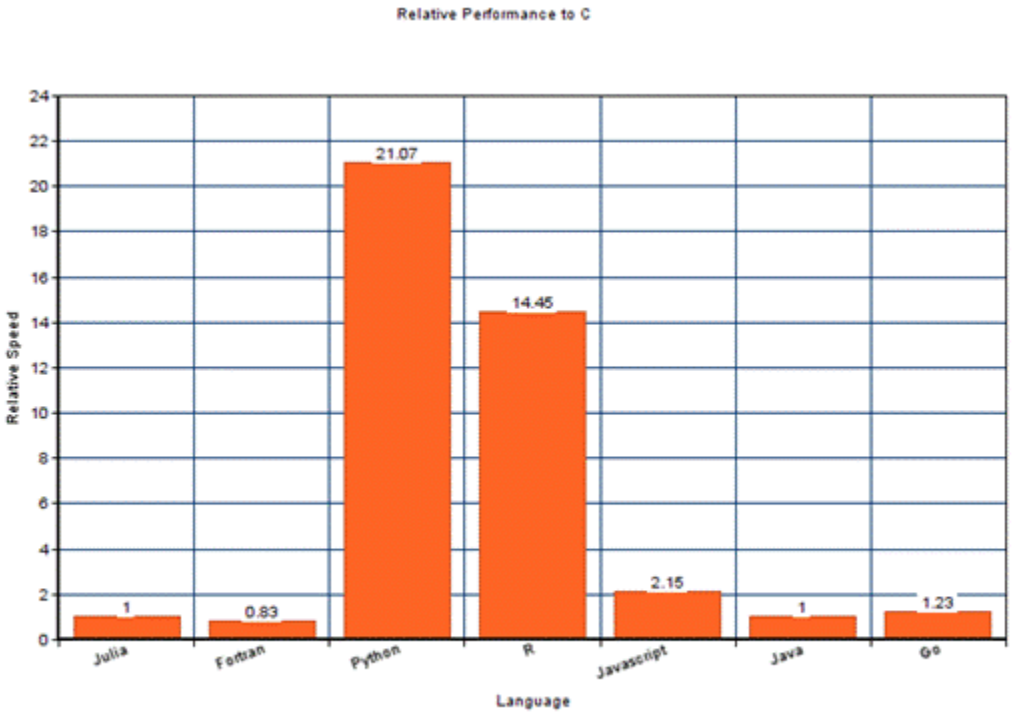
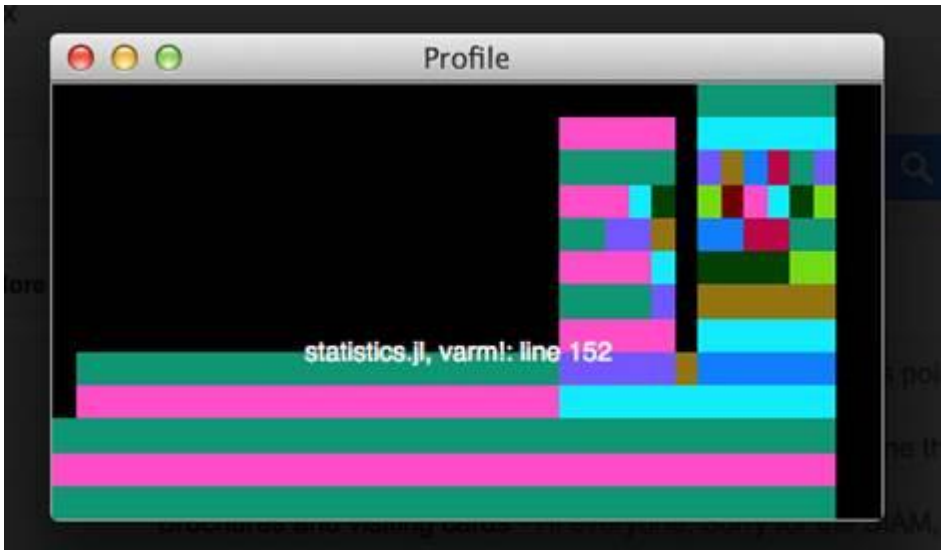
Chapter 1: Julia is Fast

