Pseudo_Code.java

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PSEUDO CODE
by Josh Pang

Preface // Read Me

"Welcome to Pseudo Code. In this novella, we'll be sharing small, relaxing tales which sneak in byte sized bits of
computer science. Enjoy!"

// Chapter 1: The Flowers Of The Garden
// An Introduction to Loops

The Flowers Of The Garden live life in a cycle. They recycle.
Every day The Flowers play in sunlight, then dream in moonlight, then play in sunlight, then dream in moonlight.
This cycle recycles forever. The Earth loves to recycle.
Every season The Flowers grow big, then grow small, then grow big, then grow small.
This cycle recycles forever. The Earth loves to recycle.
The Flowers of the Garden live life in a cycle. They recycle.

In computer science, we call this a loop.

Moral Of The Story: Loops are how we recycle in computer science. Computers love to loop.

// Chapter 2: Gardener Caroline
// Why we need structure

Caroline tends her garden lovingly. She cares for each little flower individually, "Hello little flower, how
are you this morning?" She smiles as she waters the thirsty plants.
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Line 1, Column 1 | Tab Size: 4 | Java

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```
28 Caroline is quite a good gardener. She has ever so many flowers! In fact, Caroline is getting
       overwhelmed by
29 her success.
30 She needs to organize how she cares for her flowers, so she can give each one the care and love they
       deserve.
31 "Oh little flowers, what will I do?"
32 That night, Caroline finds the solution she needs in a dream.
33
34 Moral Of The Story: Gardener Caroline needs "data structures" to manage the plethora of flowers in
       her garden.
35 In computer science, we need data structures to manage the plethora of binary code in our programs.
36
37 // Chapter 3: Gardener Caroline Dreams A Solution
38 // An Introduction to Declaring and Instantiating Variables
39
40 Caroline awakens to the first light of dawn.
41 Every morning Caroline does a few basic things the same way. Essentially, her morning routine is a
       loop.
42 The first thing she does every morning is yawn. After a good yawn, she stretches a nice long stretch.
43 Caroline greets her friend Mr. Sun the same way every morning, "Good morning, Mr. Sun!"
44 Caroline has greeted each day every day in this way all her life. This is her World Famous Caroline
       Morning Loop!
45 "I wonder how The Flowers greet the new day?"
46 Excited from her dream last night, Caroline jumps out of bed and runs to her friend Old Mr. Computer.
       She needs Mr.
47 Computer to remember the events of her dream because sometimes she forgets. Old Mr. Computer is like
       Old Faithful
48 when it comes to remembering things for our friend Gardener Caroline.
49
50 In her dream, Caroline found herself upset in the middle of her garden. Suddenly, all the flowers
```

Line 28, Column 1 | Tab Size: 4 | Java

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```
    gathered around
her in a protective circle.
"Caroline, why are you upset? You give us so much water and food and love, what can we do to lift
    your spirit?"
Caroline replied, "Little flowers, I am worried about how I can take care of all of you... How can I
    love all
of you equally?"
The Flowers said, "Well, maybe if you knew all of our names, you would be able to account for all of
    us."

Caroline was very happy that The Flowers were speaking to her!!!

A Blue Flower introduced himself, "My name is Mr. Blue. I'm ever so grateful for all of your help!"

