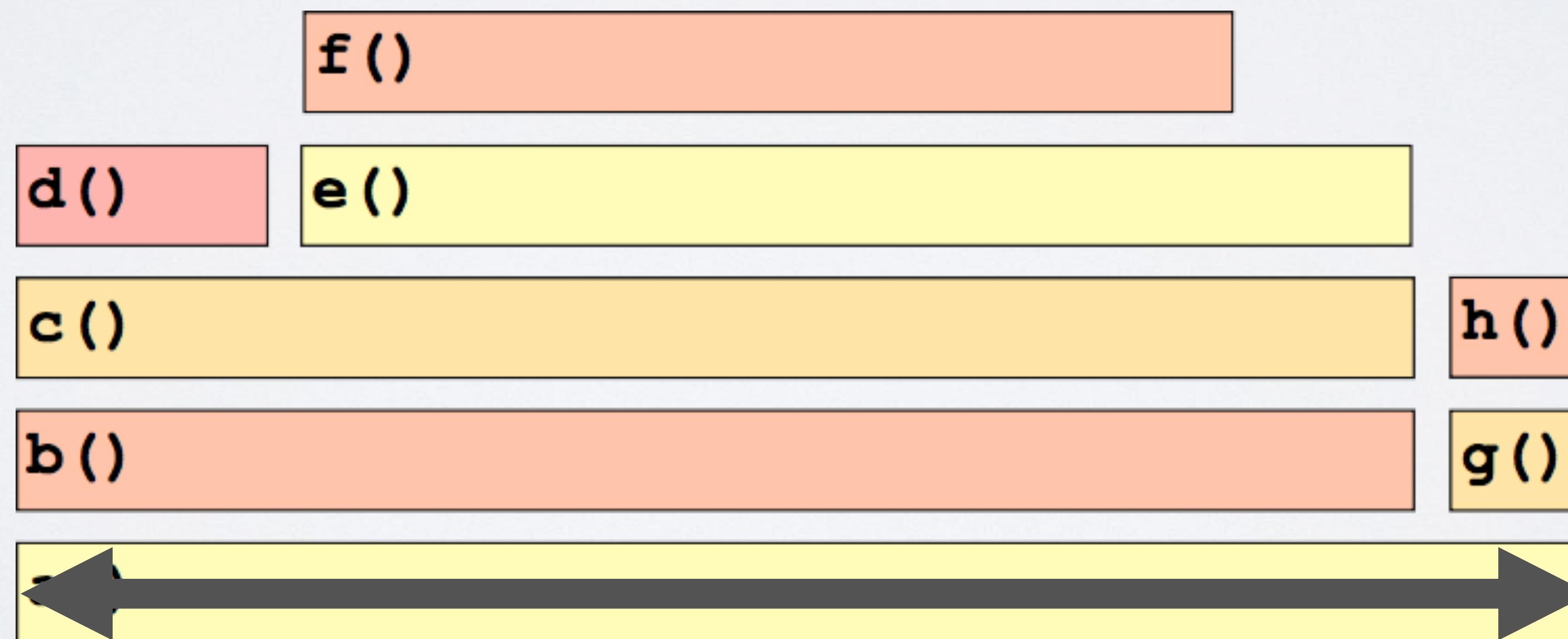
# FLAME GRAPH

Total Time on CPU



# FLAME GRAPH

Total Time on CPU



# FLAME GRAPH

Total Time on CPU



# WHO WANTS A T-SHIRT?

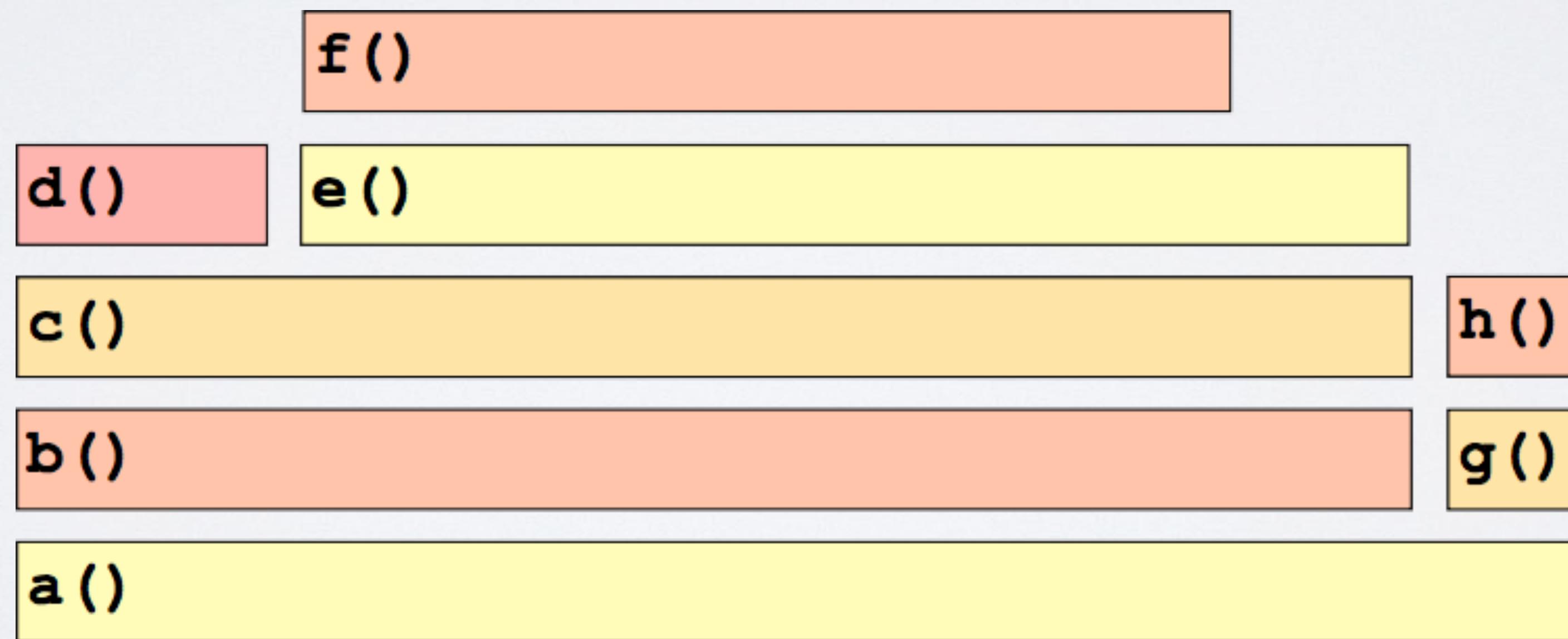


A group of approximately 15 people are posing for a group photo in front of a large, multi-story brick building with several towers and spires, illuminated at night. The people are arranged in three