//TODO: Write A Better Comment

Adam McNeilly - @AdamMc331

Java @java · Jun 2

Stop Writing Code Comments

#cleancoder

medium.com/@bpnorlander/s...

```
// this function sends an email
void sendEmail() {
  ...
}

// this class holds data for an employee
public class Employee {
  ...
}

/**
 * @param title The title of the CD
 * @param author The author of the CD
 * @param tracks The number of tracks on the CD
```

257 298 1K

This Is Bad Advice

"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?

To 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
```

To Explain Why We Did Something

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

To 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

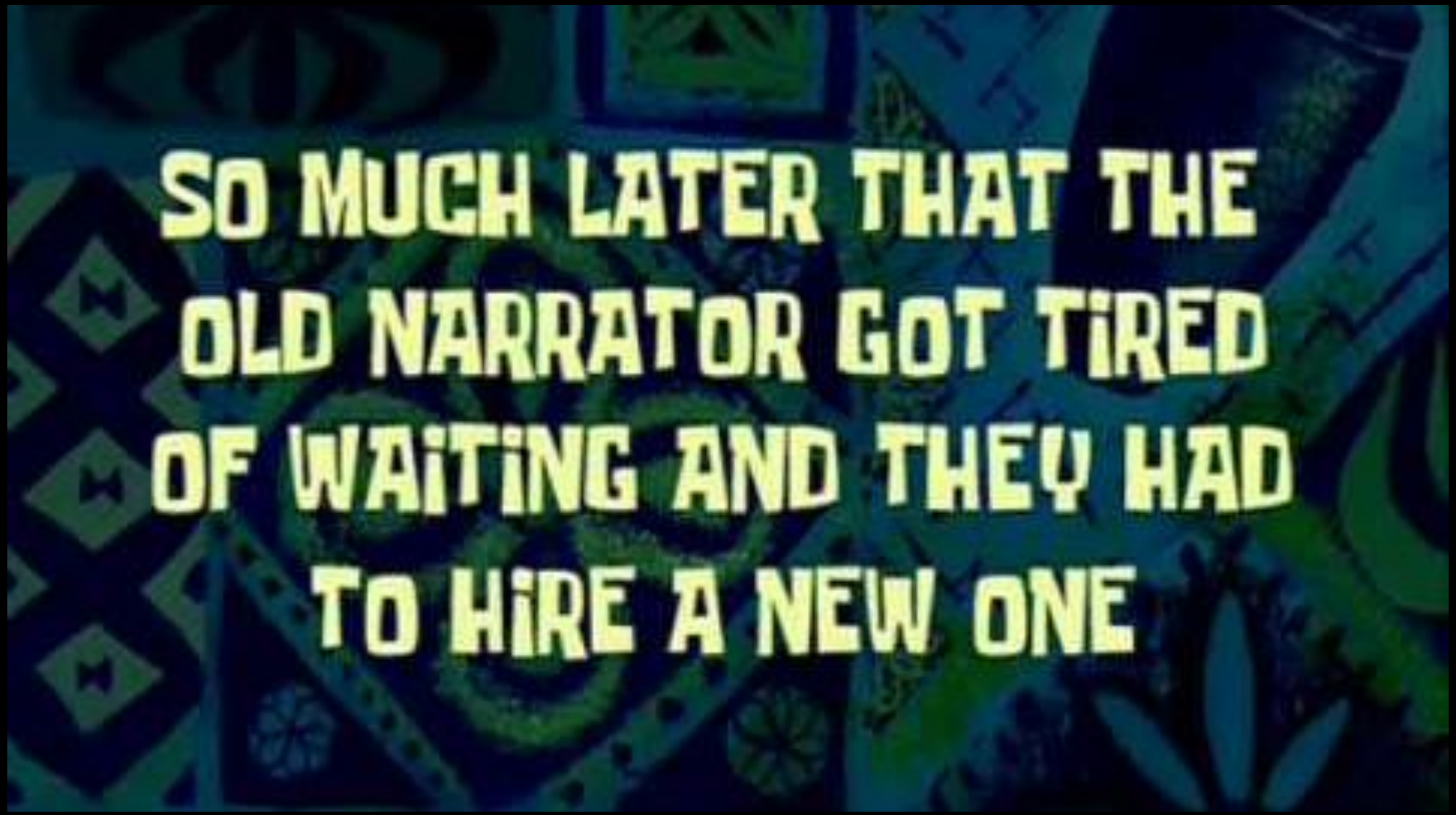
Describe Some Action

