

# **Introduction to Programming**



“The complex reality of the technologies that real companies leverage to get ahead emphasizes the absurdity of the now common idea that exposure to simplistic, consumer-facing products – especially in schools – somehow prepares people to succeed in a high-tech economy. Giving students iPads or allowing them to film homework assignments on YouTube prepares them for a high-tech economy about as much as playing Hot Wheels would prepare them to thrive as auto mechanics.”

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**Deep Work**  
Cal Newport



# **Lesson 1**

Programming (and learning it) requires long stretches of uninterrupted time.

# **Hello World**

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A look at four different programming languages

# Hello World -

---

```
1 public class HelloWorld {  
2 |  
3     public static void main(String[] args) {  
4         System.out.println("Hello, World");  
5     }  
6  
7 }
```



# Hello World - C

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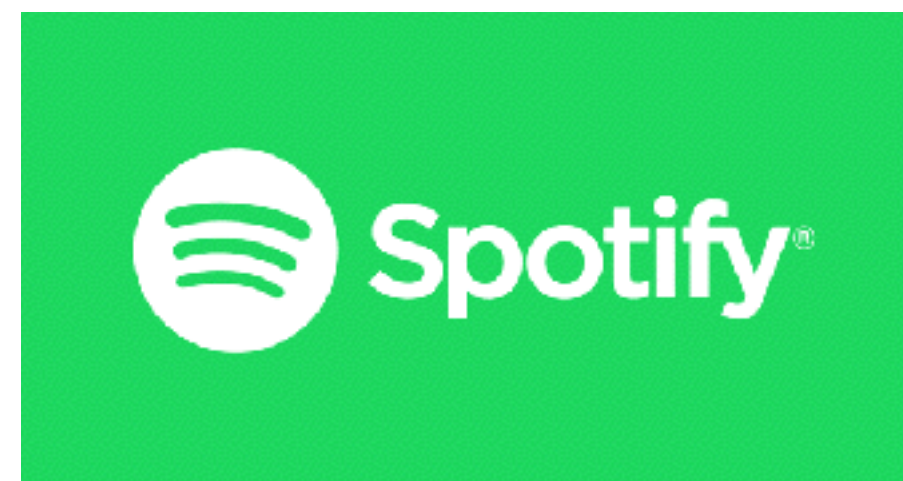
```
1 #include <stdio.h>
2 int main()
3 {
4     printf("Hello, World!");
5     return 0;
6 }
```



# Hello World - Python

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```
1 print("Hello World!")
```





# Hello World - Ruby

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```
1 puts "Hello World!"
```



**KICKSTARTER**



# **Lesson 2**

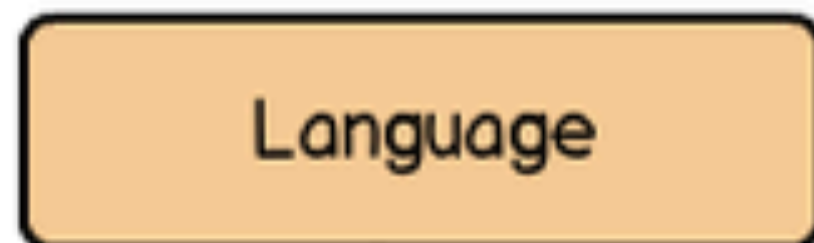
You can build anything with any programming language.

# Compiled or Interpreted

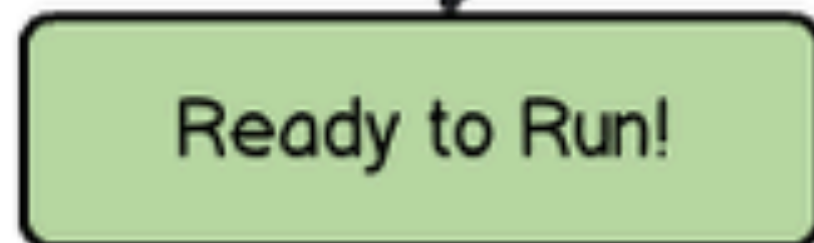
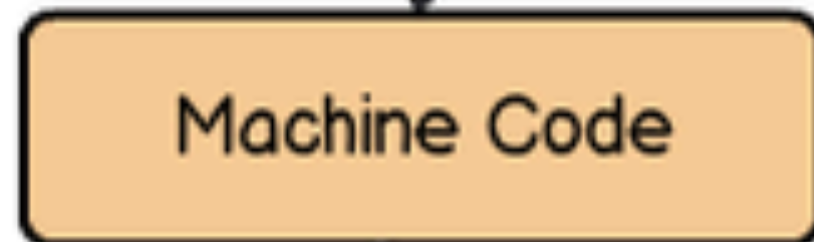
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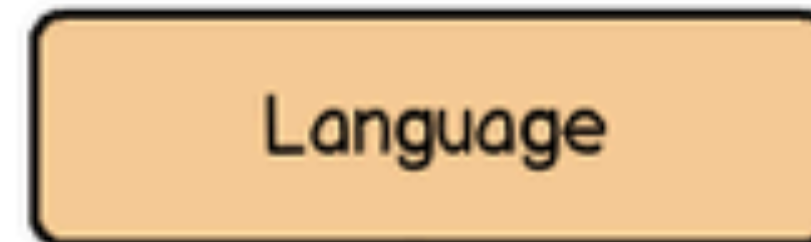
C, C++, Go, Fortran, Pascal