rows: a back row standing on a low wall, a middle row standing on the ground, and a front row sitting on the grass. They are dressed in casual winter clothing. The Toptal logo, featuring a stylized arrow pointing right followed by the word "toptal" in lowercase, is overlaid in the upper right quadrant of the image.

Toptal

# Q&A

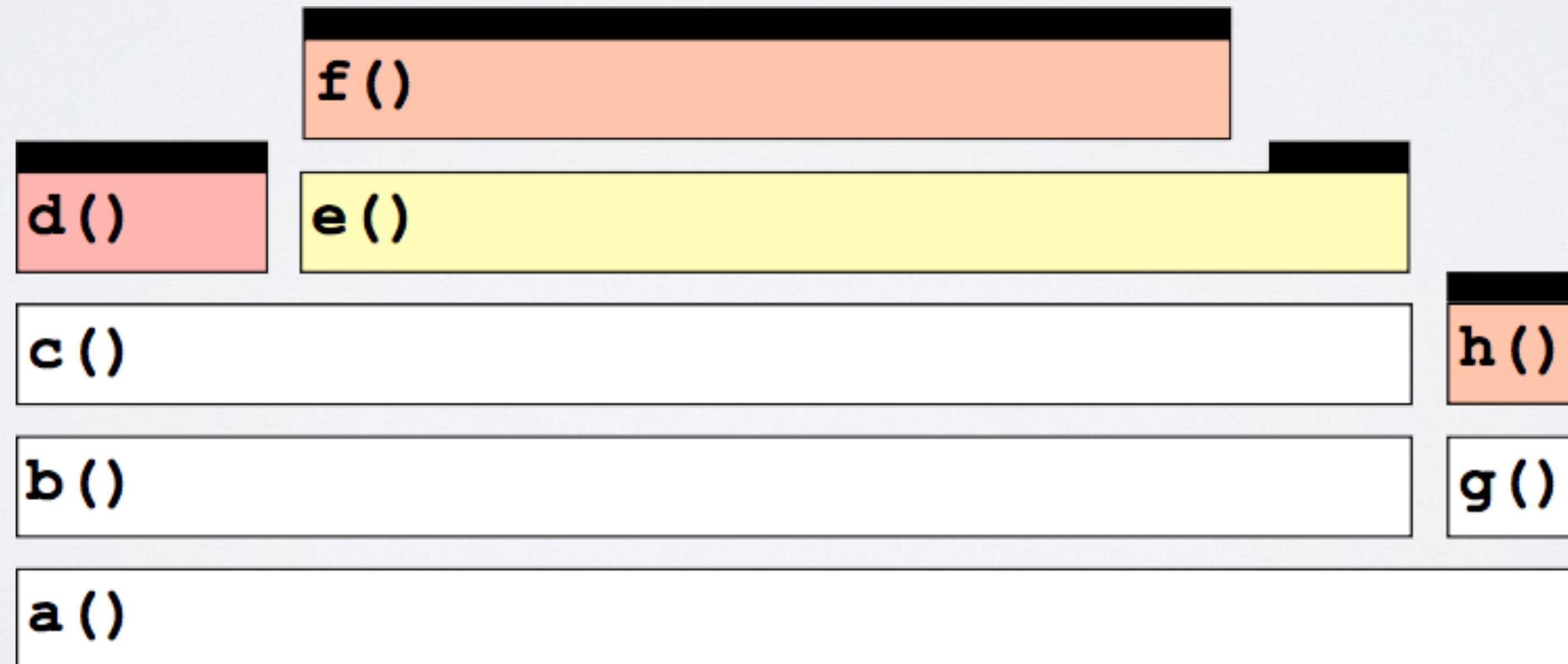
Q: Which function is on CPU the most?



