

Qwalkeko user study - part 1/2

What is your anonymous name? *

Please enter the animal name that's mentioned on the piece of paper you received. It will be used to match your responses in part 1 with those in part 2.

Anonymous Maarten

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

Yes

No

Do you have experience in the area of Mining Software Repositories? *

None 1 2 3 4 5 Expert

How much experience do you have using the Ekeko metaprogramming library? *

None 1 2 3 4 5 Expert

How much experience do you have using the Ekeko metaprogramming library? *

- None, I do not know what a meta-programming library is.
 - None, I have used other meta-programming libraries.
 - Introductory, I have used it at least once.
 - Intermediate, I have used it in a few occasions.
 - Expert, I have used it on several occasions.
-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Query looks for methods in interfaces that have at least one parameter and where all existing parameters were either removed or renamed by the change. Looks for all interfaces that have at least one method, where all existing (i.e., before) parameters of that method were either removed or renamed by the change. If the method didn't have any parameters in the first place, the query also fails. C and D do *not* match, because C is not an interface, and the parse-method of D does not have any parameters, while the setup-method has a parameter 'options' that is not renamed or removed.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Exercise 1.2

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Looks for changes to methods, containing a binary expression that compares ('!=') with a null on the right-hand side, such that the change replaced/removed all 'null's from the right-hand side of binary expressions in that method.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Looks for methods where a literal value that was used in the method is replaced by a newly introduced field. A does *not* match: even though method now uses new field, the value of the field is different from the literal that was replaced, B does not match: does not directly use new field name, D does not match because of the same reason as A

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

For those not experienced with the logic programming paradigm, it is difficult to wrap one's head around all the (corner)cases where a query might fail.

Understanding the outcome of a 'fail'-construct is especially tricky.

Loading a medium-large source file causes Eclipse to freeze for a fairly significant amount of time. It would be helpful if we could at least open other Eclipse windows in the meantime.

Is there anything that you like so far? If so, what and why.

The meanings of the 'primitives' of the query language that enable you to access and reason over the AST (e.g., has, child+, field-introduced etc.) are all fairly straightforward.

I think the language itself is very well designed. The main problem in understanding queries is mostly due to my lack of experience with logic programming languages.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Excellent

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Anonymous alpaca

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 - Master degree
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Does your thesis/research topic fit in the area of software engineering? *

- Yes
 - No
-
-

Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | Expert |
-
-

How much experience do you have using the Ekeko metaprogramming library? *

- | | | | | | | |
|------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

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-
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Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Function: Before is interface, has a method declaration. The method declaration has a single var declaration, whose name is fparam-name-str. Find corresponding method in after. Fails checks for a single var declaration with that same name. In other words, if there is at least one other single var declaration with a different name, then fails is true.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Exercise 1.2

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Function: Before has method, method has a `==` or `!=` comparison with right hand side `null`. Find corresponding method after and corresponding left hand side of the comparison. Fails has "right hand is still null", so succeeds if the null is no longer there. I would say the result depends a bit on how deep-equals matches things, which is not clear.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Exercise 1.3

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Function: Find a literal and its enclosing method in before. See if a field was introduced from before to after. See if field's :fragments's :initializer has same literal as before. See if the name for this field is immediately used somewhere. Note: this did not become "clear" to me until after looking at the matching options...

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

Hard to understand all the details without intimate knowledge of how Eclipse ASTs are formed (what names are used). `Fails` can easily confuse you. Not necessarily clear what constitutes a match in terms of AST matching or literal matching.

Is there anything that you like so far? If so, what and why.

It looks pretty and short.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Excellent

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anteater

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Does your thesis/research topic fit in the area of software engineering? *

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Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
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- | | | | | | | |
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-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Finds method decls in interface which has parameters whose name is different.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Finds `before`'s AST nodes that do a == or != comparison to `null` (RHS) where in after, in the same method, either a) the LHS is involved in a binary operator whose RHS is not the null literal or b) the LHS node is used in a parent AST node that is not a binary operator expression (in which case `(ast:rightOperand ...) ` would fail)

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Find refactorings of magic constants to fields.

Please rate the difficulty of this exercise *

Easy 1 2 3 4 5 Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

1 2 3 4 5

Easy Hard

Is there anything specific that you dislike so far? If so, what and why.

The `fails` construct is tricky and can possibly lead to many unwanted matches, but that's the case in all of logic programming too.

Is there anything that you like so far? If so, what and why.

