Variables of the Veracious Variety:

How to better name your variables

@AdrienneTacke cisco

🖐 Stir Trek

"There are only two hard things in Computer Science: **cache invalidation** and **naming things**."

– Phil Karlton

naming things

One Why is naming important?

One Why is naming important?

Two Why is it difficult?

One Why is naming important?

Two Why is it difficult?

Three The 3 Cs of great variables

One Why is naming important?

Two Why is it difficult?

Three The 3 Cs of great variables

Four Variable variables

Why is naming important?

Why is naming important?

Naming is a way of placing order on our world by helping us differentiate between things.

Why is naming important?

Why is naming important?

Why is naming important?

Oreo

Why is naming important?

Oreo

Domino

Why is naming important?

Oreo

Domino

Tux

Why is naming important?

Oreo

Domino

Tux

Onyx

Why is naming important?

Onyx

Why is naming important?

Adrienne

Adrienne VITTADINI

🌳 Why is naming important?

scientific nomenclature

The way scientists name things

Scientists prevent confusion by being **specific**.

?

🌳 Why is naming important?

Why is naming important?

Why is naming important?

Say what strange **White Oak** is this...

Why is naming important?

Say what strange **White Oak** is this...

It was a **Rounded Oak**, I believe.

Why is naming important?

Say what strange **White Oak** is this...

It was a **Rounded Oak**, I believe.

The **Rough Oak** still stands, day after day!

Why is naming important?

Quercus alba

Say what strange **White Oak** is this...

It was a **Rounded Oak**, I believe.

The **Rough Oak** still stands, day after day!

🌳 Why is naming important?

Quercus alba

AKA "White Oak"

Say what strange **White Oak** is this...

It was a **Rounded Oak**, I believe.

The **Rough Oak** still stands, day after day!

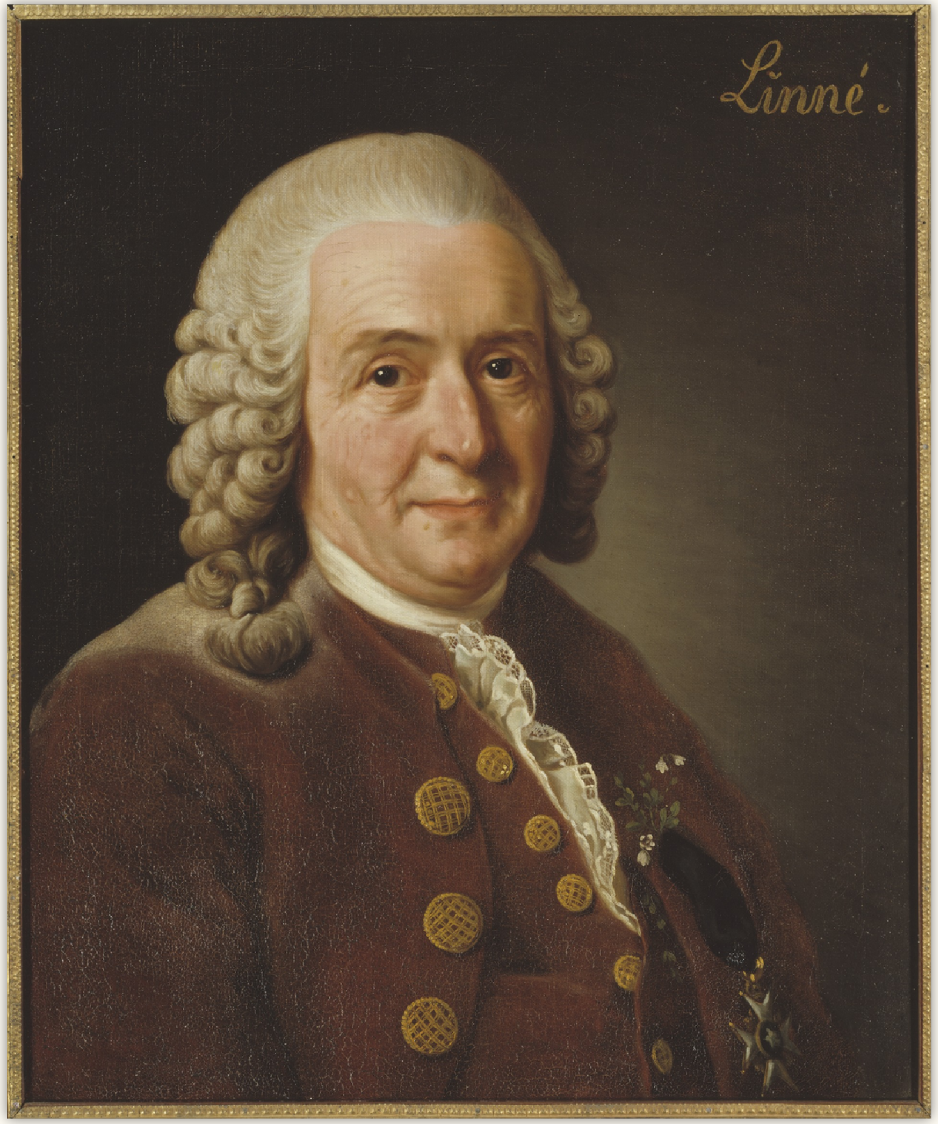
🌳 Why is naming important?

NOT White Oak

Possibly Maple

And there stood before me, a **White Oak**.

🌳 Why is naming important?



Carl Linnaeus

Swedish Naturalist

developed unique naming system

Why is naming important?

Every organism in the world is assigned a unique **binomial name**.

Every organism in the world is assigned a unique **binomial name**.

Why is naming important?

Every organism in the world is assigned a unique **binomial name**.

binomial name

genus

binomial name

Why is naming important?

genus

species modifier

binomial name

Why is naming important?

Homo

genus

species modifier

binomial name

Why is naming important?

Homo *sapiens*

genus species modifier

binomial name

Why is naming important?

Humans

binomial name

Homo *sapiens*

genus species modifier

🌳 Why is naming important?

😑 Why is it difficult?

😑 Why is it difficult?

Guidance on naming is mostly **syntactical**.