# Q&A

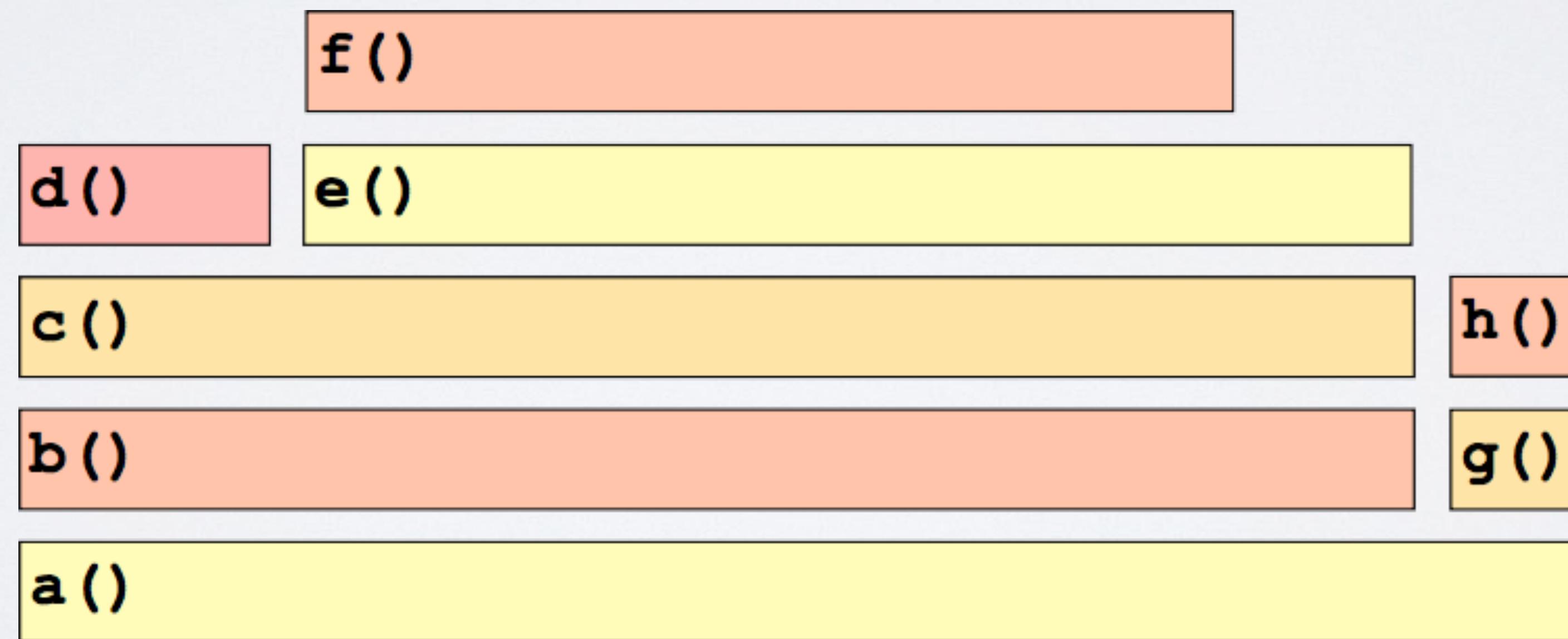
A: f()

