

# PrettyPrinting

Optimal layout for code and data

<https://github.com/MechanicalRabbit/PrettyPrinting.jl>

Kyrylo Simonov



```
julia> print(["Hello", "World"])  
["Hello", "World"]
```

```
julia> print(["Hello", "World"])  
["Hello", "World"]
```

```
julia> show(["Hello", "World"])  
["Hello", "World"]
```

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julia> print(["Hello", "World"])  
["Hello", "World"]
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```
julia> show(["Hello", "World"])  
["Hello", "World"]
```

```
julia> display(["Hello", "World"])  
2-element Vector{String}:  
 "Hello"  
 "World"
```

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julia> print(["Hello", "World"])  
["Hello", "World"]
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```
julia> show(["Hello", "World"])  
["Hello", "World"]
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```
julia> display(["Hello", "World"])  
2-element Vector{String}:  
 "Hello"  
 "World"
```

```
julia> dump(["Hello", "World"])  
Array{String}((2,))  
 1: String "Hello"  
 2: String "World"
```

```
julia> print(["Hello", "World"])  
["Hello", "World"]
```

```
julia> show(["Hello", "World"])  
["Hello", "World"]
```

**julia> using PrettyPrinting**

```
julia> pprint(["Hello", "World"])  
["Hello", "World"]
```

```
julia> display(["Hello", "World"])  
2-element Vector{String}:  
 "Hello"  
 "World"
```

```
julia> dump(["Hello", "World"])  
Array{String}(2,)  
 1: String "Hello"  
 2: String "World"
```

```
$ cat Project.toml
name = "FunSQL"
uuid = "cf6cc811-59f4-4a10-b258-a8547a8f6407"
authors = ["Kirill Simonov <xi@resolvent.net>", "Clark C. Evans <cce@clarkevans.com>"]
version = "0.6.0"

[deps]
Dates = "ade2ca70-3891-5945-98fb-dc099432e06a"
PrettyPrinting = "54e16d92-306c-5ea0-a30b-337be88ac337"

[compat]
julia = "1.4"
PrettyPrinting = "0.3.2"
```



```
julia> TOML.parsefile("Project.toml") |> show
Dict{String, Any}("deps" => Dict{String, Any}("Dates" => "ade2ca7
0-3891-5945-98fb-dc099432e06a", "PrettyPrinting" => "54e16d92-306
c-5ea0-a30b-337be88ac337"), "name" => "FunSQL", "uuid" => "cf6cc8
11-59f4-4a10-b258-a8547a8f6407", "compat" => Dict{String, Any}("j
ulia" => "1.4", "PrettyPrinting" => "0.3.2"), "authors" => ["Kiri
ll Simonov <xi@resolvent.net>", "Clark C. Evans <cce@clarkevans.c
om>"], "version" => "0.6.0")
```

```
julia> TOML.parsefile("Project.toml") |> show
Dict{String, Any}("deps" => Dict{String, Any}("Dates" => "ade2ca7
0-3891-5945-98fb-dc099432e06a", "PrettyPrinting" => "54e16d92-306
c-5ea0-a30b-337be88ac337"), "name" => "FunSQL", "uuid" => "cf6cc8