```
// 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

Which Is Right? 🤔

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

Three Types Of Comments

Three Types Of Comments

- Comments that are unnecessary

Three Types Of Comments

- Comments that are unnecessary
- Comments that are unhelpful

Three Types Of Comments

- Comments that are unnecessary
- Comments that are unhelpful
- Comments that are helpful

Unnecessary Comments

Bad: Repeating the code

```
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
}
```

Good: Remove what we don't need

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

Change Code To Avoid Needing Comments

Good: Clarifying Behavior

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

Better: More Expressive Code

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

Good: Break Up Method

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

   // create deposit transaction and add from toAccount
   // ...
}
```

Better: Extract Functionality

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

Now What?

Now What?

- We removed any redundant comments

Now What?

- We removed any redundant comments
- We changed code to avoid comments

Now What?

- We removed any redundant comments
- We changed code to avoid comments
- How do we ensure the comments we do write are helpful?

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

Comments That Tell Us What

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

Comments That Tell Us Why

```
/**
 * 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

Okay: No Examples

```
class Pokedex {
    /**
     * @param[name] The name of the Pokemon.
     */
    fun addPokemon(name: String, number: Int) {

    }
}
```

Better: With Examples

```
class Pokedex {
    /**
     * @param[name] The name of the Pokemon (Bulbasaur, Ivysaur, Venusaur).
     */
    fun addPokemon(name: String, number: Int) {

    }
}
```

Links To Additional Resources

To StackOverflow

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

To Internal Documentation

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

To 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

//TODO: Comments

If you're not going to do it now, create accountability with links to issue trackers.

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

Deprecation Comments

Bad: No Explanation

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

Better: Provide Alternative

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

Other General Suggestions

ASCII Art?[2]

```
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    |    |    |  XX  XX  |    |     |
145  * |     |    |    X      |    |    |  XX   X  X  X  X    |    |    | X      X |    |     |
146  * +-----+----+-----------+----+----+---------------------+----+----+----------+----+-----+
147  *                 ^                          ^                      ^
148  *                 |                          |                      |
149  *                 +                          +                      +
150  *            chipIconSize                 *dynamic*             closeIconSize
151  * </pre>
152  *
```

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

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.

5

REPLY

Reference Definitions

Reference Definitions

- Helps survive refactoring of a field

Reference Definitions

- 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()
```

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()
```

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()
```

Use Consistent Language

Use Consistent Language

- When documenting methods that return booleans, try to always describe the true condition

Use Consistent 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

Recap

- Remove redundant comments

Recap

- Remove redundant comments
- Write expressive code

Recap

- Remove redundant comments
- Write expressive code
- Write helpful comments

Recap

- Remove redundant comments
- Write expressive code
- Write helpful comments
  - Explain **why**

Recap

- Remove redundant comments
- Write expressive code
- Write helpful comments
  - Explain **why**
  - Provide examples

Recap

- Remove redundant comments
- Write expressive code
- Write helpful comments
  - Explain **why**
  - Provide examples
  - Give guidance

Recap

- Remove redundant comments
- Write expressive code
- Write helpful comments
  - Explain **why**
  - Provide examples
  - Give guidance
  - Leverage IDE tools

Recap

- Remove redundant comments
- Write expressive code
- Write helpful comments
  - Explain **why**
  - Provide examples
  - Give guidance
  - Leverage IDE tools
  - Use consistent language

Thank You!

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