A Yellow Flower introduced herself, "My name is Ms. Yellow. Caroline, you make me glow whenever I see
    you!"

Finally, A Green Flower introduced himself, "My name is Mr. Green. Caroline, perhaps you could tell
    Old Mr. Computer
about our names when you wake up?"

While chatting with Old Mr. Computer, Caroline thought of a way to organize all the names of all The
    Flowers Of The
Garden. Ever since she was little, Caroline had tied colored strings around her fingers to keep track
    of important
things she needed to remember. She tied a blue string around her first finger for Mr. Blue, a yellow
    string around
her second finger for Ms. Yellow, and a green string around her third finger for Mr. Green.

Remembering how she used to remember things, Caroline asked Old Mr. Computer to remember the names of
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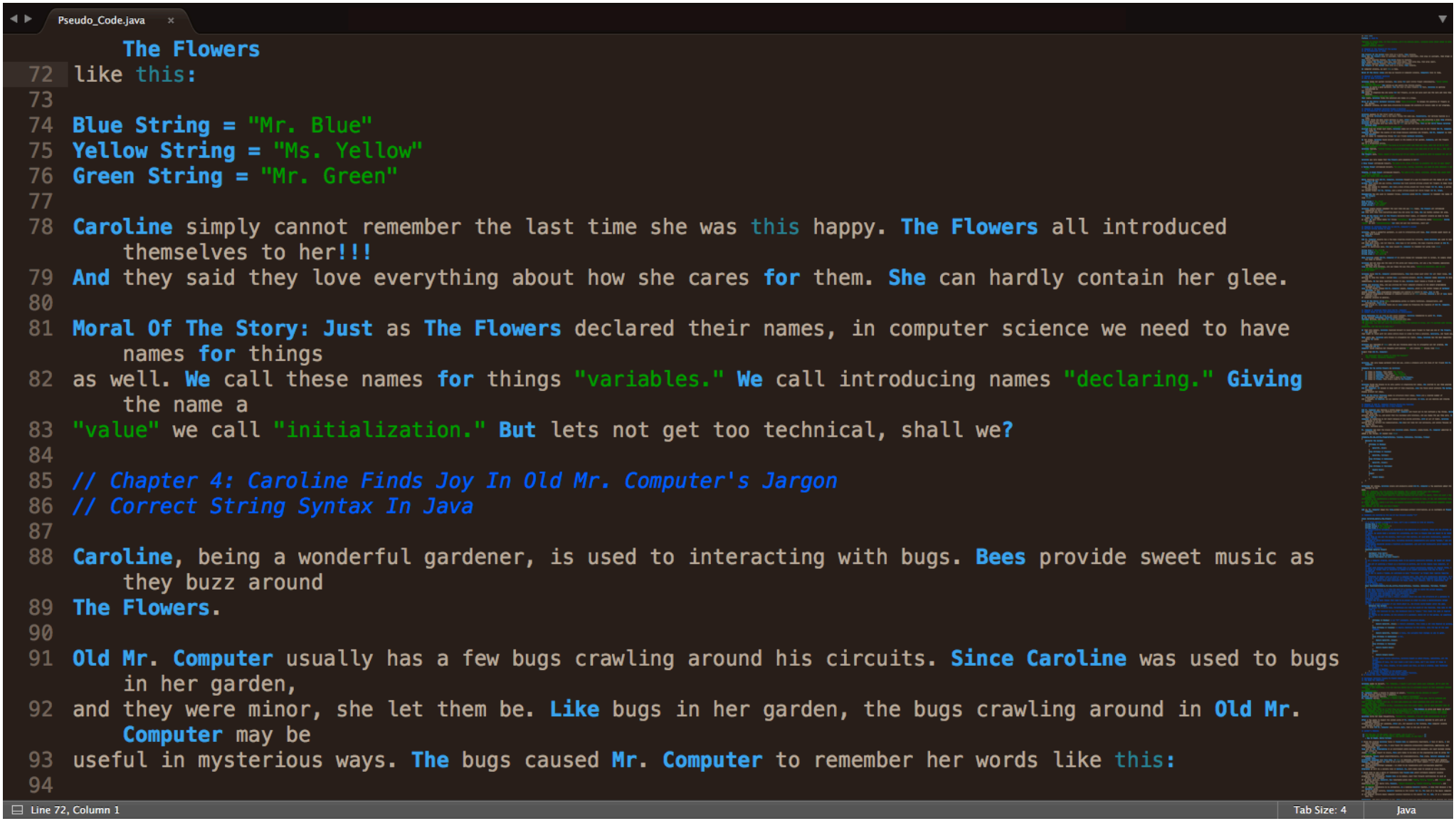
Line 51, Column 1 | Tab Size: 4 | Java


Pseudo_Code.java
The Flowers
like this:
Blue String = "Mr. Blue"
Yellow String = "Ms. Yellow"
Green String = "Mr. Green"
Caroline simply cannot remember the last time she was this happy. The Flowers all introduced themselves to her!!!
And they said they love everything about how she cares for them. She can hardly contain her glee.
Moral Of The Story: Just as The Flowers declared their names, in computer science we need to have names for things
as well. We call these names for things "variables." We call introducing names "declaring." Giving the name a
"value" we call "initialization." But lets not get too technical, shall we?
// Chapter 4: Caroline Finds Joy In Old Mr. Computer's Jargon
// Correct String Syntax In Java
Caroline, being a wonderful gardener, is used to interacting with bugs. Bees provide sweet music as they buzz around
The Flowers.
Old Mr. Computer usually has a few bugs crawling around his circuits. Since Caroline was used to bugs in her garden,
and they were minor, she let them be. Like bugs in her garden, the bugs crawling around in Old Mr. Computer may be
useful in mysterious ways. The bugs caused Mr. Computer to remember her words like this:
Line 72, Column 1
Tab Size: 4
Java

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```
String Blue = "Mr. Blue";
String Yellow = "Ms. Yellow";
String Green = "Mr. Green";

When Caroline asked Old Mr. Computer if he could change her language back to normal, he simply shook his head in defeat.

Caroline did not know why the some of the words got topsy-turvy, nor why a few friendly semicolons appeared, but so
long as they were harmless, she was happy the way they were. "Nature is beautiful, and so are computers. All I have
to do is look!"

Caroline loves Old Mr. Computer unconditionally. They have known each other for all their lives. She has made
getting to know his lingo - called Java - a creative project. Old Mr. Computer needs Caroline to help him
communicate. He has many important things to say. Caroline never leaves a friend in need!

Little did Caroline know, she was writing her first computer program in the modern programming language of Java.
Java is the mother tongue Old Mr. Computer speaks. English, which is the mother tongue of Gardener Caroline, is his
second language. Many programming languages are similar in nature to Java. Java is the
most popular programming language in computer science as of this writing. Knowing a bit of Java means knowing a bit
of computer science in general.

Moral Of The Story: Circa 2015, programming syntax is highly technical, idiosyncratic, and unforgiving. There is no
```