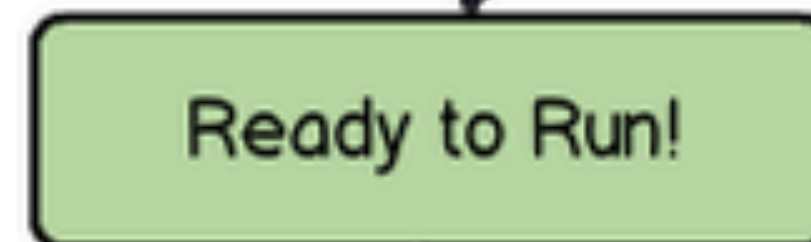
"Compiling"



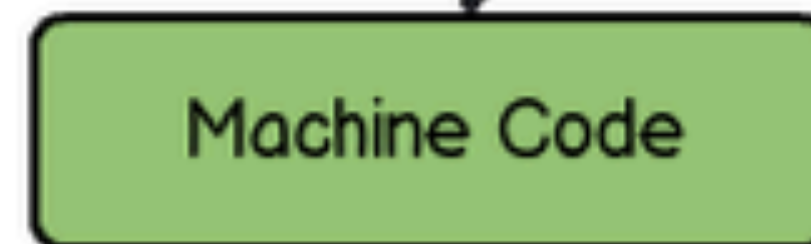
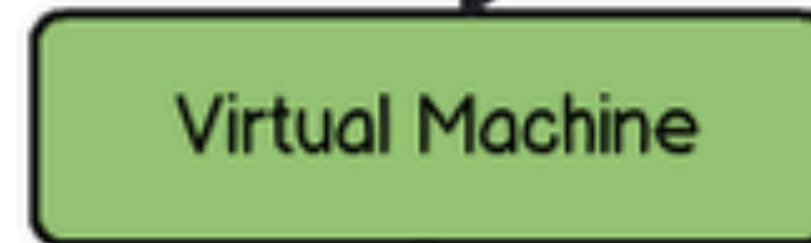
Python, PHP, Ruby, JavaScript



Ready to Run!



"Interpreting"



