

//TODO: Write A Better Comment

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Java  @java · Jun 2

## Stop Writing Code Comments


#cleancoder

[medium.com/@bpnorlander/s...](https://medium.com/@bpnorlander/s...)

```
1 // this function sends an email
2 void sendEmail() {
3     ...
4 }
5
6 // this class holds data for an employee
7 public class Employee {
8     ...
9 }
10
11 /**
12  * @param title The title of the CD
13  * @param author The author of the CD
14  * @param tracks The number of tracks on the CD
```

 257

 298

 1K



# This Is Bad Advice

# It Also Doesn't Need To Be This Harsh

"When you need to write a comment, it usually means that you have failed to write code that was expressive enough. You should feel a sharp pain in your stomach every time you write a comment."

# You Are Not A Failure For Writing Comments

# We Need To Stop Writing *Bad* Comments

# Why Do We Have Comments, Anyways?

# They Provide Additional Insight

```
/**  
 * There is certain functionality that we need to be consistent  
 * in all WebViews of our app.  
 * For some URLs, though, we need additional customization so we  
 * can extend this base class accordingly.  
 */  
class BaseWebViewClient(...) : WebViewClient
```



# They Can Tell You Why The Programmer Did Something

```
// The API returns the time in seconds  
// but we need to manipulate it as milliseconds.  
val timeInMillis = response.time * 1000
```

# They Can Provide Documentation

```
interface AccountDAO {  
    /**  
     * Inserts an account into the database.  
     *  
     * @param[account] The account that we're inserting.  
     * @return The ID of the inserted account.  
     */  
    fun insert(account: Account): Long  
}
```

# What Risks Do Comments Pose?

# Changing Code Doesn't Guarantee We Change Comments

# Describe Some Action

```
// We only want active users  
val usersToDisplay = userList.filter { user ->  
    user.isActive  
}
```