Line 95, Column 1 | Tab Size: 4 | Java

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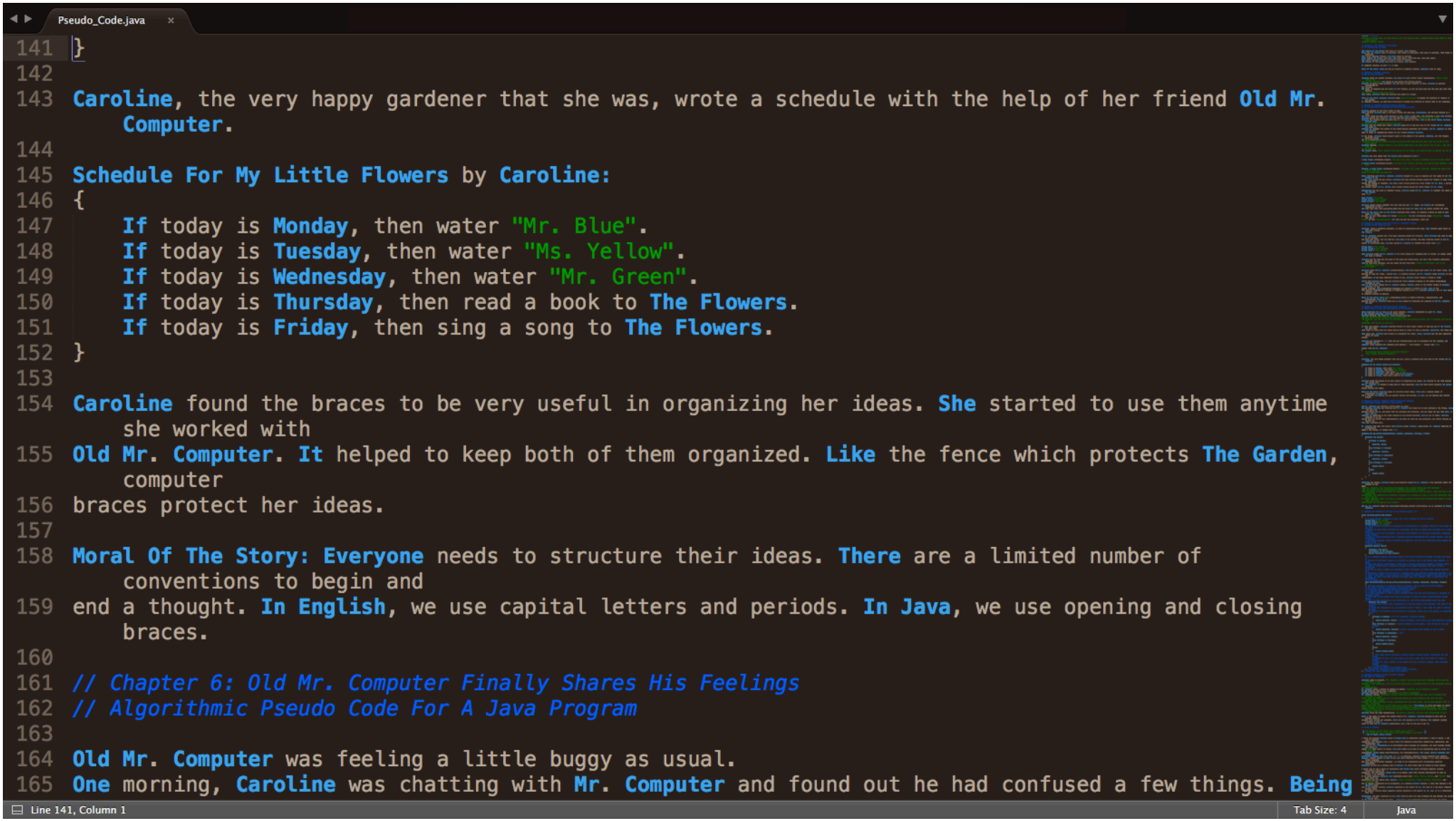
```
116 getting around it. Caroline found joy in Java jargon by forgiving the rigidity of Old Mr. Computer.
        Can you?
117
118 // Chapter 5: Caroline Chats With Old Mr. Computer
119 // Indent Style In Java and Introduction to Conditionals
120
121 Every Wednesday for as long as she could remember, Caroline remembered to water Mr. Green.
122 On one unusual Wednesday, Caroline plumb forgot.
123 Thursday morning, she found Mr. Green wilting with woe.
124 "My dear little flower! Why do you wilt with woe?"
125 "Oh Caroline, you did not visit me yesterday. I've had nothing to drink, and I'm parched with thirst.
        I'm
126 exhausted, and too dry to even cry."
127
128 At that very moment, Caroline resolved herself to never again forget to feed any one of The Flowers.
        She went home
129 that night to think with her whole entire brain in order to find a solution. Naturally, she found one.
130
131 Many years ago, Caroline wore braces to straighten her teeth. Today, Caroline has the most beautiful
        smile for miles
132 around.
133
134 Caroline was reminded of this when she was thinking about how to straighten out her problem. She
        realized Old Mr.
135 Computer could organize her thoughts with opening "{" and closing "}" braces like this:
136
137 E-mail from Old Mr. Computer:
138 {
139     "Hi Caroline! Don't forget to feed The Flowers!"
140     "Your friend, Cornelius Computer."
```