😑 Why is it difficult?

syntactical

😑 Why is it difficult?

syntactical

`casing`

😑 Why is it difficult?

syntactical

casing

snake_case

😑 Why is it difficult?

syntactical

casing

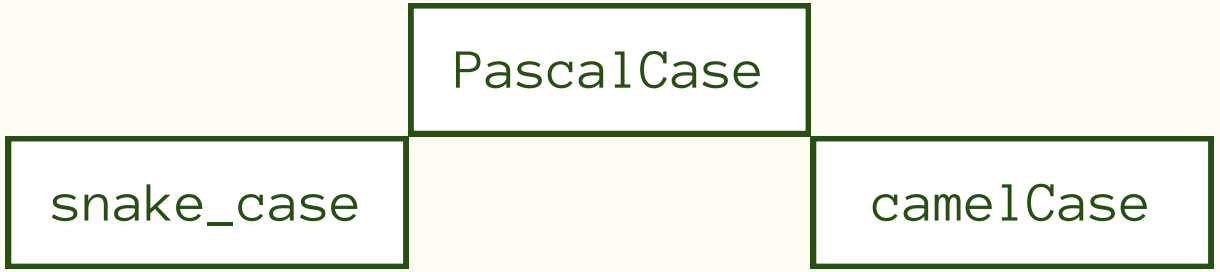
`PascalCase`

`snake_case`

😑 Why is it difficult?

syntactical

casing



😑 Why is it difficult?

syntactical

casing

- `snake_case`
- `PascalCase`
- `camelCase`
- `kebab-case`

😑 Why is it difficult?

syntactical

casing

- `snake_case`
- `PascalCase`
- `camelCase`
- `kebab-case`

length

😑 Why is it difficult?

syntactical

casing

- `snake_case`
- `PascalCase`
- `camelCase`
- `kebab-case`

length

`TotalInventoryCountForEndOfDay`

😑 Why is it difficult?

syntactical

casing

- `snake_case`
- `PascalCase`
- `camelCase`
- `kebab-case`

length

- `TotalInventoryCountForEndOfDay`
- `usr`

😑 Why is it difficult?

syntactical

casing

- `snake_case`
- `PascalCase`
- `camelCase`
- `kebab-case`

length

- `TotalInventoryCountForEndOfDay`
- `usr`
- `auth`

😑 Why is it difficult?

syntactical

casing

PascalCase

kebab-case

snake_case

camelCase

length

TotalInventoryCountForEndOfDay

usr

auth

ht

😑 Why is it difficult?

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PascalCase

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long

😑 Why is it difficult?

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i

😑 Why is it difficult?

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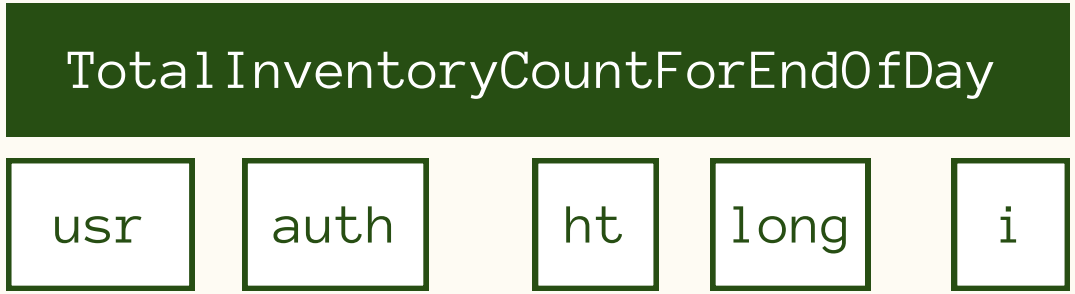
😑 Why is it difficult?

syntactical

casing

"Avoid kebab-case since it clashes with subtraction syntax..."

length



😑 Why is it difficult?

syntactical

casing

"Avoid kebab-case since it clashes with subtraction syntax..."

"Use camelCase for variable names..."

length

`TotalInventoryCountForEndOfDay`

`usr` `auth` `ht` `long` `i`

😑 Why is it difficult?

syntactical

casing

"Avoid kebab-case since it clashes with subtraction syntax..."

"Use camelCase for variable names..."

length

"Use short identifier names for short scopes"

😑 Why is it difficult?

syntactical

casing

"Avoid kebab-case since it clashes with subtraction syntax..."

"Use camelCase for variable names..."

length

"Use short identifier names for short scopes"

"Keep name length to a twenty five character maximum"

😑 Why is it difficult?

semantics

The meaning of names

😑 Why is it difficult?

sen

es

😑 Why is it difficult?

semantics

The meaning of names

😑 Why is it difficult?

semantics

😑 Why is it difficult?

semantics

"Use **meaningful**, **descriptive** names..."

😑 Why is it difficult?

semantics

"Use **meaningful**, **descriptive** names..."

"Try making identifiers **self-documenting**."

😑 Why is it difficult?

semantics

"Use **meaningful**, **descriptive** names..."

"Try making identifiers **self-documenting**."

"Names should be **nonambiguous**."

😑 Why is it difficult?

semantics

meaningful

descriptive

self-documenting

nonambiguous

😑 Why is it difficult?

semantics

"meaningful"

"descriptive"

"self-documenting"

"nonambiguous"

😑 Why is it difficult?

`meaningful` `descriptive` `self-documenting` `nonambiguous`

😑 Why is it difficult?

Names that are

`meaningful` `descriptive` `self-documenting` `nonambiguous`

😑 Why is it difficult?

Names that are

`meaningful` `descriptive` `self-documenting` `nonambiguous`

are not enough...

😑 Why is it difficult?

Names have to be **correct** .

😑 Why is it difficult?

Names have to be "correct".

highly debatable

😑 Why is it difficult?

homonyms

same words, different meaning

😑 Why is it difficult?

homonyms

😑 Why is it difficult?

homonyms

😑 Why is it difficult?

homonyms

homographs

😑 Why is it difficult?

homonyms

homographs

"same writing"

😑 Why is it difficult?

homonyms

homographs

"same writing"

same *spelling*,

different meaning

😑 Why is it difficult?

homonyms

homographs

"same writing"

homophones

same *spelling*,
different meaning

😑 Why is it difficult?

homonyms

homographs

"same writing"

homophones

"same sound"

same *spelling*,
different meaning

😑 Why is it difficult?

homonyms

homographs

"same writing"

same *spelling*, different meaning

homophones

"same sound"

same *pronunciation*, different meaning

😑 Why is it difficult?

homonyms

homographs

homophones

😑 Why is it difficult?

homonyms

homographs

homophones

English

duck

😑 Why is it difficult?

homonyms

homographs

English

"I took my pet **duck** to the Gucci store."

duck

homophones

😑 Why is it difficult?

homonyms

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English

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"I took my pet **duck** to the Gucci store."

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homophones

😑 Why is it difficult?

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rock

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homonyms

homographs

homophones

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rock

"There was a great **rock** band last night."

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homophones

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"I took my pet **duck** to the Gucci store."

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"There was a great **rock** band last night."

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homophones

English

right

write

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homophones

English

right

"Turn **right** at the next intersection."

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😑 Why is it difficult?

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"Turn **right** at the next intersection."

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"**Write** a book, they said."

hour

our

😑 Why is it difficult?

homonyms

homographs

English

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"I took my pet **duck** to the Gucci store."

"**Duck** your head going while down the stairs!"

rock

"There was a great **rock** band last night."

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homophones

English

right

"Turn **right** at the next intersection."

write

"**Write** a book, they said."

hour

"You are with me for the **hour**."

our

😑 Why is it difficult?

homonyms

homographs

English

duck

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our "What do you mean '**our**' cake?"

😑 Why is it difficult?