The extra constructs (ast-deep-equals, corresponding-method, ...) are a nice abstraction over plain Ekeko.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

1 2 3 4 5

Bad Excellent

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moose

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

Yes

No

Do you have experience in the area of Mining Software Repositories? *

None 1 2 3 4 5 Expert

How much experience do you have using the Ekeko metaprogramming library? *

None 1 2 3 4 5 Expert

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-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query searches for all the changes in the parameter declaration of the methods declared in an interface. It searches for parameter names that are removed in the new version of the code. It also matches renamed variables.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query searches in the "before" version of the code for all occurrences of an equality where the right-hand side is equal to 'null'. It then searches, in the new version of the code, for occurrences of the same left-hand side expression (that needs to exist), and checks whether it is still part of an infix expression (implicit, as we don't check for this, but still read the parent's rightOperand) where the right-hand side is still equal to null. It matches only if it can't match the updated version anymore.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query searches for all literal values that occur in a method. It then searches in the updated code for fields that were introduced in the class that, as the default value, has the same literal value as a literal value found in the before code. It then checks whether the field is accessed in the same method.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

It has the same issues that Ekeko has: naming conventions of Java/Eclipse AST is something built-in into the language. For the first exercise, it took me some time to find out that :SingleVariableDeclaration refers to parameter declarations. However, the qwalkeko specific stuff (matching something before, and after, and then "compare" both) is okay. However, the pattern is almost always the same, maybe this can be made more explicit (instead of a just a blank line).

Also, if similarities are required between the two versions, it might be favorable to have syntax to match a relation in both versions of the code...

Is there anything that you like so far? If so, what and why.

Rules that immediately compare/find differences in the before and after code (field-introduced, corresponding-method...) are useful to avoid navigating the same code twice.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Excellent

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Qwalkeko user study - part 1/2

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Anonymous tyrannosaurus

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

- Yes
 - No
-
-

Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |
-
-

How much experience do you have using the Ekeko metaprogramming library? *

- | | | | | | | |
|------|-----------------------|-----------------------|-----------------------|----------------------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
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How much experience do you have using the Ekeko metaprogramming library? *

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-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

A parameter (name) of a method (of an interface) has been removed

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

An expression that was compared (using == or !=) with null in [before] has at least one occurrence in [after] where it is not the left operator of an infix-expression with rhs null

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Acces to a literal value in a method in [before], whereas in [after] a reference is used to a new field which is initialized with that constant literal value. Could be used to detect replacements of 'magic constants' in the code with variable references.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

Sometimes tricky to reason about negation, but this is more of an issue with logic programming in general.

Is there anything that you like so far? If so, what and why.

Provided built-in relations are mostly clear

Given your current experience, what is your overall rating for the Qwalkeko query language? *

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1 2 3 4 5

Bad Excellent

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platypus

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Does your thesis/research topic fit in the area of software engineering? *

Yes

No

Do you have experience in the area of Mining Software Repositories? *

None 1 2 3 4 5 Expert

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-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query looks up methods of an interface whose parameter names have changed. e.g. `public foo(int a) -> public foo(int b)` should produce a match.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query looks up all comparisons (`==`/`!=`) to null, of the form ``expression == null`` (null has to be on the RHS). Afterwards, it tries to look for expressions with the same sub-expression (the LHS of the before comparison) where the ``== null`` is no longer present.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query looks up places where a literal in the code was replaced by a field access. This field should be declared as a fragment (i.e. `int foo = 5`) which should be initialized with a literal.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

- Very often, one needs to write 2 rules to find a certain node. One to find all child nodes, and one to filter out the correct one. Some syntactic sugar to combine this into a single rule would be nice.
 - The names `has`, `child+`, `ast` and the like are not very clear at first, some more verbose names might be useful here
 - Declaring all variables with the `fresh` keyword seems strange/annoying
 - `fresh`, `conde` seem like strange names, `match-all`, and `match-one` or `and` and `or` would seem more clear
-

Is there anything that you like so far? If so, what and why.

- Focussing on the AST instead of on the syntax seems like a good choice so far
 - Finding correct nodes feels more natural than one would initially think
-

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Excellent

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spinosaurus

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- | | | | | | | |
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- | | | | | | | |
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-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Removal of a specific parameter name (by removing or renaming params) of a particular method.
.....

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

LHS of infix `null` check in particular method must still appear but no longer (directly) as LHS.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Removal of magic values in a particular method (assign literal value to fields that are then accessed by that method).

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

The naming of 'before' and 'after' is ambiguous, as it can also refer to positions within an AST.

Is there anything that you like so far? If so, what and why.

