Ruby: The Big Picture

DISCOVERING RUBY

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Overview

Discovering Ruby

- Let’s write some Ruby!

Investigating Ruby Objects

- Ruby and object-oriented programming

Unlocking Ruby’s Hidden Magic

- Ruby’s cool metaprogramming features

Exploring Ruby’s ecosystem

- Interpreters, libraries and community

Understanding Ruby’s Pros and Cons

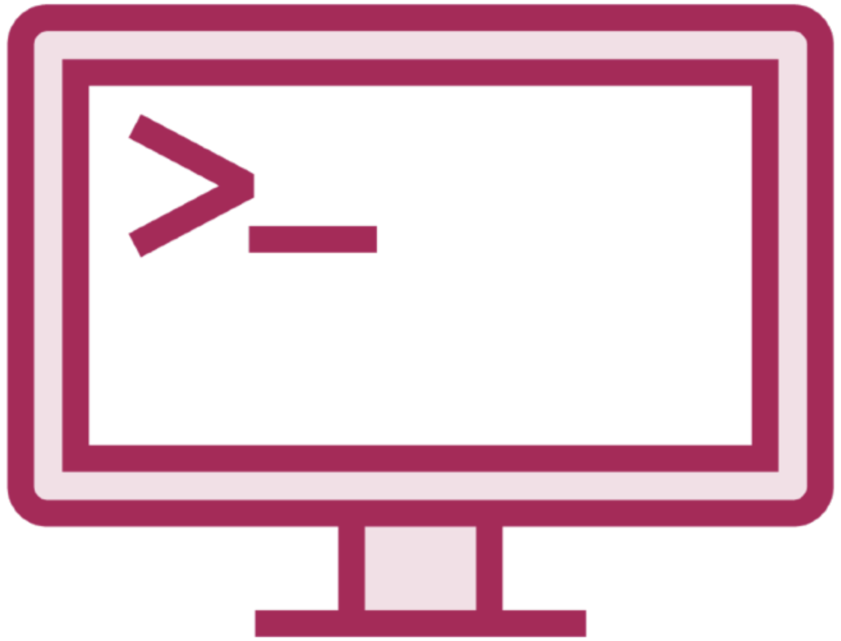
- Strong and weak points

Let’s Dive In!

Running Ruby Code

Running Ruby Code

As a program



In a shell

Public Service Announcements

Public Service Announcements

Ignore the details

No stress–I just want to show you what Ruby looks like

You can follow along

Type Ruby statements in your own interpreter, if you wish

A “Scripting Language”

Comparing Languages

Java (static, compiled)

```java
int doSomething(String a, int b, int c) {
    int result = 0;
    if (a.equals("mod")) {
      result = b % c;
    }
    return result;
}
```

JavaScript (dynamic, interpreted)

```javascript
function doSomething(a, b, c) {
    result = 0;
    if (a === "mod") {
        result = b % c;
    }
    return result;
}
```

Ruby (dynamic, interpreted)

```ruby
def do_something(a, b, c)
    result = 0
    if a == "mod"
        result = b % c
    end
    return result
end
```

Ruby is dynamic and interpreted
(a “scripting language”).