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😑 Why is it difficult?

homonyms

homographs

same *spelling*,
different meaning

homophones

same *pronunciation*,
different meaning

😑 Why is it difficult?

homonyms

😑 Why is it difficult?

homonyms

Danish	**skål** (bowl)	**skål** (cheers!)	**hjul** (wheel)	**jul** (christmas)

😑 Why is it difficult?

homonyms

Danish

skål (bowl)	**skål** (cheers!)
hjul (wheel)	**jul** (christmas)

Tagalog

tayo (to stand)	**tayo** (we)
basa (wet)	**basa** (to read)

😑 Why is it difficult?

synonyms

different words, same meaning

😑 Why is it difficult?

synonyms

https://www.thesaurus.com/browse/count

😑 Why is it difficult?

synonyms

😑 Why is it difficult?

synonyms

Names

Words chosen as identifiers

😑 Why is it difficult?

synonyms

count

Names

Words chosen as identifiers

😑 Why is it difficult?

synonyms

summation

count

Names

Words chosen as identifiers

Concepts

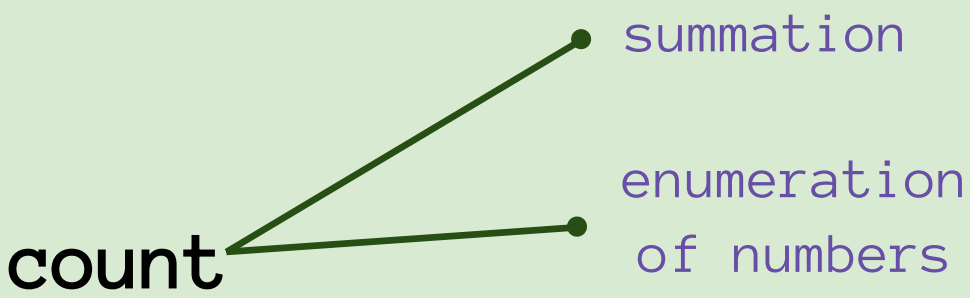
Associated meanings and perceptions tied to a name

😑 Why is it difficult?

synonyms

Names

Words chosen as identifiers



Concepts

Associated meanings and perceptions tied to a name

😑 Why is it difficult?

synonyms

Names

Words chosen as identifiers

count

tally

summation

enumeration of numbers

Concepts

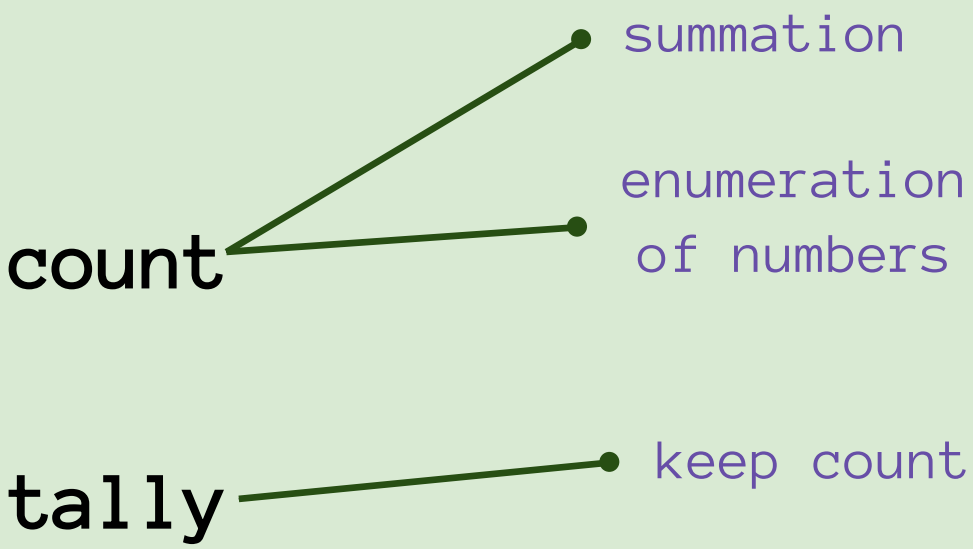
Associated meanings and perceptions tied to a name

😑 Why is it difficult?

synonyms

Names

Words chosen as identifiers



Concepts

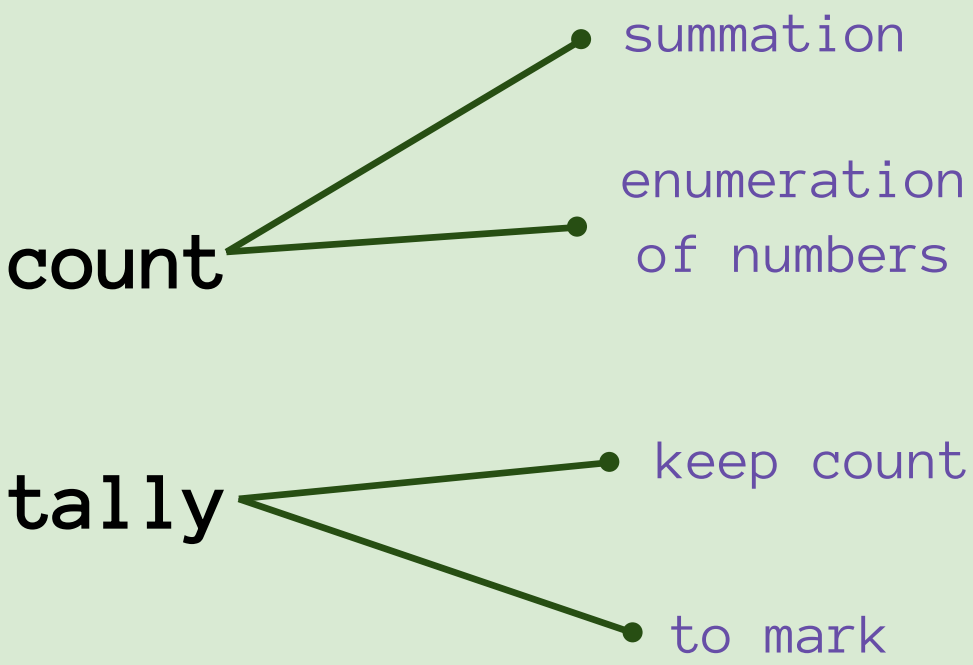
Associated meanings and perceptions tied to a name

😑 Why is it difficult?