It works :)

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Excellent

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Qwalkeko user study - part 1/2

What is your anonymous name? *

Please enter the animal name that's mentioned on the piece of paper you received. It will be used to match your responses in part 1 with those in part 2.

stegosaurus

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

- Yes
- No

Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- None, I do not know what a meta-programming library is.
 - None, I have used other meta-programming libraries.
 - Introductory, I have used it at least once.
 - Intermediate, I have used it in a few occasions.
 - Expert, I have used it on several occasions.
-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query looks for method argument refactorings.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Exercise 1.2

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query looks for method body refactorings.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query looks for literal values refactored with field names.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

1 2 3 4 5

Easy Hard

Is there anything specific that you dislike so far? If so, what and why.

I have to learn the language in a short time duration and use it to answer questions.

Is there anything that you like so far? If so, what and why.

Prior time should be dedicated for learning the language e.g., before the user study.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Excellent

This content is neither created nor endorsed by Google.

Google Forms

Qwalkeko user study - part 1/2

What is your anonymous name? *

Please enter the animal name that's mentioned on the piece of paper you received. It will be used to match your responses in part 1 with those in part 2.

Anonymous walrus

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

- Yes
- No

Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- None, I do not know what a meta-programming library is.
 - None, I have used other meta-programming libraries.
 - Introductory, I have used it at least once.
 - Intermediate, I have used it in a few occasions.
 - Expert, I have used it on several occasions.
-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query searches for interfaces in which a parameter of a method has been renamed (or removed)

.....

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query searches for expressions that compare something (with == or !=) to null, and matches those that have been replaced where null has been replaced. (I thought nothing matches but the form doesn't accept this answer.)

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query searches for literal values that moved to a member field.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

1 2 3 4 5

Easy Hard

Is there anything specific that you dislike so far? If so, what and why.

It is difficult to understand what the "fails" will do. For example, in the first exercise I think the fails also succeeds if the parameter has been removed, not only renamed, but I'm not sure about this.

The jumping up and down the AST with parent+ and child+ is also difficult to reason about.

Is there anything that you like so far? If so, what and why.

The AST view in Eclipse makes things easier to understand.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

1 2 3 4 5

Bad Excellent

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Google Forms

Qwalkeko user study - part 1/2

What is your anonymous name? *

Please enter the animal name that's mentioned on the piece of paper you received. It will be used to match your responses in part 1 with those in part 2.

Anonymous allosaurus

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

- Yes
- No

Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- None, I do not know what a meta-programming library is.
 - None, I have used other meta-programming libraries.
 - Introductory, I have used it at least once.
 - Intermediate, I have used it in a few occasions.
 - Expert, I have used it on several occasions.
-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Query checks that the after does not have instances of renaming a parameter of a method with a name

.....

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Query retrieves the infix expressions with the right hand side having a null literal, and checks if that expression was removed in the after.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Query checks if the method has an added field where the name is same as its
access

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

It can be nice to see what matches there are so far at some specific line. It was hard do this, especially when multiple matches (in different branches of the AST) occur

Is there anything that you like so far? If so, what and why.

The integrated tooling. makes it easier to understand the queries by quickly looking at the before and after code.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Excellent

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Qwalkeko user study - part 1/2

What is your anonymous name? *

Please enter the animal name that's mentioned on the piece of paper you received. It will be used to match your responses in part 1 with those in part 2.

Anonymous antilope

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

- Yes
 - No
-
-

Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |
-
-

How much experience do you have using the Ekeko metaprogramming library? *

- | | | | | | | |
|------|-----------------------|-----------------------|----------------------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input type="radio"/> | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- None, I do not know what a meta-programming library is.
 - None, I have used other meta-programming libraries.
 - Introductory, I have used it at least once.
 - Intermediate, I have used it in a few occasions.
 - Expert, I have used it on several occasions.
-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query finds all methods define in interfaces where a parameter name of a method changed (i.e. are not the same between before and after)

.....

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

(No matches!) This query finds all methods with expressions (== or !=) that have null as the right operand and checks whether this is no longer the case.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query finds all replacements of magic constants by a field access in every method.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

.....

Is there anything that you like so far? If so, what and why.

Declarative language because this allows you to define problems in an easier way.

.....

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

1 2 3 4 5

Bad Excellent

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Qwalkeko user study - part 1/2

What is your anonymous name? *

Please enter the animal name that's mentioned on the piece of paper you received. It will be used to match your responses in part 1 with those in part 2.