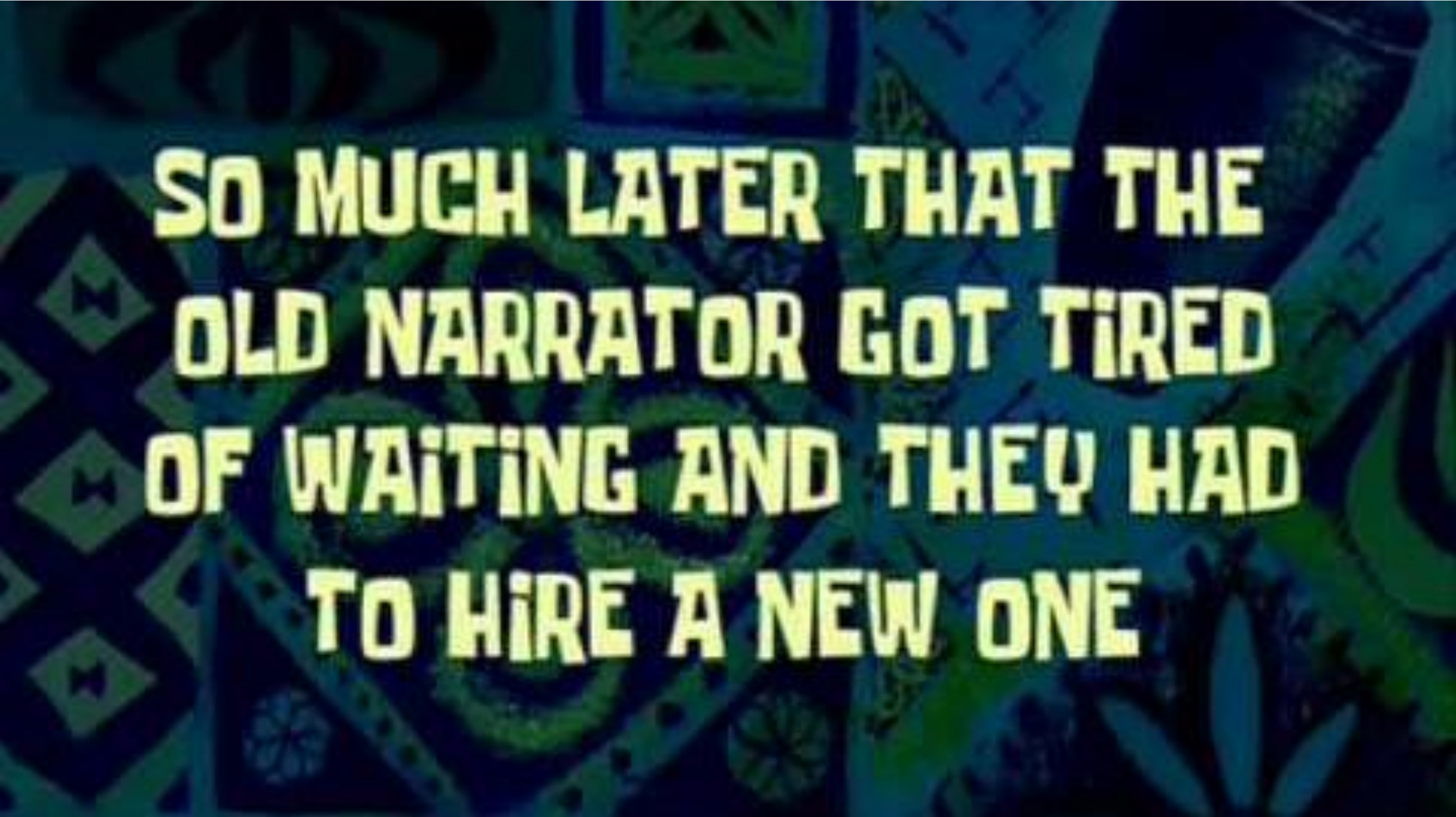


**THREE  
WEEKS  
LATER...**

# That Action Changed

```
// We only want active users
val usersToDisplay = userList.filter { user ->
    user.isActive && user.completedRegistration
}
```





**SO MUCH LATER THAT THE  
OLD NARRATOR GOT TIRED  
OF WAITING AND THEY HAD  
TO HIRE A NEW ONE**



# Who is right? 🤔

```
// We only want active users
val usersToDisplay = userList.filter { user ->
    user.isActive && user.completedRegistration
}
```

# Managing Code And Comments Is Difficult

- Try to avoid them by default
- Don't avoid comments just for avoidance sake
- Ask yourself if there's some way to avoid it

# Avoid Redundant Comments

# The Comments Tell Me Everything The Code Does

```
interface AccountDAO {  
    /**  
     * Inserts an account into the database.  
     *  
     * @param[account] The account that we're inserting.  
     * @return The ID of the inserted account.  
     */  
    fun insert(account: Account): Long  
}
```

# Remove What We Don't Need

```
interface AccountDAO {  
    /**  
     * @return The ID of the inserted account.  
     */  
    fun insert(account: Account): Long  
}
```

# An Exception

- If you're writing a library or public facing API, document everything
- More on this later

# Change Code To Avoid Needing Comments

# Sometimes We Try To Clarify Behavior

```
// Saves data to database  
fun saveData() {  
    // ...  
}
```



# We Can Write More Expressive Method Names

```
fun saveDataToDatabase() {  
    // ...  
}
```

# Sometimes We Use Them To Break Up A Method<sup>1</sup>

```
fun transferMoney(fromAccount: Account, toAccount: Account, amount: Double) {  
    // create withdrawal transaction and remove from fromAccount  
    // ...  
  
    // create deposit transaction and add from toAccount  
    // ...  
}
```

---

<sup>1</sup> This is also bad because methods should do just one thing.

# We Should View This As An Opportunity To Extract Functionality

```
fun transferMoney(fromAccount: Account, toAccount: Account, amount: Double) {  
    withdrawMoney(fromAccount, amount)  
    depositMoney(toAccount, amount)  
}
```

# Now What?

- We removed any redundant comments
- We changed code to avoid comments
- But we still feel the need to clarify what we did, or we're working on a public API

# How Do I Ensure The Comments I Do Write Are Helpful?

Comments Tell You *Why*, Code Tells  
You *What*

# This Comment Only Tells Me What

```
/**  
 * A list of updated questions to be replaced in our list by an interceptor.  
 */  
private val updatedQuestions: MutableMap<Long, Question> = HashMap()
```

# We Should Clarify Why We Need This Value

```
/**
 * The `PagedList` class from Android is backed by an immutable list.
 * However, if the user answers a question locally, we want to update the display
 * without having to fetch the data from the network again.
 *
 * To do that, we keep this local cache of questions that the user has
 * answered during this app session, and later when we are building
 * the list we can override questions with one from this list, if it exists.
 * That's determined by the key of this HashMap, which is the question ID.
 */
private val updatedQuestions: MutableMap<Long, Question> = HashMap()
```



# Comments With Examples Are Helpful

# These Are All Redundant

```
class Pokedex {  
    /**  
     * Adds a pokemon to this pokedex.  
     *  
     * @param[name] The name of the Pokemon.  
     * @param[number] The number of the Pokemon.  
     */  
    fun addPokemon(name: String, number: Int) {  
  
    }  
}
```

# We Can Provide Examples

```
class Pokedex {  
    /**  
     * Adds a pokemon to this Pokedex.  
     *  
     * @param[name] The name of the Pokemon (Bulbasaur, Ivysaur, Venusaur).  
     * @param[number] The number of the Pokemon (001, 002, 003).  
     */  
    fun addPokemon(name: String, number: Int) {  
  
    }  
}
```

# Links To External Resources Are Helpful

# For Things We Find On StackOverflow

```
/**
 * A ViewPager that cannot be swiped by the user,
 * but only controlled programmatically.
 *
 * Inspiration: https://stackoverflow.com/a/9650884/3131147
 */
class NonSwipeableViewPager(
    context: Context,
    attrs: AttributeSet? = null
) : ViewPager(context, attrs) {
    // ...
}
```