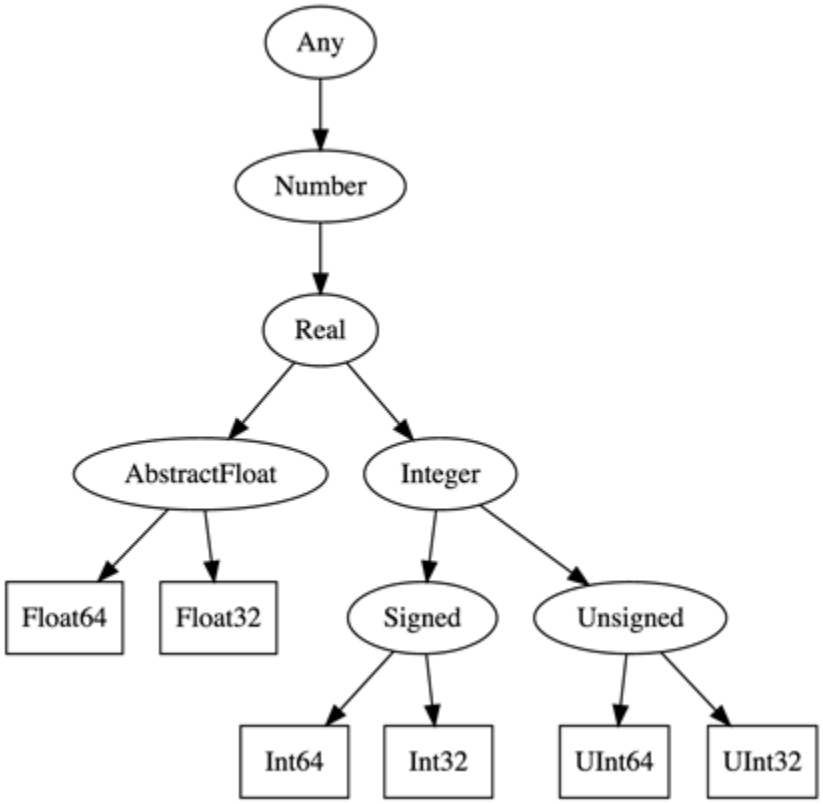
$$\sum_{n=1}^{1000} \frac{1}{n^2}$$


Relative Performance to C
Relative Speed
Language
Julia
Fortran
Python
R
Javascript
Java
Go
1
0.83
21.07
14.45
2.15
1
1.23
0
2
4
6
8
10
12
14
16
18
20
22
24