Anaconda

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

- Yes
- No

Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- None, I do not know what a meta-programming library is.
 - None, I have used other meta-programming libraries.
 - Introductory, I have used it at least once.
 - Intermediate, I have used it in a few occasions.
 - Expert, I have used it on several occasions.
-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query looks for parameter name refactorings

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Exercise 1.2

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query looks for refactorings in the right hands side of infix expressions

Please rate the difficulty of this exercise *

Easy 1 2 3 4 5 Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query looks for field introductions and method refactorings

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

1 2 3 4 5

Easy Hard

Is there anything specific that you dislike so far? If so, what and why.

Is there anything that you like so far? If so, what and why.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Excellent

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Google Forms

Qwalkeko user study - part 1/2

What is your anonymous name? *

Please enter the animal name that's mentioned on the piece of paper you received. It will be used to match your responses in part 1 with those in part 2.

Anonymous hippopotamus

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

Yes

No

Do you have experience in the area of Mining Software Repositories? *

None 1 2 3 4 5 Expert

How much experience do you have using the Ekeko metaprogramming library? *

None 1 2 3 4 5 Expert

How much experience do you have using the Ekeko metaprogramming library? *

- None, I do not know what a meta-programming library is.
 - None, I have used other meta-programming libraries.
 - Introductory, I have used it at least once.
 - Intermediate, I have used it in a few occasions.
 - Expert, I have used it on several occasions.
-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query matches interface methods where a parameter was renamed or removed after the commit.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.2

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query matches left-operands of a "==" null" or "!= null" condition that is used in the same method but not in a null-comparison after the commit.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

The query searches for literals in methods that were added as an initialising value for a field which was used in the same method after the commit.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

1 2 3 4 5

Easy Hard

Is there anything specific that you dislike so far? If so, what and why.

The 'fails' relation can become very confusing to understand.

Is there anything that you like so far? If so, what and why.

It is relatively simple to understand it: given the limited time we have spent with it, I already start to feel familiar with it.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

1 2 3 4 5

Bad Excellent

This content is neither created nor endorsed by Google.



Qwalkeko user study - part 1/2

What is your anonymous name? *

Please enter the animal name that's mentioned on the piece of paper you received. It will be used to match your responses in part 1 with those in part 2.

Anonymous alligator

What is your level of education? *

- Undergraduate
 - Bachelor degree
 - Master degree
 - Phd degree
-
-

Does your thesis/research topic fit in the area of software engineering? *

- Yes
- No

Do you have experience in the area of Mining Software Repositories? *

- | | | | | | | |
|------|-----------------------|----------------------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- | | | | | | | |
|------|----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------|
| | 1 | 2 | 3 | 4 | 5 | |
| None | <input checked="" type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | Expert |

How much experience do you have using the Ekeko metaprogramming library? *

- None, I do not know what a meta-programming library is.
 - None, I have used other meta-programming libraries.
 - Introductory, I have used it at least once.
 - Intermediate, I have used it in a few occasions.
 - Expert, I have used it on several occasions.
-
-

Exercise 1.1

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Searches for all the methods that have at least one parameter in the old version, and then finds the corresponding method in the new version, where all its parameters have different names.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Exercise 1.2

Which of the options are valid matches? *

- A
- B
- C
- D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

This query searches for all expressions that appear as left operands in (in)equality expressions where they are compared to the null-value (in the old version). In the new version, it searches for those same expressions and sees whether their parent node does not have a right operand, or they are not compared to the null-value any longer.

Please rate the difficulty of this exercise *

1 2 3 4 5

Easy Hard

Exercise 1.3

Which of the options are valid matches? *

A

B

C

D

Can you briefly describe what this query does? *

(An example answer: "This query looks for method rename refactorings.")

Searches for all methods that use literal values inside of them. It then searches for newly introduced (initialized) fields in the new version. It then sees whether the method uses that newly introduced field.

Please rate the difficulty of this exercise *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hard

Overall, how easy/hard is it to understand the Qwalkeko queries you were given? *

	1	2	3	4	5	
Easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Hard

Is there anything specific that you dislike so far? If so, what and why.

The semantics of the different constructs (especially the 'fail' construct) is not always clear.

Is there anything that you like so far? If so, what and why.

The tracing support of the tool, it is relatively easy to see the relation between code, AST, and query.

Given your current experience, what is your overall rating for the Qwalkeko query language? *

Note that we will ask this again in the second part of the questionnaire, so please write down your current answer somewhere so you can compare.

	1	2	3	4	5	
Bad	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	Excellent

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