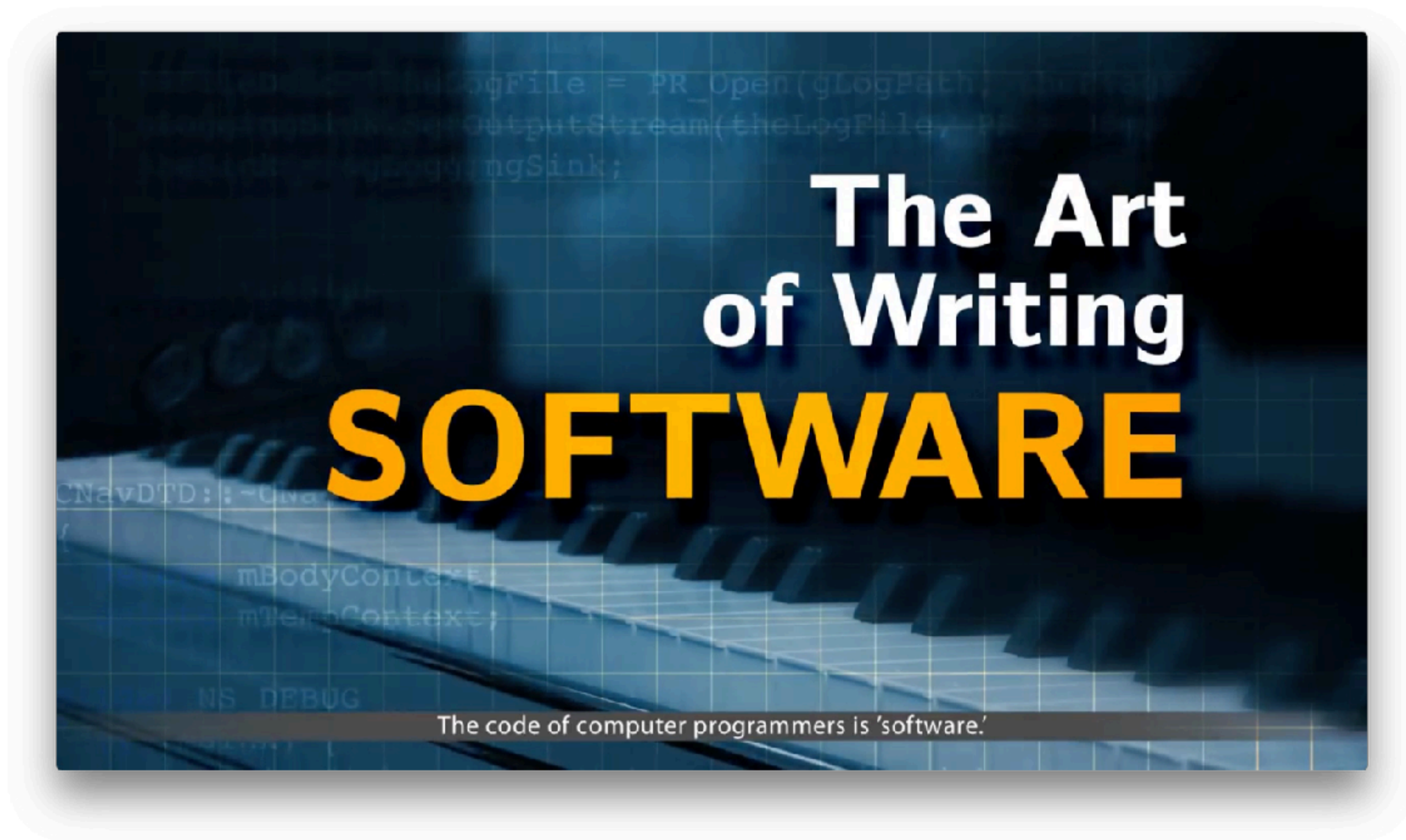






# The art of writing Software

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<https://www.youtube.com/watch?v=QdVFvsCWxrA>