Ruby Is a Scripting Language

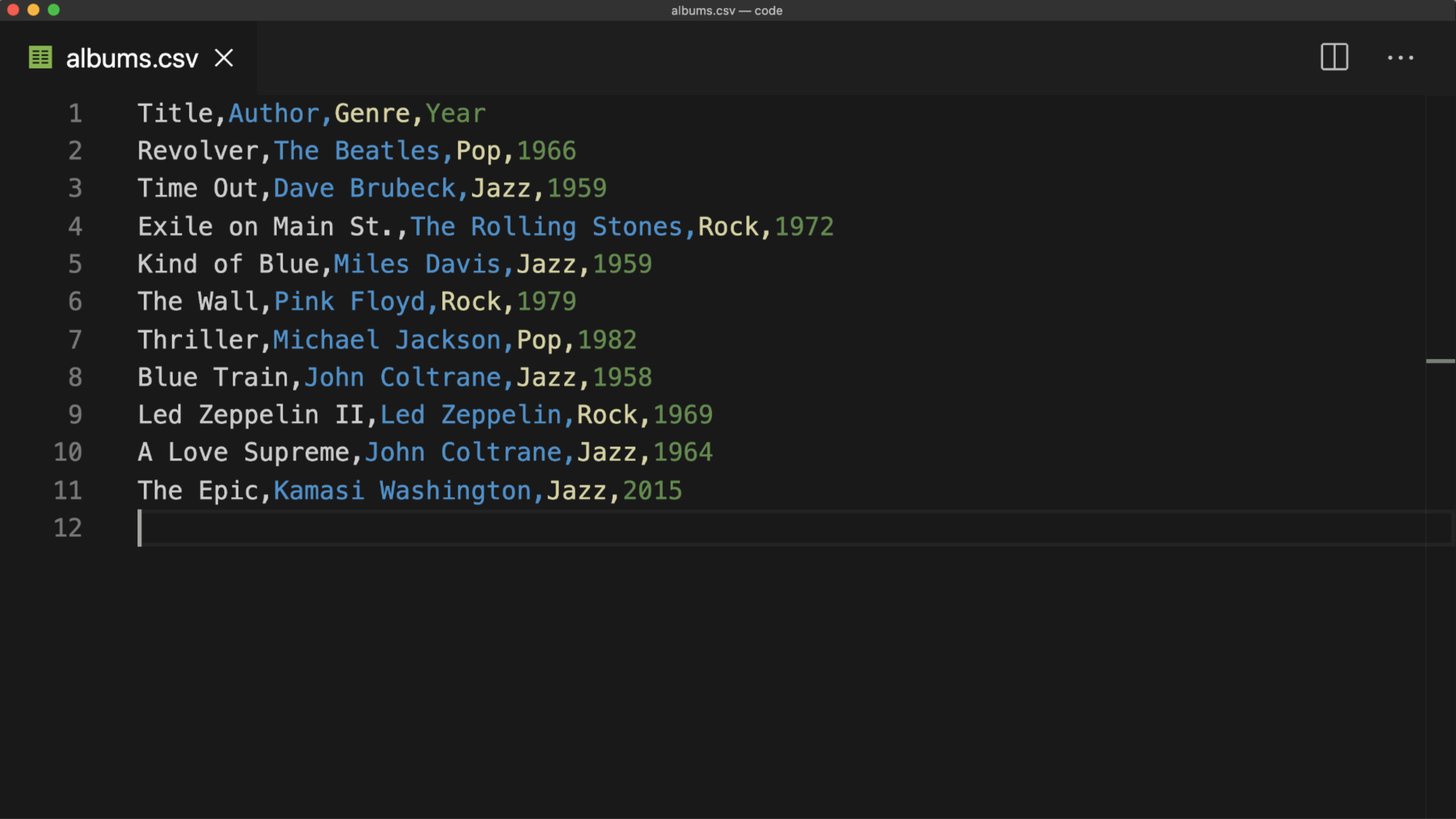
Like…

…JavaScript, Python

Unlike…

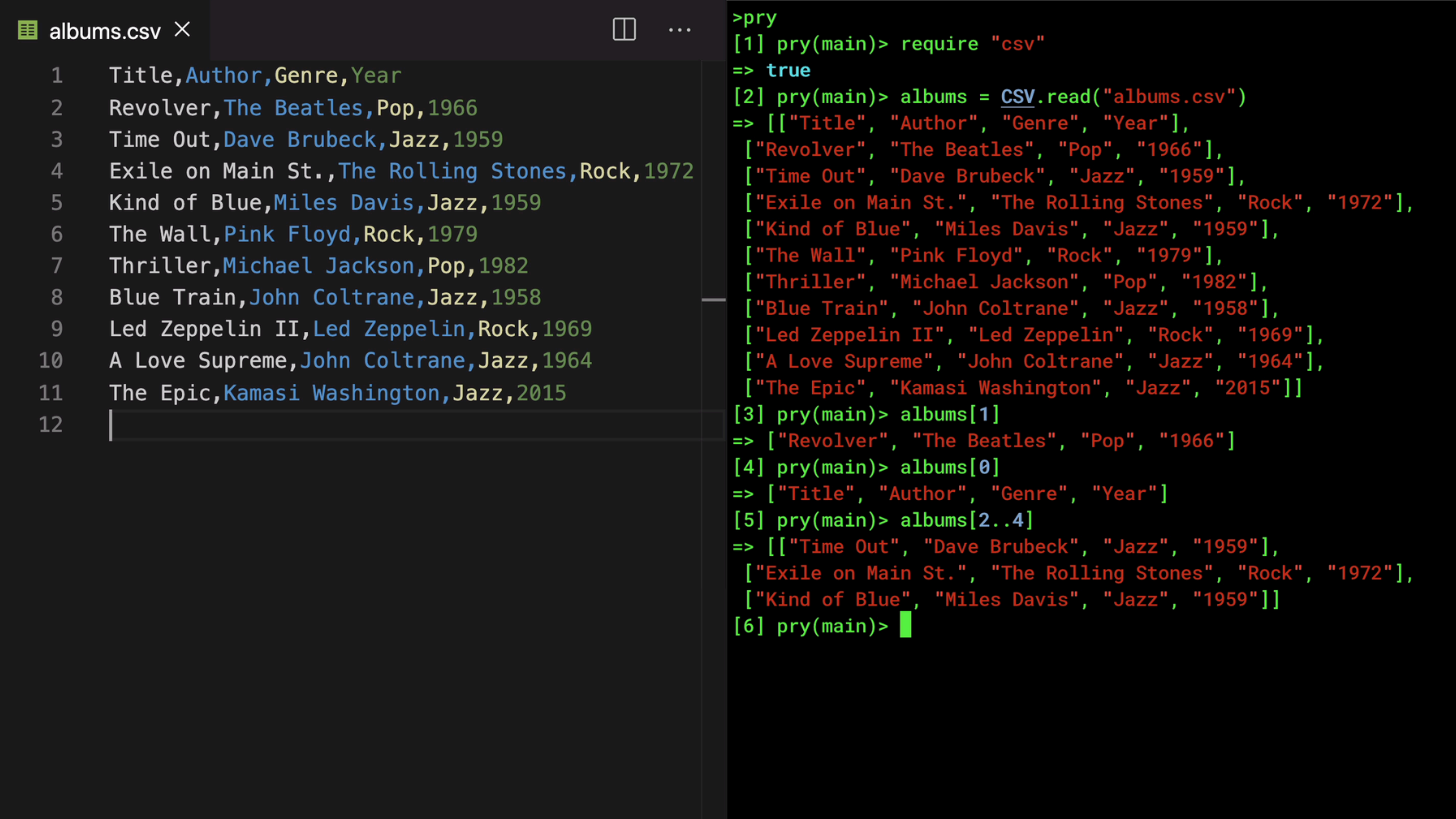
…Java, C#, C

A Problem with Jazz



```
Title,Author,Genre,Year
Revolver,The Beatles,Pop,1966
Time Out,Dave Brubeck,Jazz,1959
Exile on Main St.,The Rolling Stones,Rock,1972
Kind of Blue,Miles Davis,Jazz,1959
The Wall,Pink Floyd,Rock,1979
Thriller,Michael Jackson,Pop,1982
Blue Train,John Coltrane,Jazz,1958
Led Zeppelin II,Led Zeppelin,Rock,1969
A Love Supreme,John Coltrane,Jazz,1964
The Epic,Kamasi Washington,Jazz,2015