synonyms

Names

Words chosen as identifiers



Concepts

Associated meanings and perceptions tied to a name

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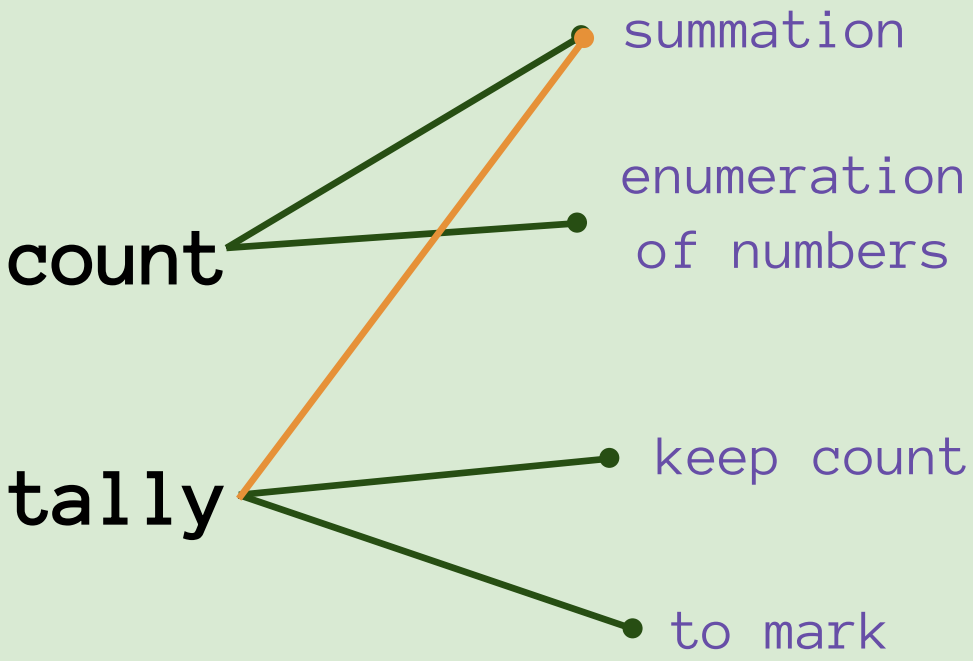


Concepts

Associated meanings and perceptions tied to a name

😑 Why is it difficult?

😑 Why is it difficult?

Concise and consistent naming

Florian Deissenboeck · Markus Pizka

Published in *Software Quality Journal* (2006)

😑 Why

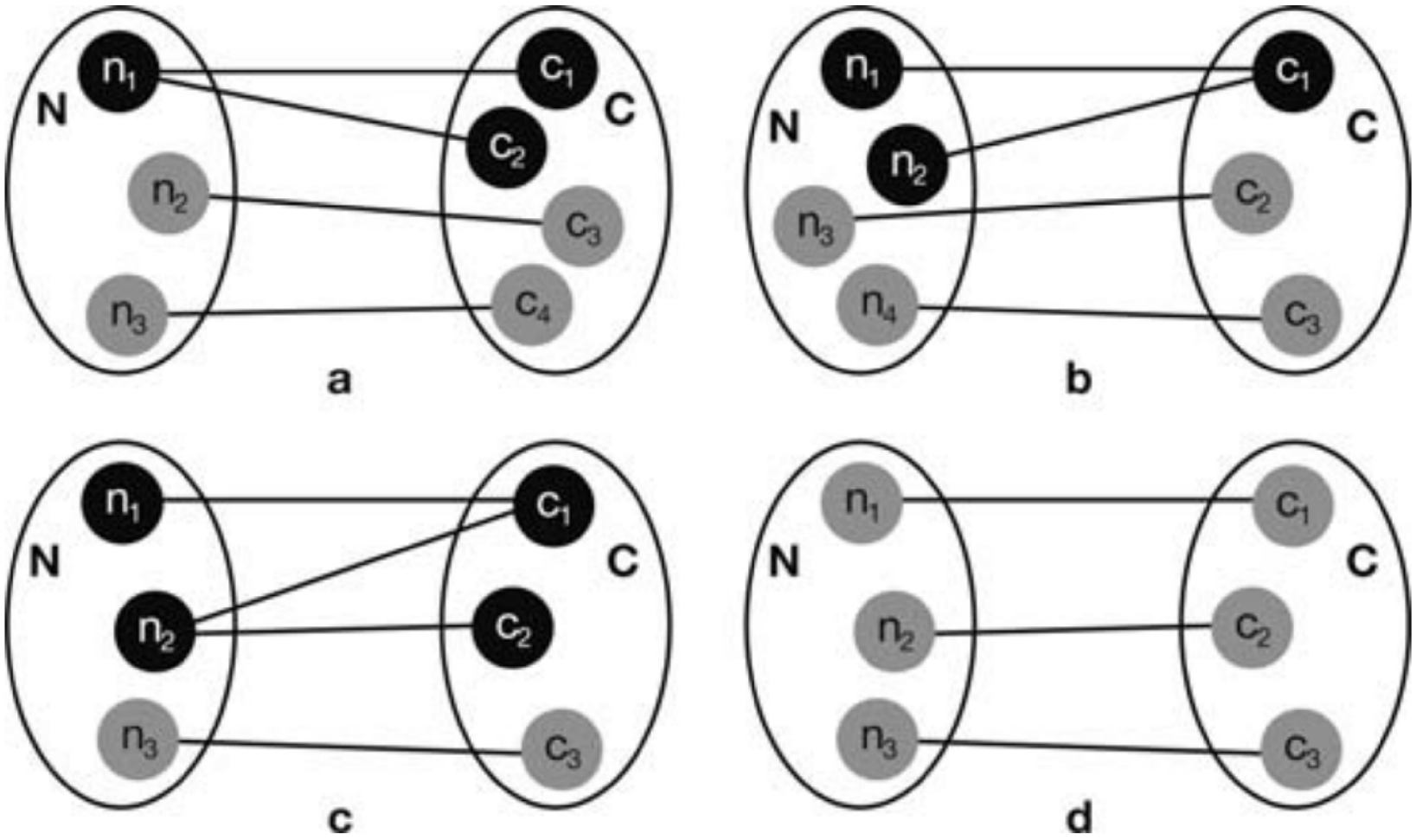
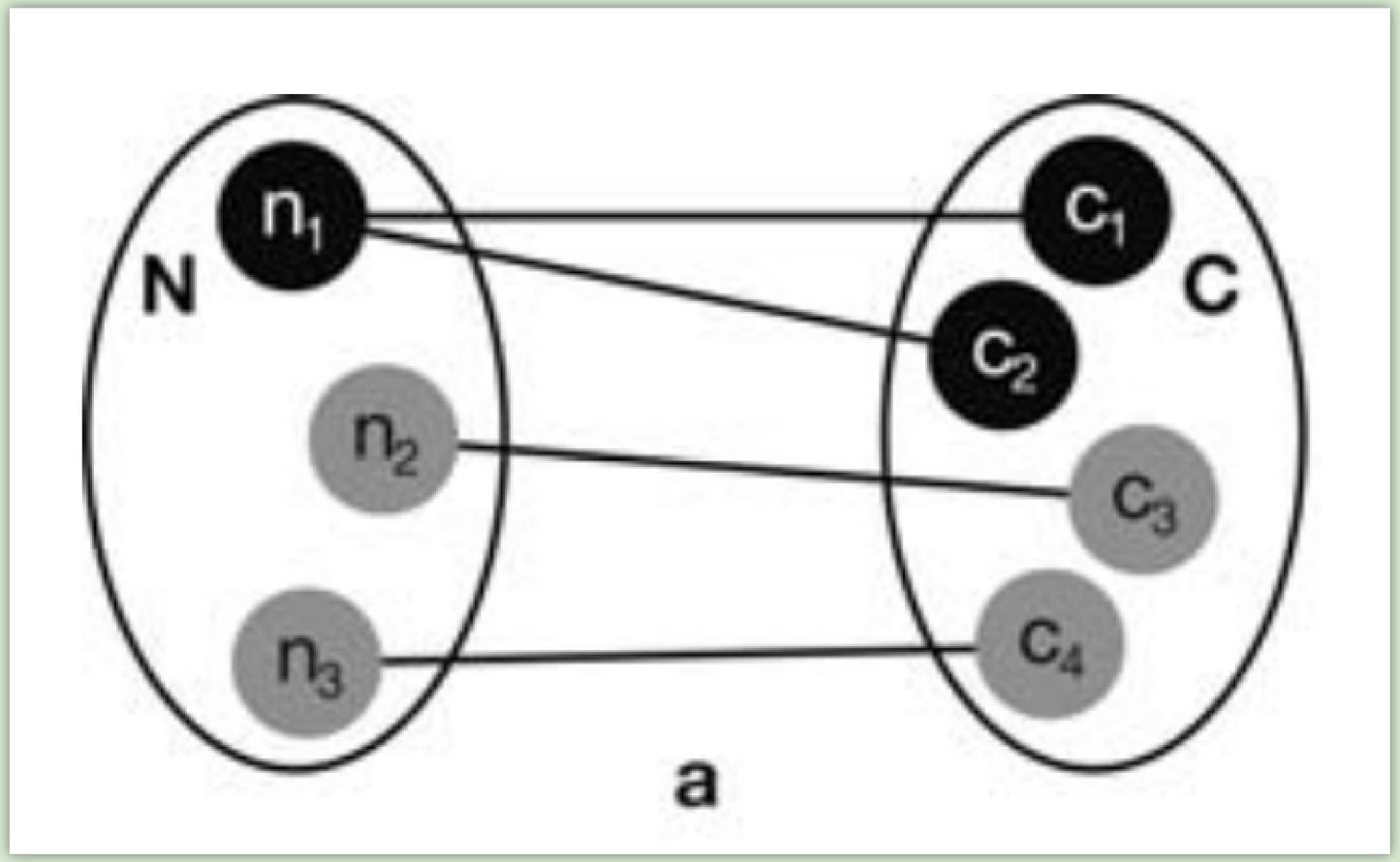