# **How programming can help you**







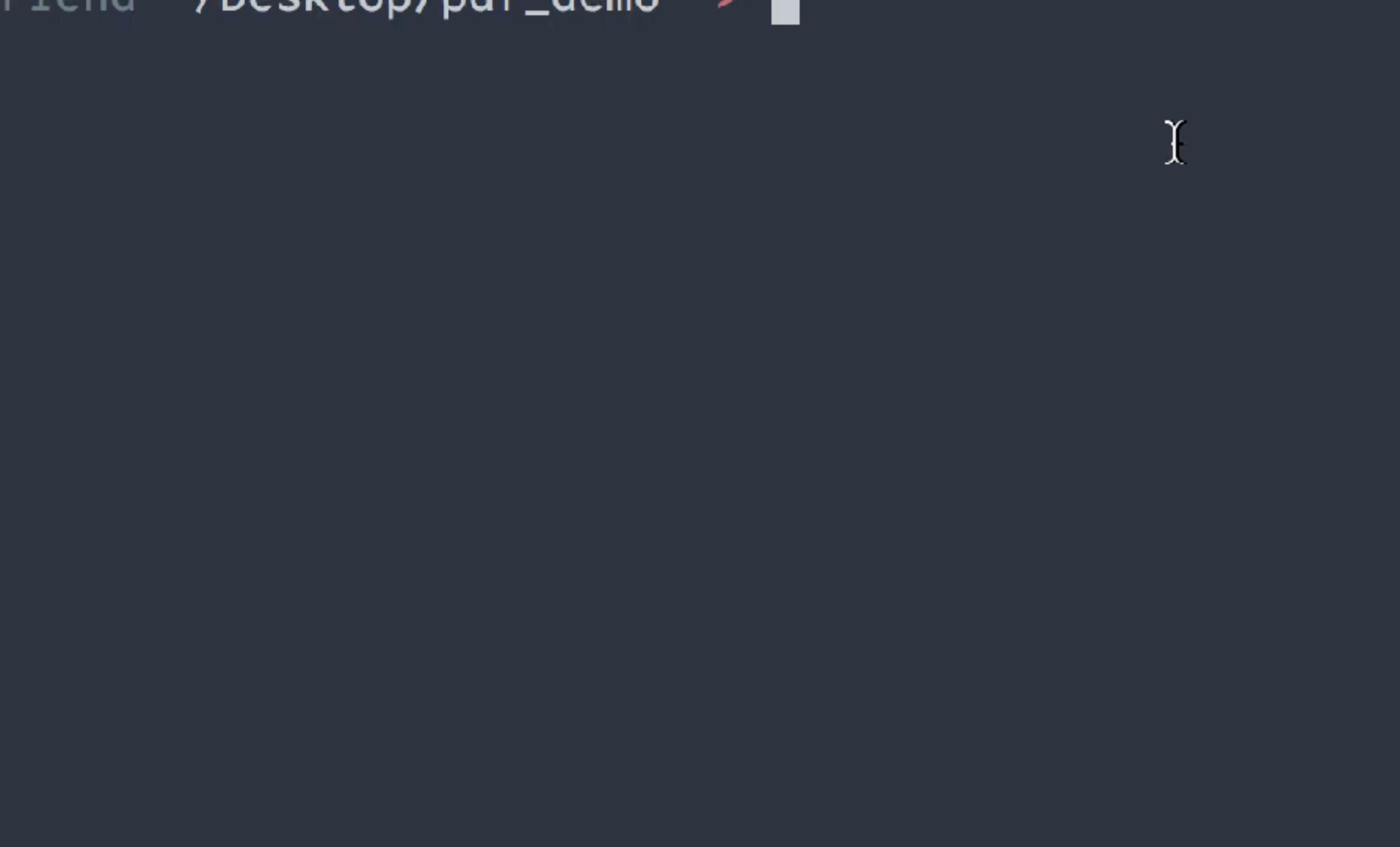
pdf\_renamer.rb

```
1 require 'pdf-reader'
2 require 'date'
3
4 def get_name(pdf_filename)
5   reader = PDF::Reader.new(pdf_filename)
6   text = reader.pages.first.text.split(" ")
7   name = text[5] + " " + text[6]
8 end
9
10 def rename_pdf(original_file, name)
11   current_month = "#{Date.today.year}_#{Date.today.month}"
12   File.rename(original_file, "#{current_month}_#{name}.pdf")
13 end
14
15 pdfs = Dir["./*.pdf"]
16
17 pdfs.each do |pdf|
18   employee_name = get_name(pdf).downcase.gsub(" ", "_")
19   rename_pdf(pdf, employee_name)
20 end
```

~

~







A terminal window titled "pdf\_demo (zsh)" with standard macOS window controls (red, yellow, green buttons). The prompt "hellofriend ~/Desktop/pdf\_demo" is followed by a red greater-than sign and a white cursor block. A white text cursor is positioned on the right side of the terminal area.

The screenshot shows a macOS Finder window titled "pdf\_demo". The window has a standard macOS title bar with three colored buttons (red, yellow, green) on the left. Below the title bar is a toolbar with various icons: back, forward, view modes (icon view, compare view, web view, gallery view), a dropdown menu for view modes, a settings gear icon with a dropdown arrow, a share icon, and a tag icon. To the right of the toolbar is a search field with a magnifying glass icon and the text "Search".

The main content area displays a list of files in a table view. The table has two columns: "Name" and "Date Modified". The "Name" column header has a small upward-pointing arrow next to it. The table contains two rows of data:

Name	Date Modified
 234209423742.pdf	Today, 17:28
 pdf_renamer.rb	Today, 17:38

The status bar at the bottom of the window displays the text "1 of 2 selected, 142.22 GB available".

# Ruby



# Good programming is like good writing.

What makes Ruby  
a special language?