```

Loading CSV Data

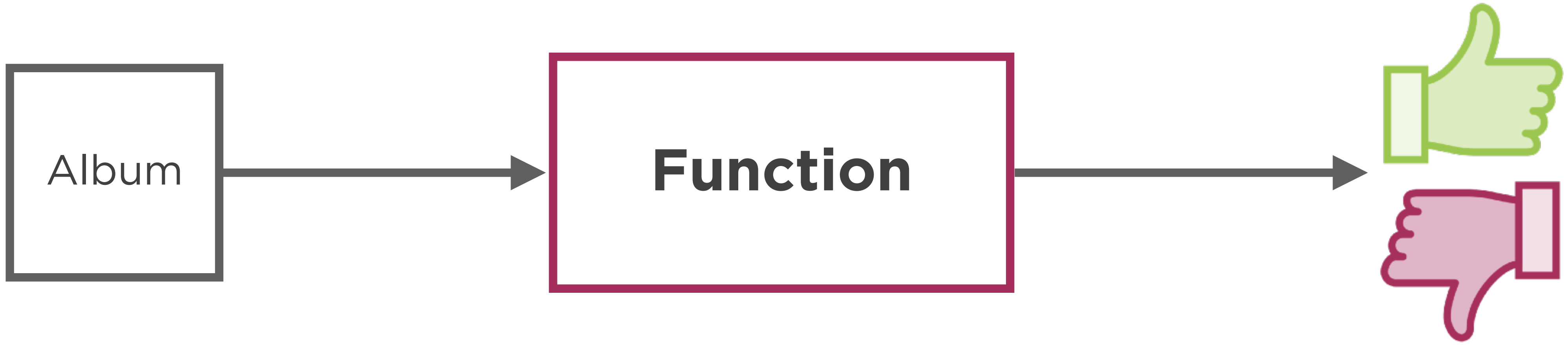


```
Title,Author,Genre,Year
Revolver,The Beatles,Pop,1966
Time Out,Dave Brubeck,Jazz,1959
Exile on Main St.,The Rolling Stones,Rock,1972
Kind of Blue,Miles Davis,Jazz,1959
The Wall,Pink Floyd,Rock,1979
Thriller,Michael Jackson,Pop,1982
Blue Train,John Coltrane,Jazz,1958
Led Zeppelin II,Led Zeppelin,Rock,1969
A Love Supreme,John Coltrane,Jazz,1964
The Epic,Kamasi Washington,Jazz,2015

```

```
>pry
[1] pry(main)> require "csv"
=> true
[2] pry(main)> albums = CSV.read("albums.csv")
=> [["Title", "Author", "Genre", "Year"],
 ["Revolver", "The Beatles", "Pop", "1966"],
 ["Time Out", "Dave Brubeck", "Jazz", "1959"],
 ["Exile on Main St.", "The Rolling Stones", "Rock", "1972"],
 ["Kind of Blue", "Miles Davis", "Jazz", "1959"],
 ["The Wall", "Pink Floyd", "Rock", "1979"],
 ["Thriller", "Michael Jackson", "Pop", "1982"],
 ["Blue Train", "John Coltrane", "Jazz", "1958"],
 ["Led Zeppelin II", "Led Zeppelin", "Rock", "1969"],
 ["A Love Supreme", "John Coltrane", "Jazz", "1964"],
 ["The Epic", "Kamasi Washington", "Jazz", "2015"]]
[3] pry(main)> albums[1]
=> ["Revolver", "The Beatles", "Pop", "1966"]
[4] pry(main)> albums[0]
=> ["Title", "Author", "Genre", "Year"]
[5] pry(main)> albums[2..4]
=> [["Time Out", "Dave Brubeck", "Jazz", "1959"],
 ["Exile on Main St.", "The Rolling Stones", "Rock", "1972"],
 ["Kind of Blue", "Miles Davis", "Jazz", "1959"]]
[6] pry(main)> 
```

Writing a Function

A Function to Recognize Classic Jazz



A Ruby Function

```ruby
def function_name(argument1, argument2, argument3)
    return … # some code to compute the result
end
```

A Ruby Function

```ruby
def classic_jazz?(album)
    album[2] == "Jazz" and album[3].to_i.between?(1950, 1959)
end
```