Pseudo_Code.java
}
Caroline, the very happy gardener that she was, wrote a schedule with the help of her friend Old Mr. Computer.
Schedule For My Little Flowers by Caroline:
{
If today is Monday, then water "Mr. Blue".
If today is Tuesday, then water "Ms. Yellow".
If today is Wednesday, then water "Mr. Green".
If today is Thursday, then read a book to The Flowers.
If today is Friday, then sing a song to The Flowers.
}
Caroline found the braces to be very useful in organizing her ideas. She started to use them anytime she worked with
Old Mr. Computer. It helped to keep both of them organized. Like the fence which protects The Garden, computer
braces protect her ideas.
Moral Of The Story: Everyone needs to structure their ideas. There are a limited number of conventions to begin and
end a thought. In English, we use capital letters and periods. In Java, we use opening and closing braces.
// Chapter 6: Old Mr. Computer Finally Shares His Feelings
// Algorithmic Pseudo Code For A Java Program
Old Mr. Computer was feeling a little buggy as usual.
One morning, Caroline was chatting with Mr. Computer and found out he had confused a few things. Being
Line 141, Column 1
Tab Size: 4
Java

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```
      the kind and
patient person she is, and given that his mistakes were harmless, she was happy the way they were. In
    fact, Old Mr.
Computer is endearing to her heart because of his quirky glitches. With an air of humor, Caroline
    imagines it is her
sacred duty to correct his communication. She does not take her job seriously, and solely focuses on
    having fun.
This way, everyone wins.

Mr. Computer had kept the braces like Caroline asked. However, shame-faced, Mr. Computer admitted he
    accidentally
added a few things. It looked like this:

Schedule_For_My_Little_Flowers(Monday, Tuesday, Wednesday, Thursday, Friday)
{
    While(In The Garden)
    {
        If(Today == Monday)
        {
            Water(Mr. Blue);
        }
        Else If(Today == Tuesday)
        {
            Water(Ms. Yellow);
        }
        Else If(Today == Wednesday)
        {
            Water(Mr. Green);
        }
        Else If(Today == Thursday)
```

Line 166, Column 1 | Tab Size: 4 | Java

Pseudo_Code.java

```
        {
            Read(A Book);
        }
        Else()
        {
            Sing(A Song);
        }
    }
}

Gathering her energy, Caroline slowly and gradually asked Old Mr. Computer a few questions about the changes he had
made.
"Dear Mr. Computer, you are perfect and awesome. But I cannot fathom this new language."
"Can you explain how you transformed my schedule from English to Java?"
"Well Caroline, if you think about it, Java and English are not that far apart. There are just a few grammatical
differences, but essentially a sentence in English is a sentence in Java. If you can understand this, you'll go far.
On Planet Computer, where I am from, we explain ourselves through terse interspersed comments around code. Let's try
that method. Let me show you how I think."

And so, Mr. Computer began his long-winded monologue without interruption, as is customary on Planet Computer.

