

Syntax overview TutorialQL

<https://github.com/cwi-swat/rascal-ql-tutorial-prototype>

<http://www.rascal-mpl.org>

<http://tutor.rascal-mpl.org>

Context-free syntax

```
start syntax Form = form: "form" Id name "{" Question* questions "}";
```

```
syntax Question
```

```
= question: Label label Id name ":" QType tipe
| computed: Label label Id name ":" QType tipe "=" Expr expr
| ifThen: "if" "(" Expr cond ")" Question body () !>> "else"
| ifThenElse: "if" "(" Expr cond ")" Question body "else" Question elseBody
| @Foldable group: "{" Question* questions "}";
```

```
syntax Expr
```

```
= var: Id name
| integer: Integer
| string: String
| money: Money
| \true: "true"
| \false: "false"
| bracket "(" Expr ")"
> not: "!" Expr
> left (
    mul: Expr "*" Expr
    | div: Expr "/" Expr
)
> left (
    add: Expr "+" Expr
    | sub: Expr "-" Expr
)
> non-assoc (
    lt: Expr "<" Expr
    | leq: Expr "<=" Expr
    | gt: Expr ">" Expr
    | geq: Expr ">=" Expr
    | eq: Expr "==" Expr
    | neq: Expr "!=" Expr
)
> left and: Expr "&&" Expr
> left or: Expr "||" Expr;
```

```
lexical Label = @category="Constant" label: String;
```

```
syntax QType
```

```
= boolean: "boolean"
| string: "string"
| integer: "integer"
| money: "money";
```

Lexical syntax

```
lexical String = [\"] StrChar* [\"];
```

```
lexical StrChar = ![\\\"\\\] | [\\\[\\\]\\\nfbtr];
```

```
lexical Integer = [0-9]+ !>> [0-9];
```

```
Lexical Money = [0-9]+ "." [0-9]+ !>> [0-9];
```

```
Layout Standard = WhitespaceOrComment* !>> [ \ \t\n\f\r ] !>> "//";
```

```
Lexical Comment = @category="Comment" "//" ![\n\r]* $;
```

```
syntax WhitespaceOrComment = whitespace: Whitespace | comment: Comment;
```

```
Lexical Whitespace
```

```
= [\u0009-\u000D \u0020 \u0085 \u00A0 \u1680 \u180E \u2000-\u200A \u2028 \u2029 \u202F \u205F \u3000];
```

```
Lexical Id
```

```
= id: ([a-z A-Z 0-9 _] !<< [a-z A-Z][a-z A-Z 0-9 _]* !>> [a-z A-Z 0-9 _]) \ Keywords;
```

Abstract syntax

```
data Form
```

```
= form(str name, list[Question] body);
```

```
data Question
```

```
= question(Label label, Id name, QType tipe)  
| computed(Label label, Id name, QType tipe, Expr expr)  
| ifThen(Expr cond, Question body)  
| ifThenElse(Expr cond, Question body, Question elseBody)  
| group(list[Question] questions)  
;
```

```
data Expr
```

```
= var(Id id)  
| integer(int intValue)  
| string(str strValue)  
| money(real realValue)  
| \true()  
| \false()  
| not(Expr arg)  
| mul(Expr lhs, Expr rhs)  
| div(Expr lhs, Expr rhs)  
| add(Expr lhs, Expr rhs)  
| sub(Expr lhs, Expr rhs)  
| eq(Expr lhs, Expr rhs)  
| neq(Expr lhs, Expr rhs)  
| lt(Expr lhs, Expr rhs)  
| gt(Expr lhs, Expr rhs)  
| leq(Expr lhs, Expr rhs)  
| geq(Expr lhs, Expr rhs)  
| and(Expr lhs, Expr rhs)  
| or(Expr lhs, Expr rhs)  
;
```

```
data QType
```

```
= boolean()  
| integer()  
| money()  
| string()  
;
```

```
data Id = id(str name);
```

```
data Label = label(str label);
```