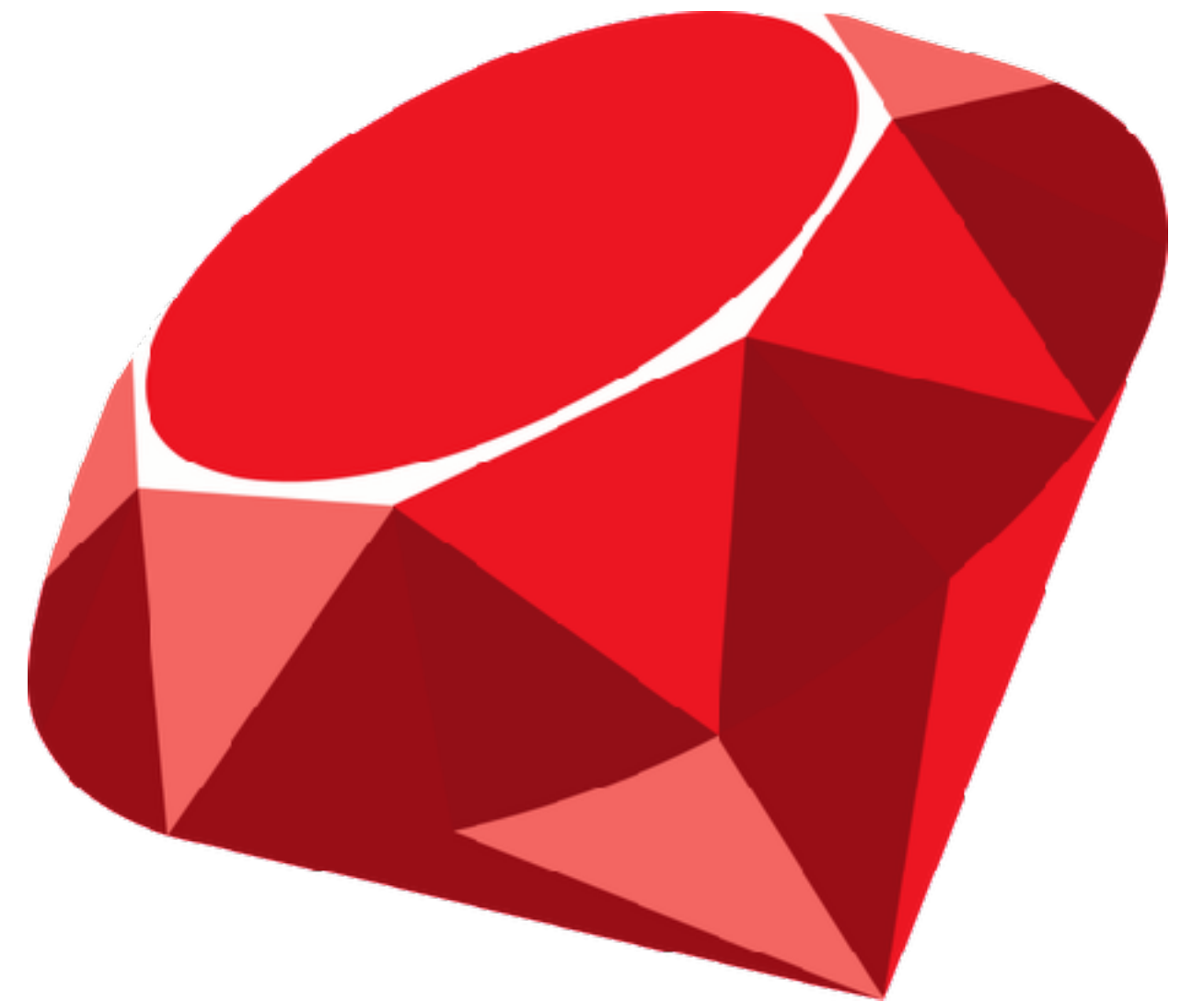
**bt** [bigthink.com/davidheinemeierhansson](http://bigthink.com/davidheinemeierhansson)

# **Lesson 3**

Good programming is like good writing.

# Ruby design goals

- Focus on the **human factor**
- Principle of **Least Surprise**
- Principle of **Least Effort**
- In short: **Focus on Programmer Happiness**



# An example

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**Read the following aloud to yourself.**

```
5.times { print "Odelay!" }
```

**Read the following aloud to yourself.**

```
exit unless "restaurant".include? "aura"
```

**Read the following aloud to yourself.**

```
[ 'toast', 'cheese', 'wine' ].each { |food| print food.capitalize }
```

# **Lesson 4**

Make sure you like the tools that you work with.

# **Ruby basics**



# **Running your first program** 🏃

# **Your first Ruby expressions** 🏃

# Books

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