11-59f4-4a10-b258-a8547a8f6407", "compat" => Dict{String, Any}("j
ulia" => "1.4", "PrettyPrinting" => "0.3.2"), "authors" => ["Kiri
ll Simonov <xi@resolvent.net>", "Clark C. Evans <cce@clarkevans.c
om>"], "version" => "0.6.0")
```

```
julia> TOML.parsefile("Project.toml") |> display
Dict{String, Any} with 6 entries:
  "deps"      => Dict{String, Any}("Dates"=>"ade2ca70-3891-5945-98...
  "name"      => "FunSQL"
  "uuid"      => "cf6cc811-59f4-4a10-b258-a8547a8f6407"
  "compat"    => Dict{String, Any}("julia"=>"1.4", "PrettyPrinting...
  "authors"   => ["Kirill Simonov <xi@resolvent.net>", "Clark C. E...
  "version"   => "0.6.0"
```

```
julia> TOML.parsefile("Project.toml") |> show
Dict{String, Any}("deps" => Dict{String, Any}("Dates" => "ade2ca70-3891-5945-98fb-dc099432e06a", "PrettyPrinting" => "54e16d92-306c-5ea0-a30b-337be88ac337"), "name" => "FunSQL", "uuid" => "cf6cc811-59f4-4a10-b258-a8547a8f6407", "version" => "0.6.0")
```

```
julia> TOML.parsefile("Project.toml") |> pprint
Dict("deps" => Dict("Dates" =>
    "ade2ca70-3891-5945-98fb-dc099432e06a",
    "PrettyPrinting" =>
    "54e16d92-306c-5ea0-a30b-337be88ac337"),
    "name" => "FunSQL",
    "uuid" => "cf6cc811-59f4-4a10-b258-a8547a8f6407",
    "compat" => Dict("julia" => "1.4",
    "PrettyPrinting" => "0.3.2"),
    "authors" => ["Kirill Simonov <xi@resolvent.net>",
    "Clark C. Evans <cce@clarkevans.com>"],
    "version" => "0.6.0")
```

```
"compat" => Dict{String, Any}("julia" => "1.4", "PrettyPrinting" => "0.3.2"),
"authors" => ["Kirill Simonov <xi@resolvent.net>", "Clark C. Evans <cce@clarkevans.com>"],
"version" => "0.6.0"
```

```
julia> TOML.parsefile("Project.toml") |> pprint
Dict{"deps" => Dict{"Dates" =>
    "ade2ca70-3891-5945-98fb-dc099432e06a",
    "PrettyPrinting" =>
    "54e16d92-306c-5ea0-a30b-337be88ac337"},
    "name" => "FunSQL",
    "uuid" => "cf6cc811-59f4-4a10-b258-a8547a8f6407",
    "compat" => Dict{"julia" => "1.4",
    "PrettyPrinting" => "0.3.2"),
    "authors" => ["Kirill Simonov <xi@resolvent.net>",
    "Clark C. Evans <cce@clarkevans.com>"],
    "version" => "0.6.0")
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julia> TOML.parsefile("Project.toml") |> pprint
Dict{"deps" => Dict{"Dates" => "ade2ca70-3891-5945-98fb-dc099432e06a",
    "PrettyPrinting" => "54e16d92-306c-5ea0-a30b-337be88ac337"},
    "name" => "FunSQL",
    "uuid" => "cf6cc811-59f4-4a10-b258-a8547a8f6407",
    "compat" => Dict{"julia" => "1.4", "PrettyPrinting" => "0.3.2"),
    "authors" => ["Kirill Simonov <xi@resolvent.net>",
    "Clark C. Evans <cce@clarkevans.com>"],
    "version" => "0.6.0")
```