# For Internal Documentation

```
/**  
 * Implementation of some feature that I was asked to build.  
 *  
 * Design/Product Spec: https://confluence.com/some/feature  
 */  
class SomeFeatureFragment : Fragment() {  
    // ...  
}
```

# For Work Arounds Of Reported Issues

```
/**
 * The carousel library we use does not support a
 * specific functionality that we need. We've extended
 * this class to modify it ourselves.
 *
 * Issue reported: https://github.com/library/issues/1
 */
class MyCustomCarousel : Carousel() {
    // ...
}
```

# Actionable Comments Are Helpful



# //TODO: Comments

# Two Options For `//TODO:` Comments

# Option 1: Just Do It

# Option 2: Link To External Issue Tracker

```
//TODO: Consolidate both of these classes  
// since we only have one activity now.  
// AAA-123  
class MainActivity : BaseActivity() {  
    // ...  
}
```

# Deprecation Comments Can Be Actionable

# Don't Do This

```
@Deprecated  
public interface DefaultBehavior {  
    // ...  
}
```

# Tell People What The Replacement Is

```
/**  
 * @deprecated Use {@link AttachedBehavior} instead  
 */  
@Deprecated  
public interface DefaultBehavior {  
    // ...  
}
```

# Other General Suggestions



# Try To Summarize Large Sections Of Code



SyntaxSeed (Sherri W)  

Jun 13 

Comments are valuable when they enable me to skip over reading a section of code.

Yes, clear, expressive code is important, but sorry to burst egos- I don't want to read every line of even beautiful code. I'm a busy woman.

Write comments to summarize sections & reveal gotchas & important details. It's just more efficient that way.



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REPLY

# ASCII Art?<sup>2</sup>

```
130 * <p>ChipDrawable's horizontal layout is as follows:
131 *
132 * <pre>
133 *   chipStartPadding   iconEndPadding   closeIconStartPadding   chipEndPadding
134 *   +                 +                 +                 +
135 *   |                 |                 |                 |
136 *   | iconStartPadding | textStartPadding textEndPadding | closeIconEndPadding |
137 *   | +                 | +                 + |                 + |
138 *   | |                 | |                 | |                 | |
139 *   v v                 v v                 v v                 v v
140 * +-----+-----+-----+-----+-----+-----+-----+
141 * | | | | | XX | | | | XX X X X XXX | | | | X X | | | |
142 * | | | | | XX | | | | X X X X X X X | | | | XX XX | | | |
143 * | | | | | XX XX | | | | X XXXX X XXX | | | | XX | | | |
144 * | | | | | XXX | | | | X X X X X X X | | | | XX XX | | | |
145 * | | | | | X | | | | XX X X X X X | | | | X X | | | |
146 * +-----+-----+-----+-----+-----+-----+
147 *           ^           ^           ^
148 *           |           |           |
149 *           +           +           +
150 *           chipIconSize *dynamic* closeIconSize
151 * </pre>
152 *
```

<sup>2</sup> <https://github.com/material-components/material-components-android/blob/master/lib/java/com/google/android/material/chip/ChipDrawable.java#L130-L151>

# Reference Classes/Methods/Properties

- Helps survive refactoring of a field
- IDE may let you click into a reference

# Without References

```
/**  
 * Retrieves the primary Type for a Pokemon.  
 */  
val firstType: Type?  
    get() = currentState.pokemon?.sortedTypes?.firstOrNull()
```

Refactor class name...

```
/**  
 * Retrieves the primary Type for a Pokemon.  
 */  
val firstType: PokemonType?  
    get() = currentState.pokemon?.sortedTypes?.firstOrNull()
```

# With References

```
/**  
 * Retrieves the primary [Type] for a [Pokemon].  
 */  
val firstType: Type?  
    get() = currentState.pokemon?.sortedTypes?.firstOrNull()
```

Refactor class name...

```
/**  
 * Retrieves the primary [PokemonType] for a [Pokemon].  
 */  
val firstType: PokemonType?  
    get() = currentState.pokemon?.sortedTypes?.firstOrNull()
```

# Be Consistent With Your Language

- When documenting methods that return booleans, try to always describe the true condition
- Don't describe the true response for some methods and the false response for others

# Inconsistent Documentation

```
/**
 * @return True if the user has signed on within the last 24 hours.
 */
fun isActive(): Boolean {
    // ...
}

/**
 * @return False if the user is not a staff member for our team.
 */
fun isStaff(): Boolean {
    // ...
}
```

# Consistent Documentation

```
/**  
 * @return True if the user has signed on within the last 24 hours.  
 */  
fun isActive(): Boolean {  
    // ...  
}
```

```
/**  
 * @return True if the user is a staff member of our team.  
 */  
fun isStaff(): Boolean {  
    // ...  
}
```



# Recap

- Avoid redundant comments
- Try to refactor your code to avoid a comment
- If you have to write a comment, try your best to be helpful
  - Explain *why*
  - Provide examples
  - Be actionable
  - Leverage IDE tools
  - Be consistent

# Thank You!

<https://github.com/AdamMc331/TODO-DCNYC19>