Fig. 3 Synonyms and Homonyms

Source: Deissenboeck, F., & Pizka, M. (2006). Concise and consistent naming. *Software Quality Journal*, *14*, 261–282.

😑 Why is it difficult?

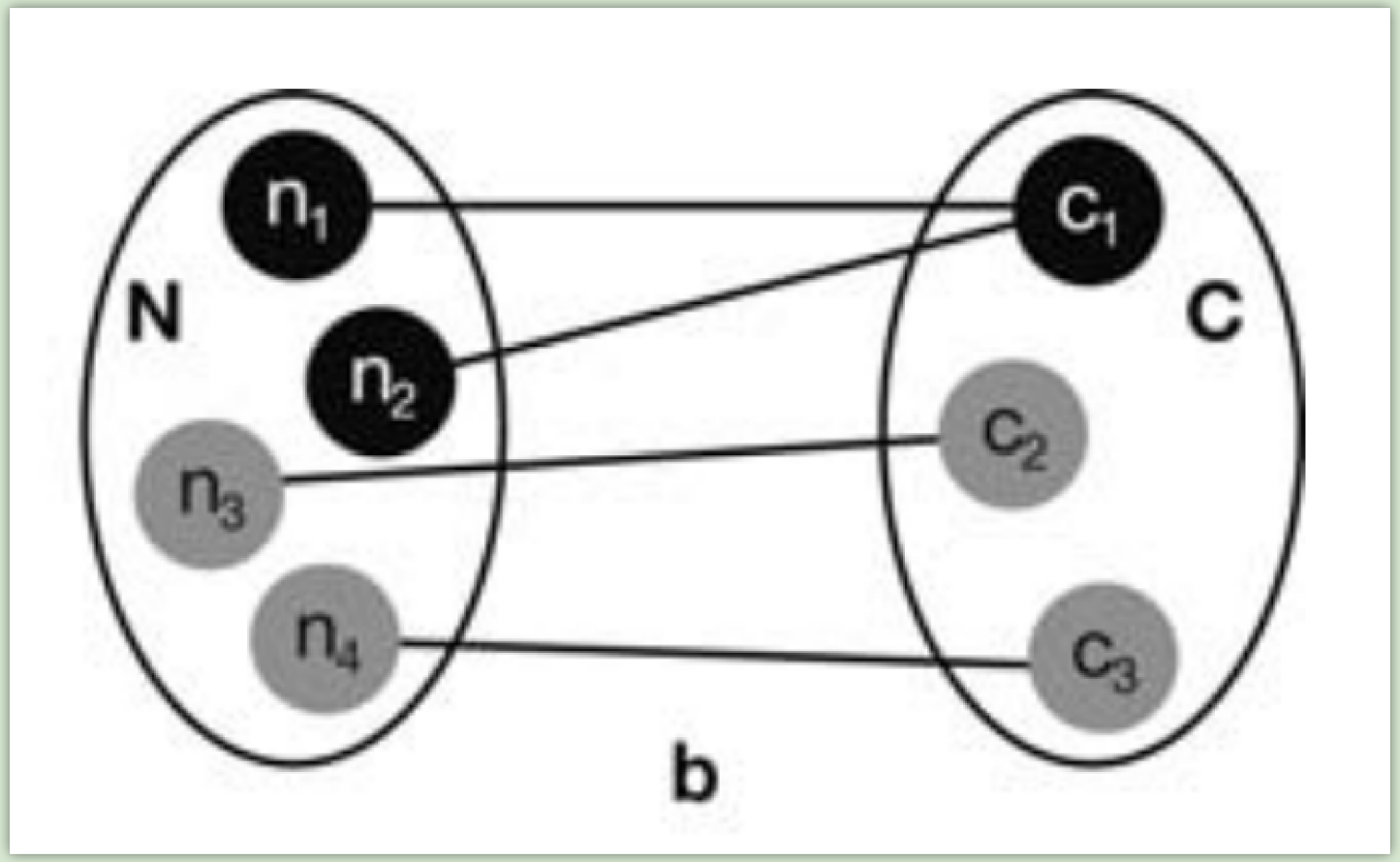


"In computer programs, homonyms pose an obstacle for program comprehension since the developer has to take all elements of the set C_n into account when spotting an identifier named *n*."

Source: Deissenboeck, F., & Pizka, M. (2006). Concise and consistent naming. *Software Quality Journal*, *14*, 261–282.

😑 Why is it difficult?

"Synonyms unnecessarily increase the domain of N and the relation R...raising the learning effort of the language used."