A Different Way of Looping

A *for* Loop

☹

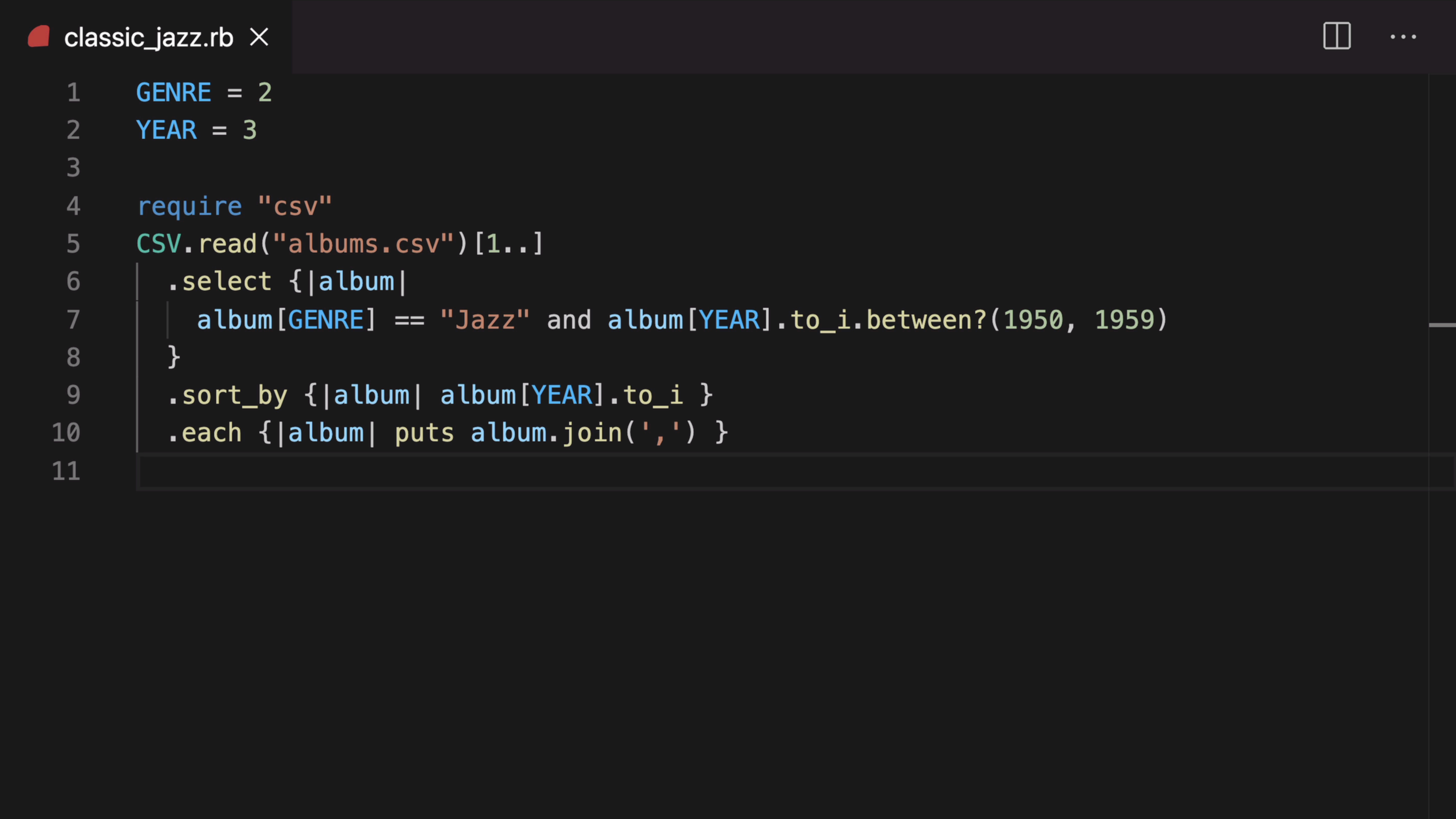
```
selected_albums = []

for i in 0...albums.size do
    if classic_jazz?(albums[i])
        selected_albums << albums[i]
    end
end
```

Ruby gives you more than one way to do the same thing.

Introducing Blocks

```
albums.select {|album| album[2] == "Jazz" and album[3].to_i.between?(1950, 1959) }
```

Completing the Program



```ruby
GENRE = 2
YEAR = 3

require "csv"
CSV.read("albums.csv")[1..]
  .select {|album|
    album[GENRE] == "Jazz" and album[YEAR].to_i.between?(1950, 1959)
  }
  .sort_by {|album| album[YEAR].to_i }
  .each {|album| puts album.join(',') }
```

Ruby is expressive.

A Few Things We Learned

Summary

Ruby is a scripting language

Ruby generally gives you more than one way to do the same thing

Ruby is expressive