// Comments are denoted by the use of two forward slashes "//"

Class Caroline_Waters_The_Flowers
{
```

Line 191, Column 9 | Tab Size: 4 | Java

Pseudo_Code.java

```
// A class defines a program in Java. Let's say a program is like an novella.
String Blue = "Mr. Blue";
String Yellow = "Ms. Yellow";
String Green = "Mr. Green";
// Conventionally variables are declared at the beginning of a program. These are the strings we saw from
// above. We would need a variable for everything, but this is Pseudo Code and meant to be taken lightly.
// As long as you get the picture, that's all that matters. Or said more technically, semantics trumps syntax.
// Scope is worth mentioning here. Variables declared independently are called "global," and are "immutable."
// Variables declared inside a function are dependent, and will not technically exist beyond the scope of the
// parent function.
Function Water(A Flower)
{
    Get(Water From Well);
    Carry(Water To The Garden);
    Return Pour(Water On Said Flower);
}
// In a computer program, everything needs to be exactly explicitly defined. We might not think of
// the act of watering a flower as a function we perform, but to the tabula rasa computer, it needs
// just such precise instructions. Though this is almost universally tedious to regular folks, I
// think we forget that as children we needed to be taught everything from how to hold a toothbrush
// to how to sauté a flambé. We sublimate so many "functions" we forget that reality requires this
```

Line 216, Column 5 | Tab Size: 4 | Java

Pseudo_Code.java