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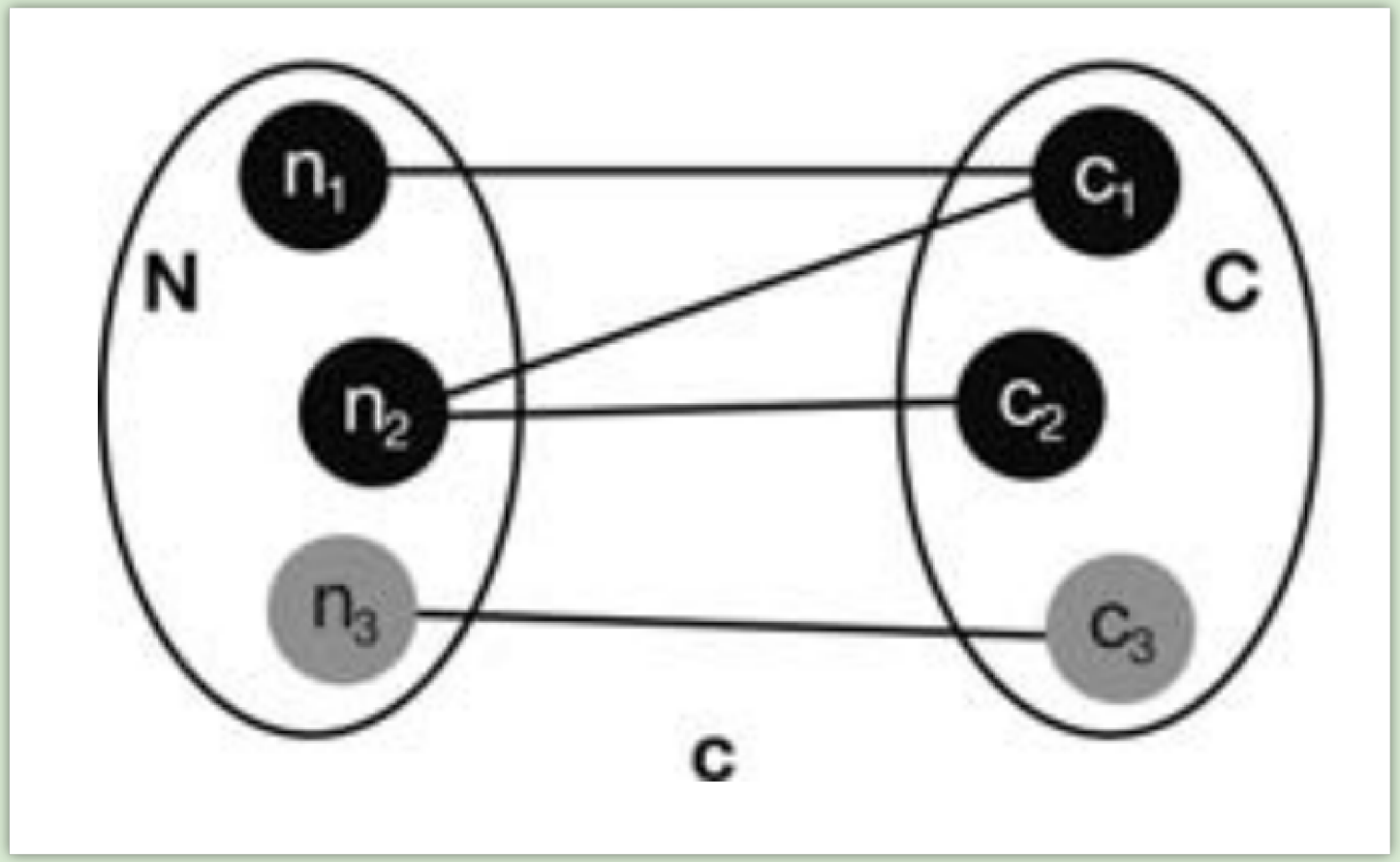
😑 Why is it difficult?

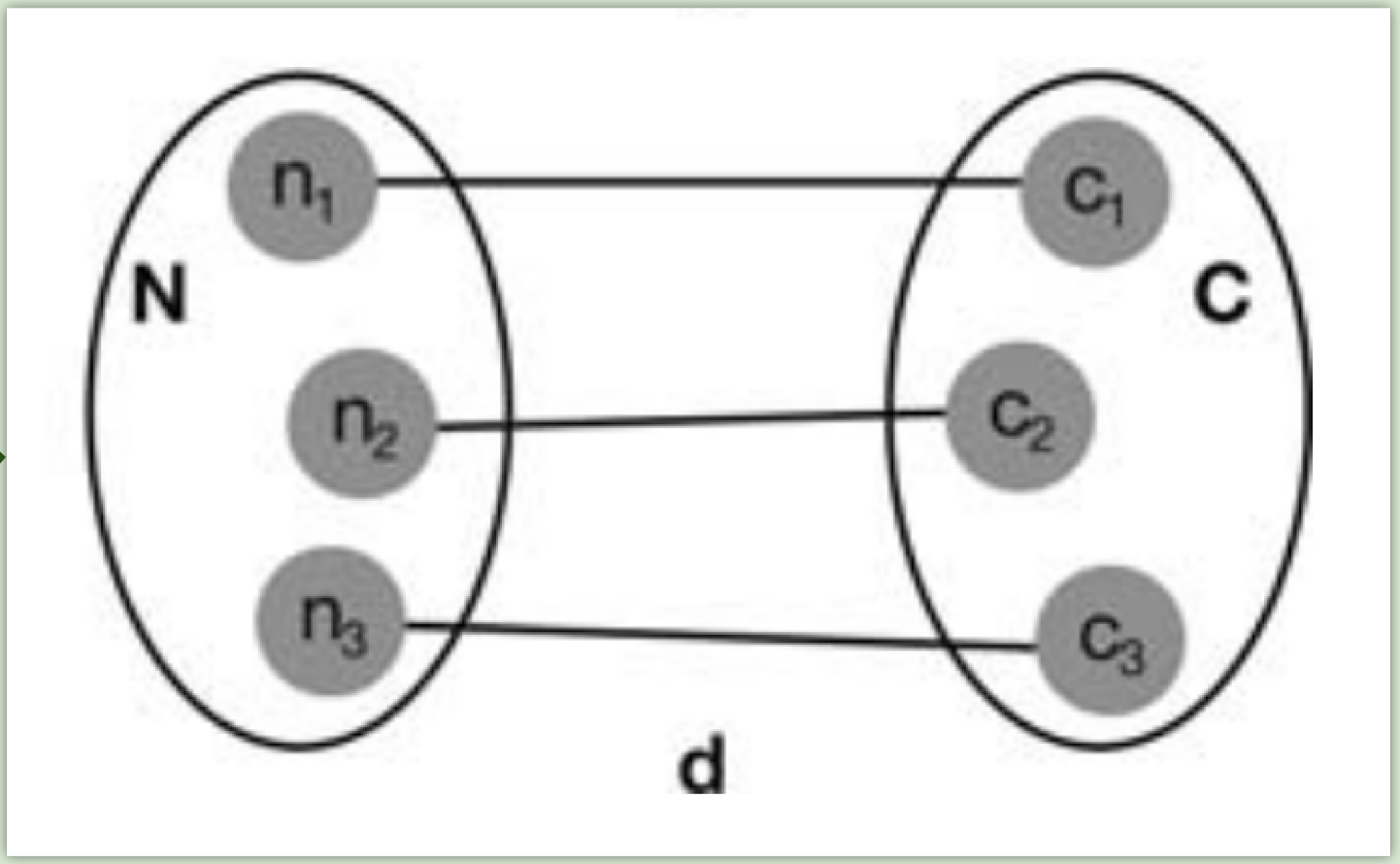


"On encountering name n_1, which is synonym to n_2, the reader must take concepts c_1 and c_2 into account."