top edge shows what is on CPU directly



# Q&A

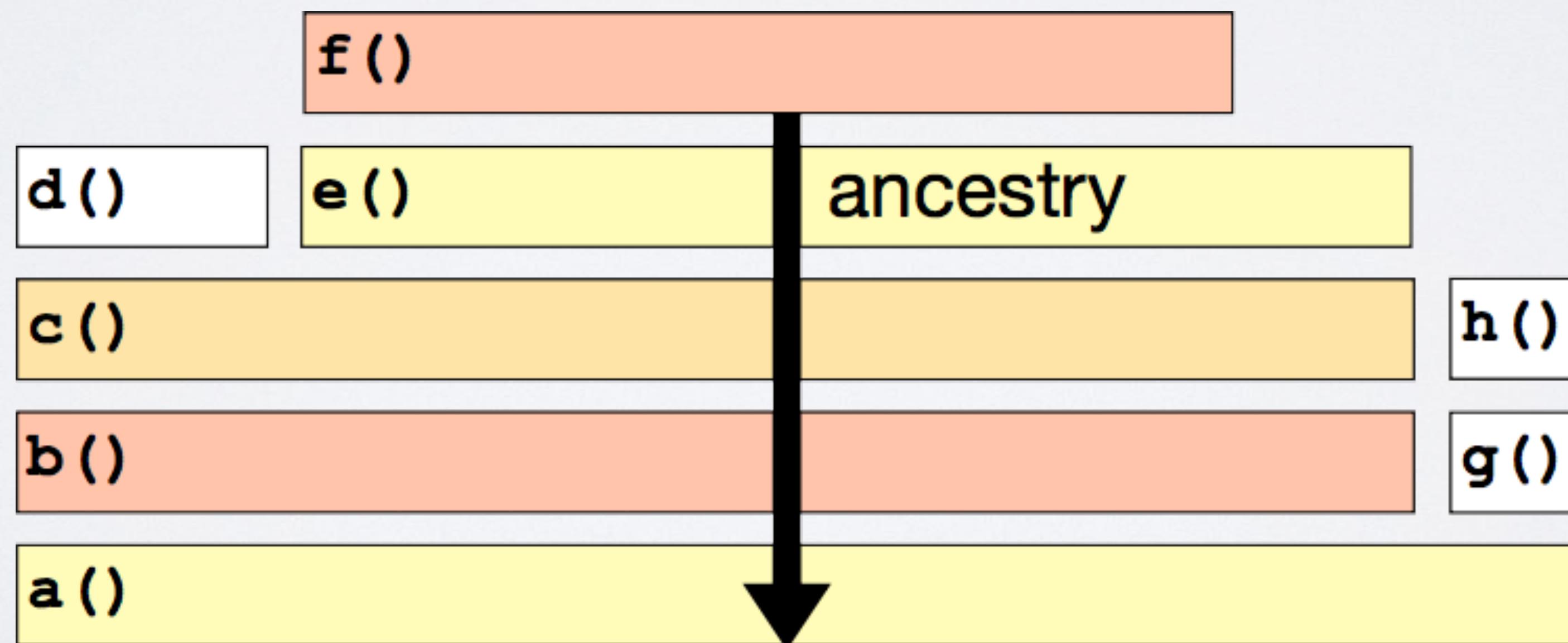
Q: Why is f() on CPU?



# Q&A

A:  $a() \rightarrow b() \rightarrow c() \rightarrow e() \rightarrow f()$

$f()$  was called by  $e()$ ,  $e()$  was called by  $c()$ ,...