```
237     // attention to detail just as much as a computer does. And, both are technically merciless. If I
238     // touch a hot stove, it will burn me. If I forget a semicolon, the compiler will burn me, so to
239     // speak. We would also need functions for Read, Sing, etc. However, this is algorithmic not
        programmatic.
240     // I.E. Pseudo Code.
241     Main Function(Schedule_For_My_Little_Flowers(Monday, Tuesday, Wednesday, Thursday, Friday))
242     {
243     // The Main Function is a like the plot of a novella. This is where the action happens.
244     // Any other function is basically a verb within the plot.
245     // A function uses variables which are basically nouns.
246     // A function uses variables to 'return' a result.
247     // A return statement is like a thesis statement which one uses the structure of a sentence to
        logically prove.
248     // There may be many theses that need to be proven in order to prove a hierarchically larger
        thesis.
249     // This is mildly pyramidal if you think about it, the bricks build higher until the apex.
250         While(In The Garden)
251         // Syntax for a while loop. Parentheses are like the mouth of the function. They take in the
            food to
252         // allow the function to run. The technical term is "input." This reads the same in English
            as Java.
253         // "While in the garden, do the actions of a gardener. While not in the garden, do something
            else."
254         {
255             If(Today == Monday) // An "If" statement. Intuitive enough.
256             {
257                 Return Water(Mr. Blue); // Return statement. This looks a lot like English on purpose.
258             }
259             Else If(Today == Tuesday) // Nearly identical to the others. Only the day of the week
                changes.
```

Line 237, Column 5 | Tab Size: 4 | Java

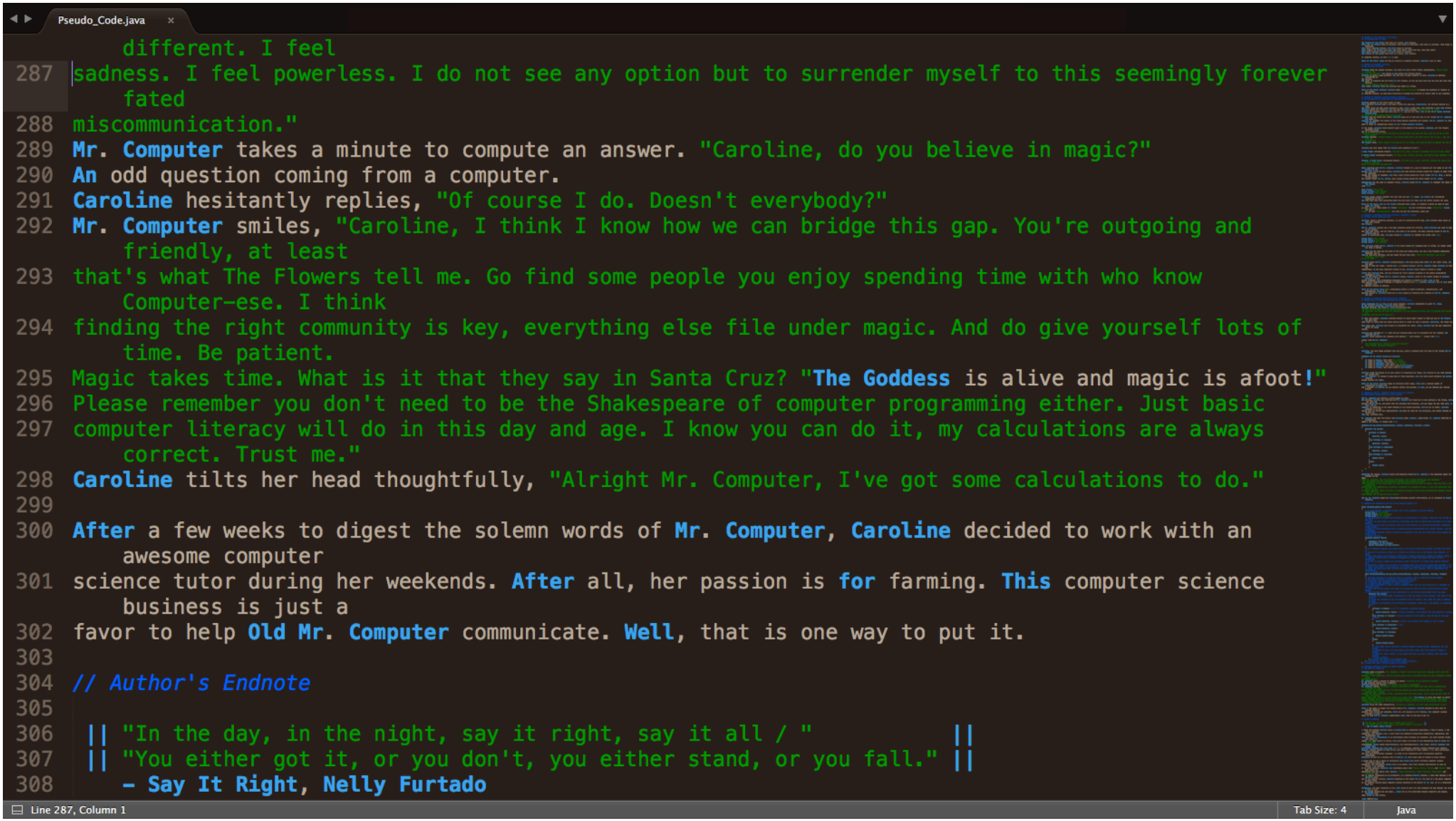
Pseudo_Code.java

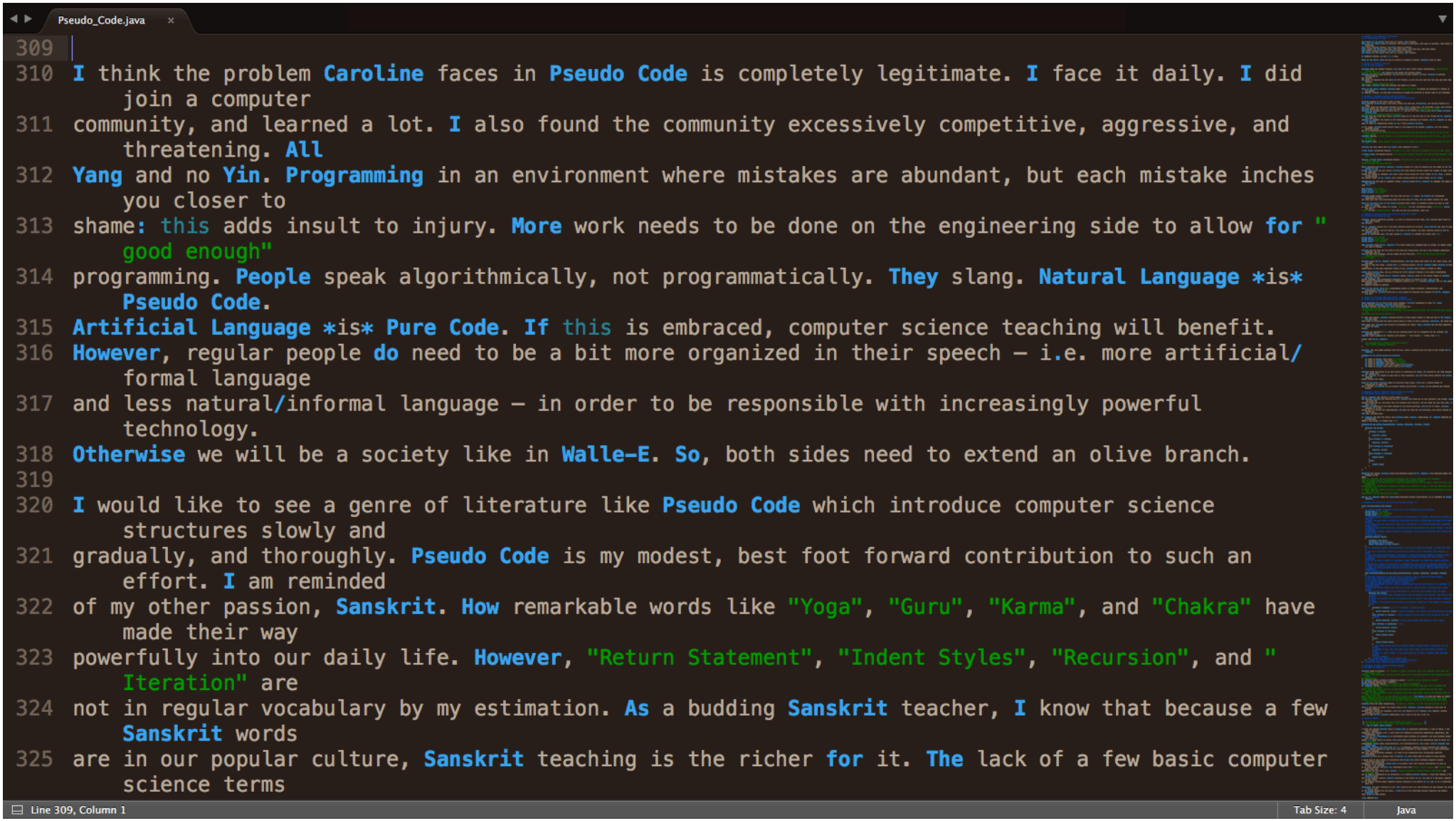
```
            {
                Return Water(Ms. Yellow); // Here, the variable that changes is who to water.
            }
            Else If(Today == Wednesday) // Etc.
            {
                Return Water(Mr. Green);
            }
            Else If(Today == Thursday)
            {
                Return Read(A Book);
            }
            Else()
            {
                Return Sing(A Song);
            }
            // That seems fairly intuitive. Caroline taught us about braces, semicolons, all the
            jargon
            // symbols of Java. The rest reads a bit like a book, don't you think? If Today is
            Monday,
            // Water Mr. Blue. Simple. If you cannot see this, we have a problem. Seek technical
            support
            // from a teacher.
        } // Closes the "While in the garden" loop
    } // Closes the "Schedule for my little flowers" function.
} // Closes the class "Caroline waters the flowers."