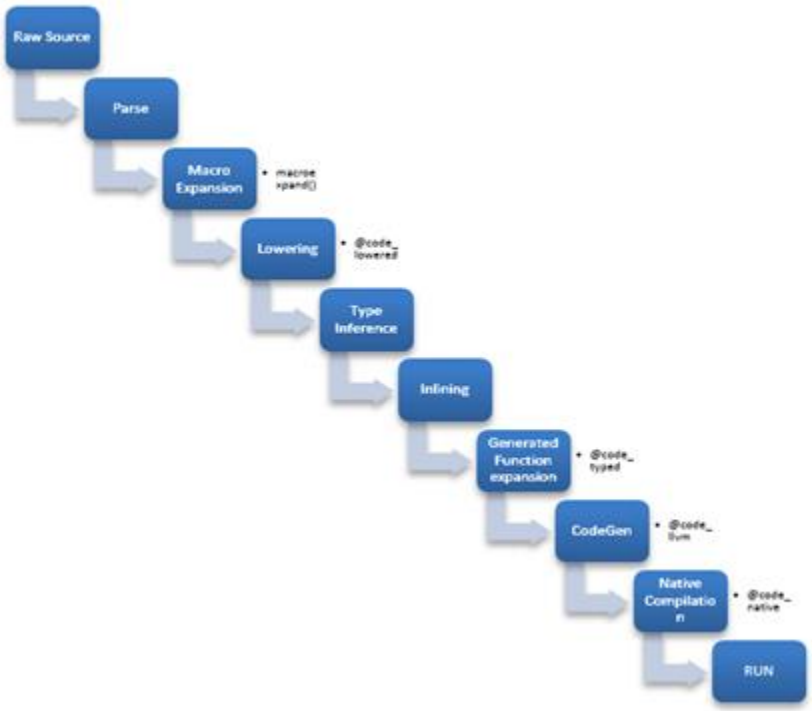
Chapter 2: Analyzing Julia Performance



Chapter 3: Types in Julia



Chapter 4: Functions and Macros – Structuring Julia Code for High Performance



$$p(x) = \sum_{i=0}^{n} a_i x^i = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + \cdots + a_n x^n$$

$$f(x) = 1 + 2x + 3x^2 + 4x^3 + 5x^4$$

$$\begin{aligned}
b_n &= a_n \\
b_{n-1} &= a_{n-1} + b_n x \\
b_{n-2} &= a_{n-2} + b_{n-1} x \\
&\vdots \\
b_0 &= a_0 + b_a x
\end{aligned}$$

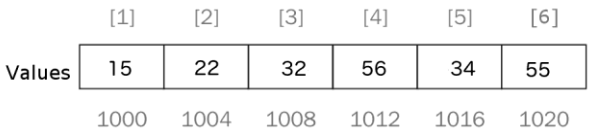
Chapter 5: Fast Numbers:

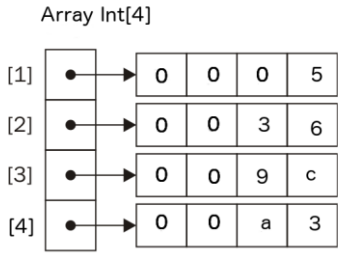
$$O\left(\sqrt{n}\right)$$

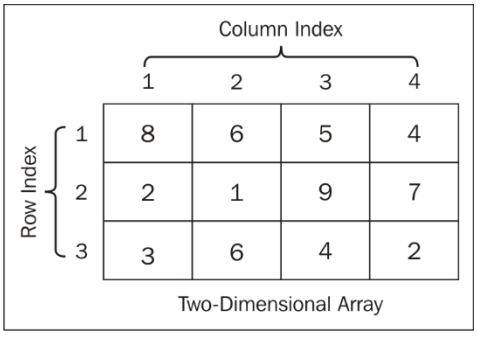
$$O\left(\sqrt{\log(n)}\right)$$

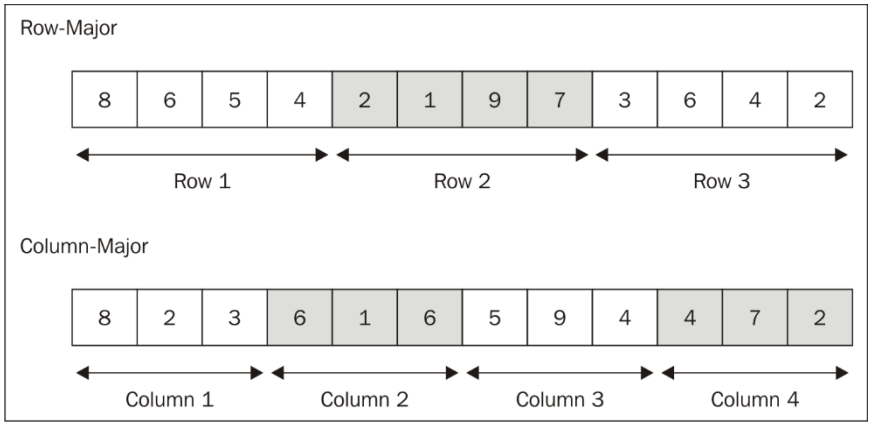
$$O(1)$$

Chapter 6: Fast Arrays








Row-Major
8 6 5 4 2 1 9 7 3 6 4 2
Row 1
Row 2
Row 3
Column-Major
8 2 3 6 1 6 5 9 4 4 7 2
Column 1
Column 2
Column 3
Column 4