# Q&A

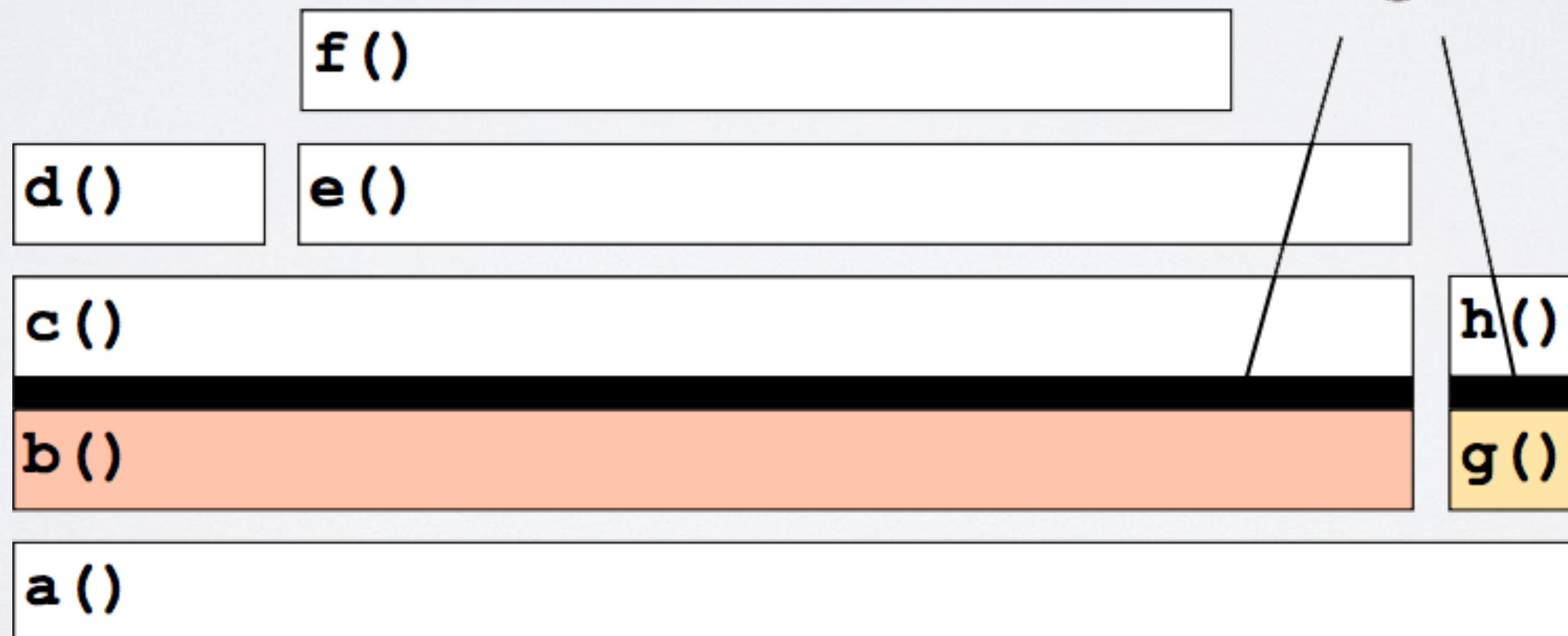
Q: How does b() compare to g()?



# Q&A

A: b() looks like it is running (present) about 10 times more often than g()

visually compare  
lengths



# USING WITH RUBY

Sam Saffron

gem 'flamegraph'

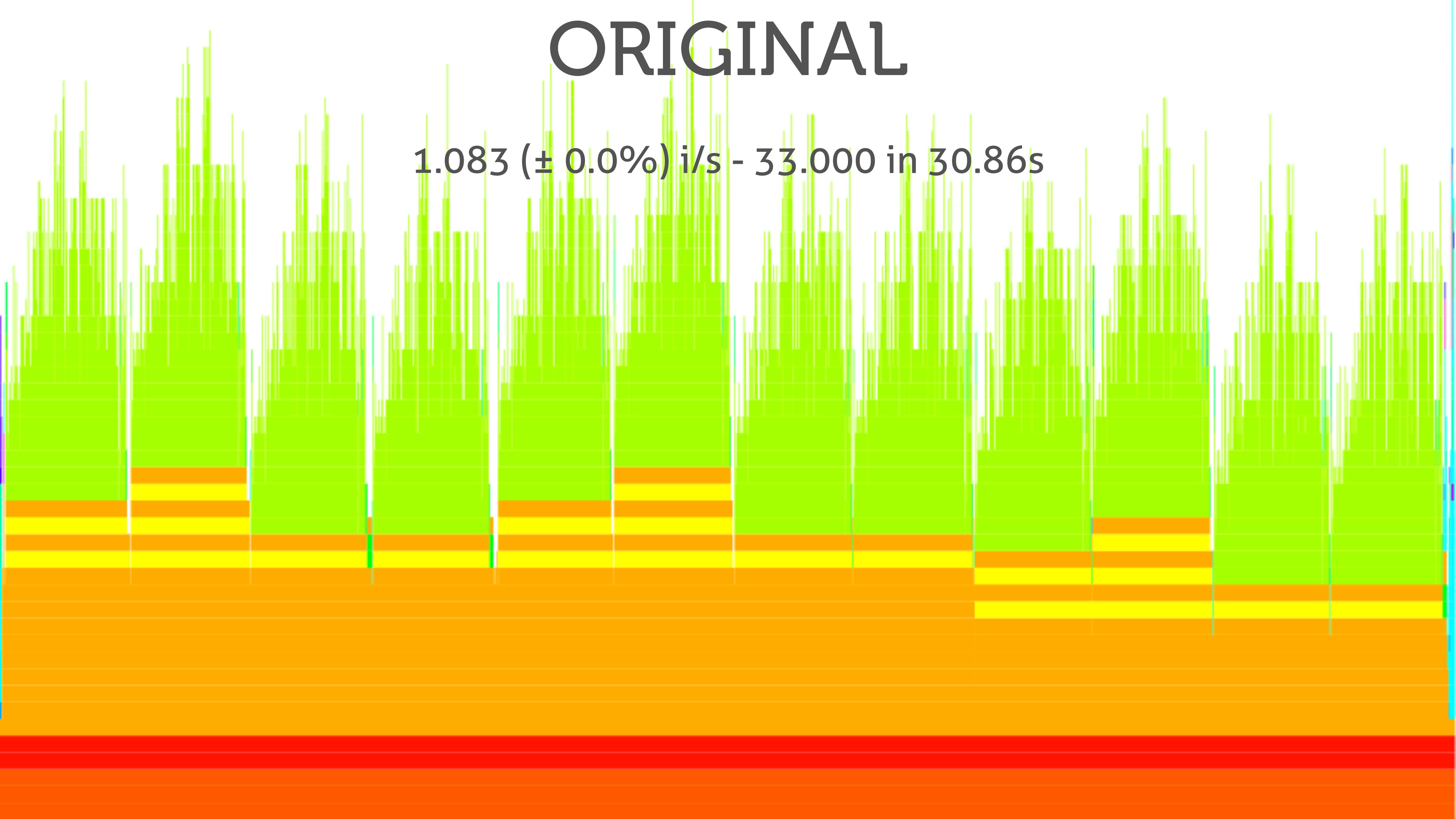
```
Flamegraph.generate(filename) do
  # your work here
end
```