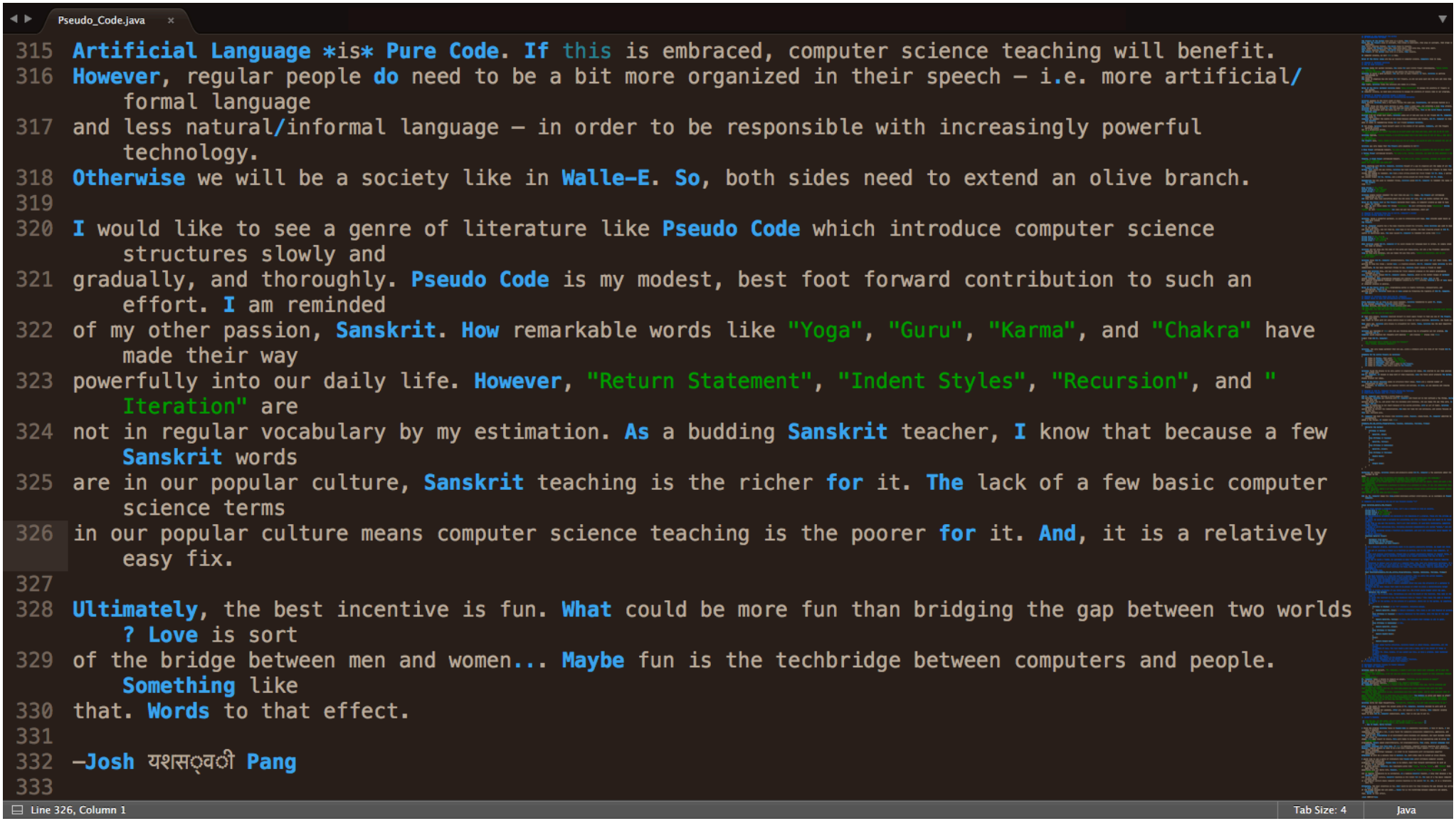
// Epilogue: Caroline Travels To Planet Computer
// The Need For Immersion