Source: Deissenboeck, F., & Pizka, M. (2006). Concise and consistent naming. *Software Quality Journal*, *14*, 261–282.

😑 Why is it difficult?

Ideally, we get to this



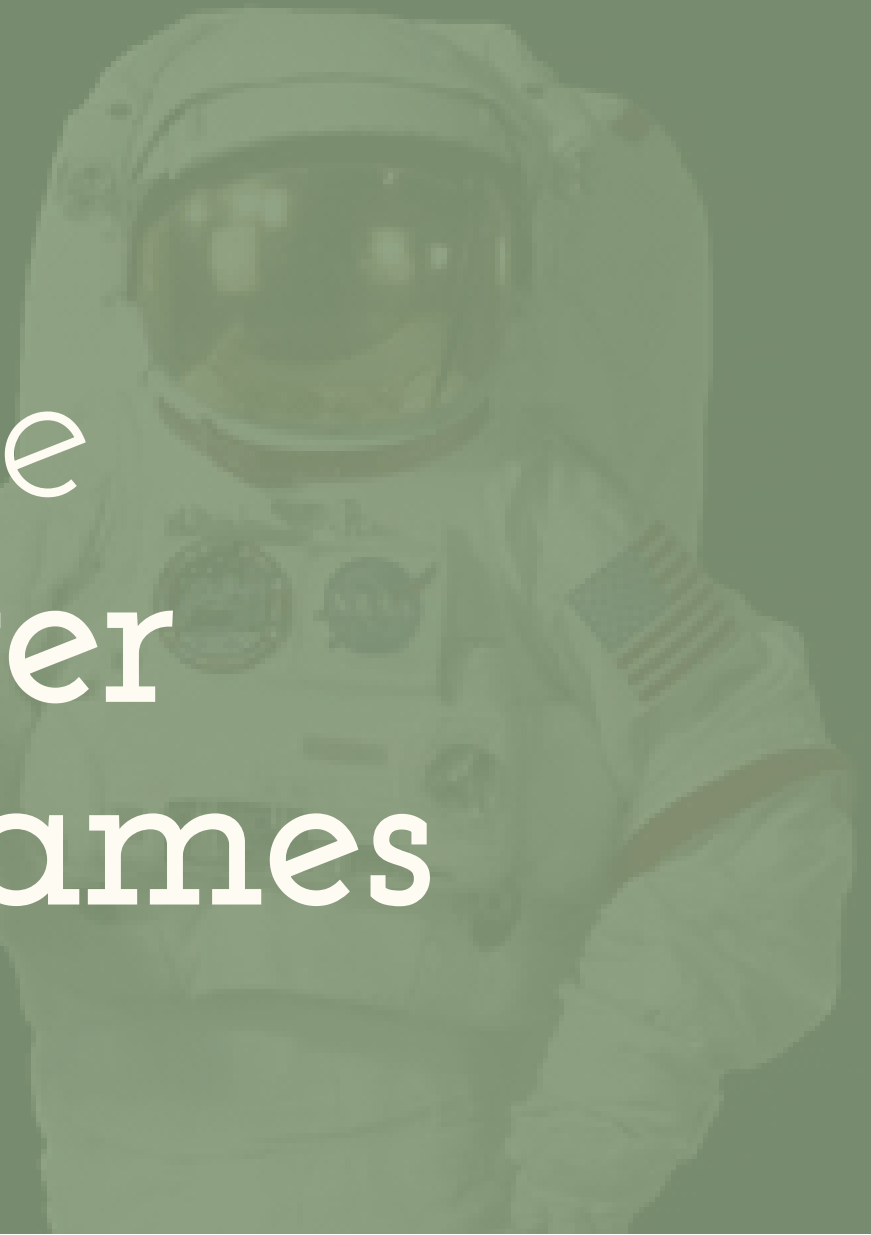
Source: Deissenboeck, F., & Pizka, M. (2006). Concise and consistent naming. *Software Quality Journal*, *14*, 261–282.

😑 Why is it difficult?

"When 334 developers were asked to choose 47 variable names, **the median probability that two would choose the same name was just 6.9%.**"

Source: Feitelson, D. G., Mizrahi, A., Noy, N., Shabat, A. B., Eliyahu, O., & Sheffer, R. (2020). How developers choose names

😑 Why is it difficult?



How do we **choose better variable names** then?

🤩 The 3 Cs of Great Naming

Consistent

Consistent

Concise

Consistent

Concise

Correct

Consistent

Identifier needs to be unique enough to convey the concept.

Concise

Correct

Consistent

Identifier needs to be unique enough to convey the concept.

Concise

Identifier needs to accurately convey the concept and minimize related concept space as much as possible.

Correct

Consistent

Identifier needs to be unique enough to convey the concept.

Concise

Identifier needs to accurately convey the concept and minimize related concept space as much as possible.

Correct

Identifier needs to convey what is actually being assigned.

🤓 Variable Variables

Booleans

Can only be one of two values: true or false

Booleans

Can only be one of two values: true or false

Booleans

Can only be one of two values: true or false

isSomething

Booleans

Can only be one of two values: true or false

isSomething

Examples:

isUpgrade, isApproval, isProMember

Booleans

Can only be one of two values: true or false

isSomething

Examples:

`isUpgrade, isApproval, isProMember`

doesSomething

Booleans

Can only be one of two values: true or false

isSomething

Examples:

`isUpgrade, isApproval, isProMember`

doesSomething

Examples:

`allowsWhitespace, willUpdate, didRestart`

Booleans

Can only be one of two values: true or false

isSomething

Examples:

`isUpgrade, isApproval, isProMember`

doesSomething

Examples:

`allowsWhitespace, willUpdate, didRestart`

hasSomething

Booleans

Can only be one of two values: true or false

isSomething

Examples:

`isUpgrade, isApproval, isProMember`

doesSomething

Examples:

`allowsWhitespace, willUpdate, didRestart`

hasSomething

Examples:

`hasMoreThanOneWarning, hasMultipleDiscounts, hasException`

```
condition: return True if at least one user is active
```

condition: return True if at least one user is active

```
const {something} = users.some(user => user.isActive);
```

condition: return True if at least one user is active

```
const {something} = users.some(user => user.isActive);
```

isUsersActive

condition: return True if at least one user is active

```
const isUsersActive = users.some(user => user.isActive);
```

isUsersActive

condition: return True if at least one user is active

```
const isUsersActive = users.some(user => user.isActive);
```

~~isUsersActive~~

condition: return True if at least one user is active

```
const isAtLeastOneUserActive = users.some(user => user.isActive);
```

isAtLeastOneUserActive

condition: return True if at least one user is active

```
const isAtLeastOneUserActive = users.some(user => user.isActive);
```

~~isAtLeastOneUserActive~~

condition: return True if at least one user is active

```
const isOneUserActive = users.some(user => user.isActive);
```

isOneUserActive

condition: return True if at least one user is active

```
const isOneUserActive = users.some(user => user.isActive);
```