# TOPTAL.BLOG



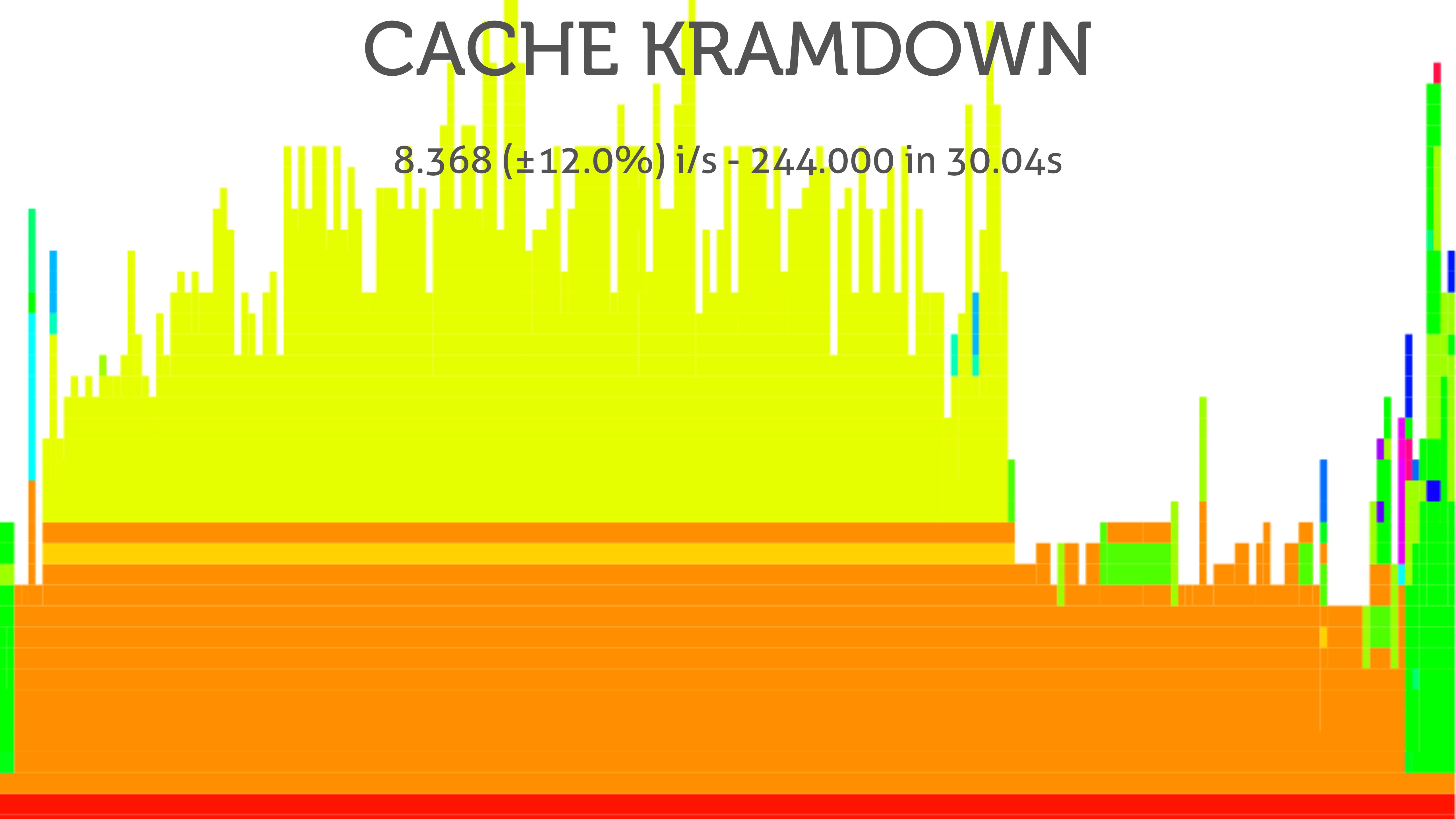
# ORIGINAL

1.083 ( $\pm$  0.0%) i/s - 33.000 in 30.86s



# CACHE KRAMDOWN

8.368 ( $\pm 12.0\%$ ) i/s - 244.000 in 30.04s



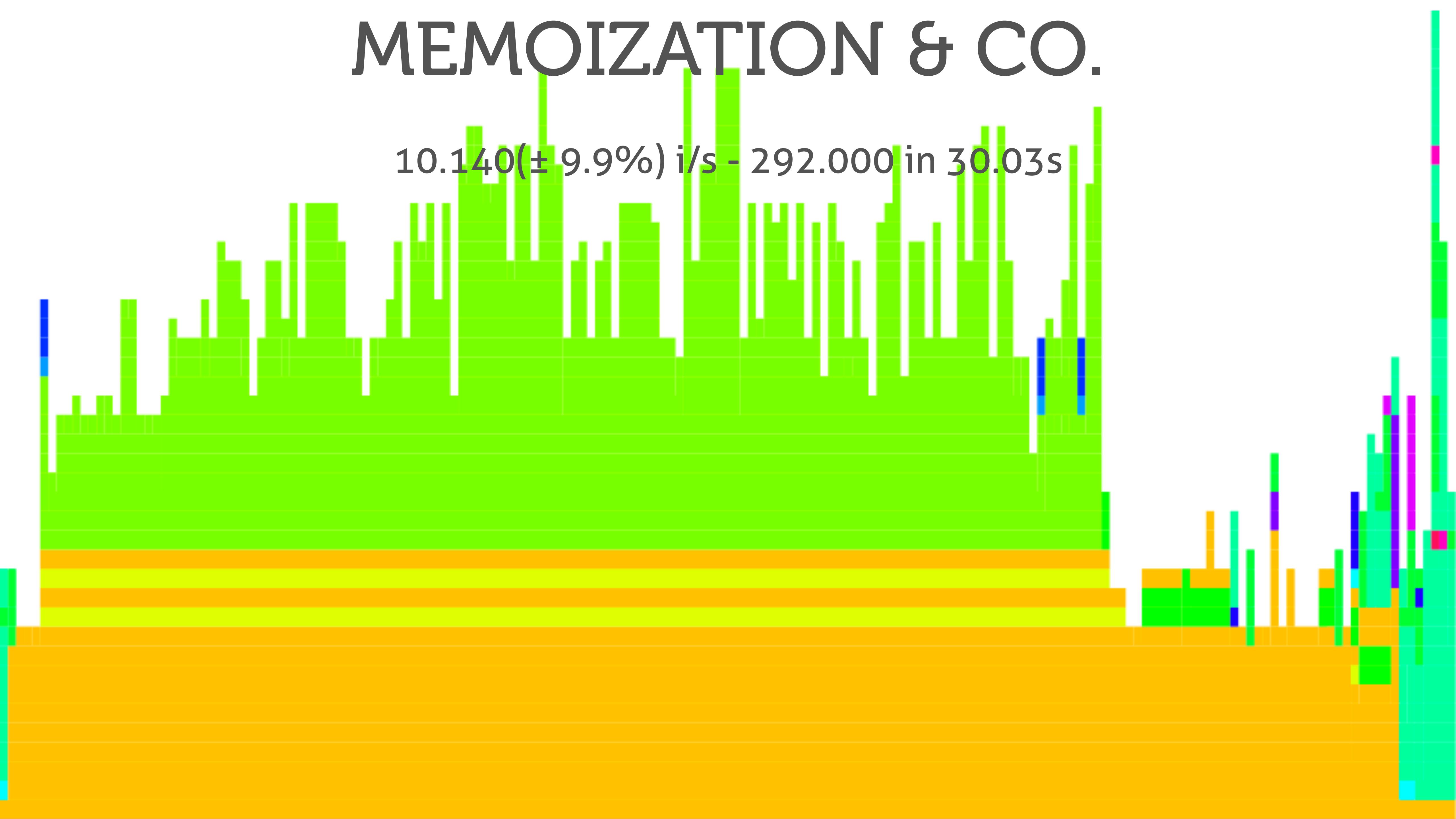