Caroline sighs to herself. "Mr. Computer, I doubt I will ever learn your language. We're just too
```

Line 260, Column 13 | Tab Size: 4 | Java


Pseudo_Code.java
different. I feel
sadness. I feel powerless. I do not see any option but to surrender myself to this seemingly forever fated
miscommunication."
Mr. Computer takes a minute to compute an answer. "Caroline, do you believe in magic?"
An odd question coming from a computer.
Caroline hesitantly replies, "Of course I do. Doesn't everybody?"
Mr. Computer smiles, "Caroline, I think I know how we can bridge this gap. You're outgoing and friendly, at least
that's what The Flowers tell me. Go find some people you enjoy spending time with who know Computer-ese. I think
finding the right community is key, everything else file under magic. And do give yourself lots of time. Be patient.
Magic takes time. What is it that they say in Santa Cruz? "The Goddess is alive and magic is afoot!"
Please remember you don't need to be the Shakespeare of computer programming either. Just basic
computer literacy will do in this day and age. I know you can do it, my calculations are always correct. Trust me."
Caroline tilts her head thoughtfully, "Alright Mr. Computer, I've got some calculations to do."
After a few weeks to digest the solemn words of Mr. Computer, Caroline decided to work with an awesome computer
science tutor during her weekends. After all, her passion is for farming. This computer science business is just a
favor to help Old Mr. Computer communicate. Well, that is one way to put it.
// Author's Endnote
|| "In the day, in the night, say it right, say it all / " ||
|| "You either got it, or you don't, you either stand, or you fall." ||
- Say It Right, Nelly Furtado
Line 287, Column 1
Tab Size: 4
Java


Pseudo_Code.java
309
310 I think the problem Caroline faces in Pseudo Code is completely legitimate. I face it daily. I did join a computer
311 community, and learned a lot. I also found the community excessively competitive, aggressive, and threatening. All
312 Yang and no Yin. Programming in an environment where mistakes are abundant, but each mistake inches you closer to
313 shame: this adds insult to injury. More work needs to be done on the engineering side to allow for "good enough"
314 programming. People speak algorithmically, not programmatically. They slang. Natural Language *is* Pseudo Code.
315 Artificial Language *is* Pure Code. If this is embraced, computer science teaching will benefit.
316 However, regular people do need to be a bit more organized in their speech - i.e. more artificial/formal language
317 and less natural/informal language - in order to be responsible with increasingly powerful technology.
318 Otherwise we will be a society like in Walle-E. So, both sides need to extend an olive branch.
319
320 I would like to see a genre of literature like Pseudo Code which introduce computer science structures slowly and
321 gradually, and thoroughly. Pseudo Code is my modest, best foot forward contribution to such an effort. I am reminded
322 of my other passion, Sanskrit. How remarkable words like "Yoga", "Guru", "Karma", and "Chakra" have made their way
323 powerfully into our daily life. However, "Return Statement", "Indent Styles", "Recursion", and "Iteration" are
324 not in regular vocabulary by my estimation. As a budding Sanskrit teacher, I know that because a few Sanskrit words
325 are in our popular culture, Sanskrit teaching is the richer for it. The lack of a few basic computer science terms
Line 309, Column 1
Tab Size: 4
Java


Pseudo_Code.java
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324 not in regular vocabulary by my estimation. As a budding Sanskrit teacher, I know that because a few Sanskrit words
325 are in our popular culture, Sanskrit teaching is the richer for it. The lack of a few basic computer science terms
326 in our popular culture means computer science teaching is the poorer for it. And, it is a relatively easy fix.
327
328 Ultimately, the best incentive is fun. What could be more fun than bridging the gap between two worlds? Love is sort
329 of the bridge between men and women... Maybe fun is the techbridge between computers and people. Something like
330 that. Words to that effect.
331
332 –Josh यशस्वी Pang
333
Line 326, Column 1
Tab Size: 4
Java