~~isOneUserActive~~

condition: return True if at least one user is active

```
const isSomeUserActive = users.some(user => user.isActive);
```

isSomeUserActive

condition: return True if at least one user is active

```
const isSomeUserActive = users.some(user => user.isActive);
```

~~isSomeUserActive~~

condition: return True if at least one user is active

```
const isAnyUserActive = users.some(user => user.isActive);
```

isAnyUserActive

condition: return True if at least one user is active

```
const isAnyUserActive = users.some(user => user.isActive);
```

isAnyUserActive

Integers

Things understood to be numbers; counts/number of something

Integers

Things understood to be numbers; counts/number of something

Integers

Things understood to be numbers; counts/number of something

{integer itself}

Integers

Things understood to be numbers; counts/number of something

{integer itself}

Examples:

age, year, MAXIMUM_ALLOWED_LOGIN_ATTEMPTS, tooltipDelayInMilliseconds

Integers

Things understood to be numbers; counts/number of something

{integer itself}

Examples:

age, year, MAXIMUM_ALLOWED_LOGIN_ATTEMPTS, tooltipDelayInMilliseconds

numberOfSomething

Integers

Things understood to be numbers; counts/number of something

{integer itself}

Examples:

age, year, MAXIMUM_ALLOWED_LOGIN_ATTEMPTS, tooltipDelayInMilliseconds

numberOfSomething

Examples:

numberOfRetries, numberOfDescendants, numberOfAccounts, numberOfDaysWithoutRain

Integers

Things understood to be numbers; counts/number of something

{integer itself}

Examples:

age, year, MAXIMUM_ALLOWED_LOGIN_ATTEMPTS, tooltipDelayInMilliseconds

numberOfSomething

Examples:

numberOfRetries, numberOfDescendants, numberOfAccounts, numberOfDaysWithoutRain

somethingCount

Integers

Things understood to be numbers; counts/number of something

{integer itself}

Examples:

age, year, MAXIMUM_ALLOWED_LOGIN_ATTEMPTS, tooltipDelayInMilliseconds

numberOfSomething

Examples:

numberOfRetries, numberOfDescendants, numberOfAccounts, numberOfDaysWithoutRain

somethingCount

Examples:

failureCount, retryCount, currentCakeInventoryCount

condition: return number of eligible discount items that are part of a customer's order.

numberOfEligibleItemsWithinTransaction

condition: return number of eligible discount items that are part of a customer's order.

numberOfEligibleItemsWithinTransaction

numberOfEligibleItemsInTransaction

condition: return number of eligible discount items that are part of a customer's order.

numberOfEligibleItemsWithinTransaction
numberOfEligibleItemsInTransaction

numberOfEligibleItems

condition: return number of eligible discount items that are part of a customer's order.

numberOfEligibleItemsWithinTransaction
numberOfEligibleItemsInTransaction
numberOfEligibleItems

numberOfEligibleDiscountItems

condition: return number of eligible discount items that are part of a customer's order.

numberOfEligibleItemsWithinTransaction
numberOfEligibleItemsInTransaction
numberOfEligibleItems

numberOfEligibleDiscountItems

Floating-Point Numbers

Unrounded measures;
numbers that are not integers

Floating-Point Numbers

Unrounded measures; numbers that are not integers

Floating-Point Numbers

Unrounded measures; numbers that are not integers

{floating-point itself}

Floating-Point Numbers

Unrounded measures; numbers that are not integers

{floating-point itself}

Examples:

height, weight, priceInDanishKrone, angleInDegrees, highTemperatureInFahrenheit

Floating-Point Numbers

Unrounded measures; numbers that are not integers

{floating-point itself}

Examples:

height, weight, priceInDanishKrone, angleInDegrees, highTemperatureInFahrenheit

somethingAmount

Floating-Point Numbers

Unrounded measures; numbers that are not integers

{floating-point itself}

Examples:

height, weight, priceInDanishKrone, angleInDegrees, highTemperatureInFahrenheit

somethingAmount

Examples:

discountAmount, transferAmount, refundAmount

Strings

Labels; typically a sequence of characters

Strings

Labels; typically a sequence of characters

Strings

Labels; typically a sequence of characters

{entity itself}

Strings

Labels; typically a sequence of characters

{entity itself}

Examples:

`fullGivenName, city, shortSpeakerBiography, playerSelectedClass, definition`

Strings

Labels; typically a sequence of characters

{entity itself}

Examples:

`fullGivenName, city, shortSpeakerBiography, playerSelectedClass, definition`

somethingAsString

Strings

Labels; typically a sequence of characters

{entity itself}

Examples:

fullGivenName, city, shortSpeakerBiography, playerSelectedClass, definition

somethingAsString

Examples:

monthAsString, timeZoneAsString

Collections

Arrays, lists, or sets; groups of things

Collections

Arrays, lists, or sets; groups of things

Collections

Arrays, lists, or sets; groups of things

{plural form of thing}

Collections

Arrays, lists, or sets; groups of things

{plural form of thing}

Examples:

robots, sentientRobots, discountedProducts, customers, newlyReleasedBooks

Collections

Arrays, lists, or sets; groups of things

{plural form of thing}

Examples:

`robots, sentientRobots, discountedProducts, customers, newlyReleasedBooks`

implementationOfThings

Collections

Arrays, lists, or sets; groups of things

{plural form of thing}

Examples:

robots, sentientRobots, discountedProducts, customers, newlyReleasedBooks

implementationOfThings

Examples:

unorderedListOfCustomers, queueOfFirstPriorityTasks, orderedSetOfTimeStamps

Maps

Accessing values by keys

Maps

Accessing values by keys

Maps

Accessing values by keys

keyToValueMap

Maps

Accessing values by keys

keyToValueMap

Examples:

`bookIdToAuthorMap, customerToOrderTotalMap, productIdToSuppliersMap`

Pairs & Tuples

Typically stored together; items of the same type

Pairs & Tuples

Typically stored together and items of the same type

Pairs & Tuples

Typically stored together and items of the same type

firstPairAndSecondPair

Pairs & Tuples

Typically stored together and items of the same type

firstPairAndSecondPair

Examples:

lengthAndWidth, setsAndRepitions, currentAndLifetimeXP, genusAndSpecies

Pairs & Tuples

Typically stored together and items of the same type

firstPairAndSecondPair

Examples:

lengthAndWidth, setsAndRepitions, currentAndLifetimeXP, genusAndSpecies

firstSecondAndThirdThing

Pairs & Tuples

Typically stored together and items of the same type

firstPairAndSecondPair

Examples:

lengthAndWidth, setsAndRepitions, currentAndLifetimeXP, genusAndSpecies

firstSecondAndThirdThing

Examples:

heightWidthAndDepthInCentimeters, saturatedTransAndTotalFatInGrams

"Great code is **understood**; rarely is it **interpreted**."

– Adrienne Braganza Tacke

Salamat/Thanks **Stir Trek**!

Salamat/Thanks **Stir Trek**!

@AdrienneTacke

Salamat/Thanks **Stir Trek**!

@AdrienneTacke

Have a question? Ask in the discord!

#variables-veracious-variety

Roger, Roger.