# CACHE KRAMDOWN

8.368 ( $\pm 12.0\%$ ) i/s - 244.000 in 30.04s

7.5x improvement

# MEMOIZATION & CO.

10.140( $\pm$  9.9%) i/s - 292.000 in 30.03s



# MEMOIZATION & CO.

10.140( $\pm$  9.9%) i/s - 292.000 in 30.03s

9.4x improvement

# NOW WHAT?

You're here

Ask me

~~Ask someone smarter than me~~

Ask anyone else

Read/watch blog posts/videos



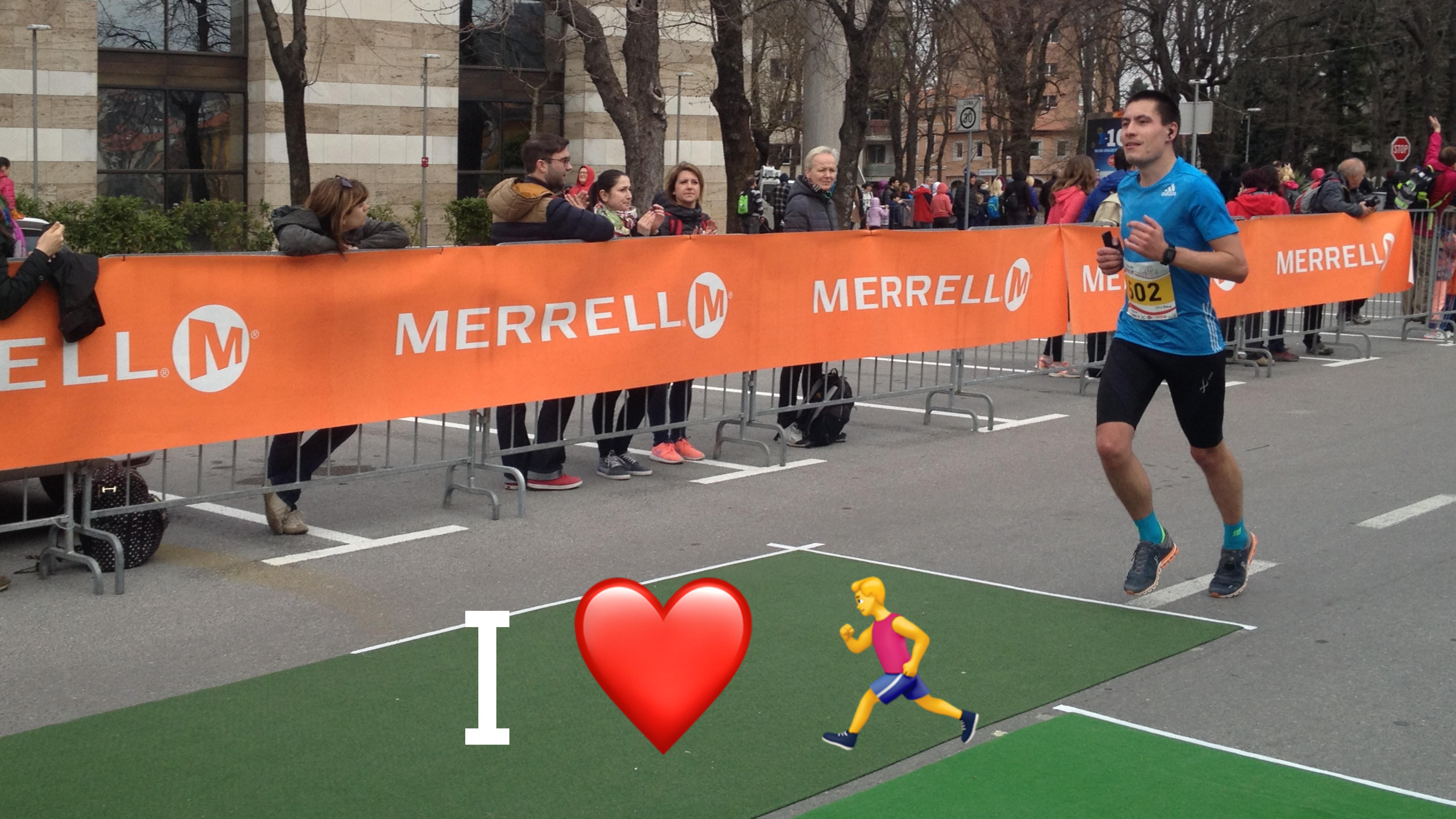
I





I





I





I



# THANK YOU



<http://mr.si/>  
 @mr\_foto