Lorem  
✕  
ipsum

Lorem  
ipsum ✕ dolor  
sit

Lorem  
ipsum or Lorem ipsum

```
julia> PrettyPrinting.tile("julia" => "1.4")  
(literal("\julia\"") * literal(" => ") |  
  literal("\julia\"") * literal(" =>") / indent(4)) *  
literal("\1.4\"")
```

"julia" •=>• or "julia" •=>  
... "1.4"

*Phillip Yelland, A New Approach to Optimal Code Formatting, 2016*

# Supported data types:

- Tuple
- NamedTuple
- Vector
- Set
- Dict
- Expr

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- Tuple
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- Vector
- Set
- Dict
- Expr

```
julia> Pkg.project()
```

```
Pkg.API.ProjectInfo("FunSQL", UUID("cf6cc811-59f4-4a10-b258-a8547  
a8f6407"), v"0.6.0", true, Dict{String, Base.UUID}("Dates" => UUI  
D("ade2ca70-3891-5945-98fb-dc099432e06a"), "PrettyPrinting" => UU  
ID("54e16d92-306c-5ea0-a30b-337be88ac337")), "/home/xi/Mechanical  
Rabbit/FunSQL.jl/Project.toml")
```



```
julia> Pkg.project()
```

```
Pkg.API.ProjectInfo("FunSQL", UUID("cf6cc811-59f4-4a10-b258-a8547a8f6407"), v"0.6.0", true, Dict{String, Base.UUID}("Dates" => UUID("ade2ca70-3891-5945-98fb-dc099432e06a"), "PrettyPrinting" => UUID("54e16d92-306c-5ea0-a30b-337be88ac337")), "/home/xi/MechanicalRabbit/FunSQL.jl/Project.toml")
```

```
PrettyPrinting.quoteof(info::Pkg.API.ProjectInfo) =  
    :(Pkg.API.ProjectInfo(name = $(info.name),  
                           uuid = $(info.uuid),  
                           version = $(info.version),  
                           ispackage = $(info.ispackage),  
                           dependencies = $(info.dependencies),  
                           path = $(info.path)))
```

```
PrettyPrinting.quoteof(info::Pkg.API.ProjectInfo) =  
    :(Pkg.API.ProjectInfo(name = $(info.name),  
                           uuid = $(info.uuid),  
                           version = $(info.version),  
                           ispackage = $(info.ispackage),  
                           dependencies = $(info.dependencies),  
                           path = $(info.path)))
```

```
julia> Pkg.project() |> pprint
```

```
Pkg.API.ProjectInfo(  
  name = "FunSQL",  
  uuid = UUID("cf6cc811-59f4-4a10-b258-a8547a8f6407"),  
  version = v"0.6.0",  
  ispackage = true,  
  dependencies =  
    Dict{String, String} =>  
      Dict{String, String} =>  
        Dict{String, String} =>  
          Dict{String, String} =>  
            Dict{String, String} =>  
              Dict{String, String} =>  
                Dict{String, String} =>  
                  Dict{String, String} =>  
                    Dict{String, String} =>  
                      Dict{String, String} =>  
                        Dict{String, String} =>  
                          Dict{String, String} =>  
                        UUID("ade2ca70-3891-5945-98fb-dc099432e06a"),  
                      "PrettyPrinting" =>  
                        UUID("54e16d92-306c-5ea0-a30b-337be88ac337")),  
  path = "/home/xi/MechanicalRabbit/FunSQL.jl/Project.toml")
```

```
Base.show(io::IO, ::MIME"text/plain", info::Pkg.API.ProjectInfo) =  
  pprint(io, info)
```

```
julia> Pkg.project()  
Pkg.API.ProjectInfo(  
  name = "FunSQL",  
  uuid = UUID("cf6cc811-59f4-4a10-b258-a8547a8f6407"),  
  version = v"0.6.0",  
  ispackage = true,  
  dependencies =  
    Dict{String, String} =>  
      Dict{String, String} =>  
        Dict{String, String} =>  
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            Dict{String, String} =>  
              Dict{String, String} =>  
                Dict{String, String} =>  
                  Dict{String, String} =>  
                    Dict{String, String} =>  
                      Dict{String, String} =>  
                        Dict{String, String} =>  
                          Dict{String, String} =>  
                        UUID("ade2ca70-3891-5945-98fb-dc099432e06a"),  
                      "PrettyPrinting" =>  
                        UUID("54e16d92-306c-5ea0-a30b-337be88ac337")),  
  path = "/home/xi/MechanicalRabbit/FunSQL.jl/Project.toml")
```

*Find all patients born between*  *and*  *living in*  *with conditions*    *who visited a doctor*

person.year\_of\_birth

location.state

condition\_occurrence.condition\_concept\_id

visit\_occurrence.visit\_start\_date

**FUNSQL**

```
FindPatients(; start_year = nothing, end_year = nothing,
              state = nothing,
              condition_concepts = [],
              latest_visit_threshold = nothing) =
  From(person) |>
  FilterByYearOfBirth(; start_year, end_year) |>
  FilterByState(; state) |>
  FilterByConditions(; condition_concepts) |>
  FilterByLatestVisit(; latest_visit_threshold) |>
  Select(Get.person_id)
```

```
FindPatients(; start_year = nothing, end_year = nothing,
              state = nothing,
              condition_concepts = [])
```

```
From(p
FilterBy
FilterBy
FilterBy
FilterBy
Select

julia> FindPatients(start_year = 1970, state = "IL") |> render
ERROR: GetError: cannot find locatin_id in:
let person = SQLTable(:person, ...),
    location = SQLTable(:location, ...),
    q1 = From(person),
    q2 = q1 |> Where(Fun.">=" (Get.year_of_birth, Lit(1970))),
    q3 = From(location),
    q4 = q3 |> Where(Fun."==" (Get.state, Lit("IL"))),
    q5 = q2 |>
        Join(q4 |> As(:location),
              Fun."==" (Get.location_id,
                        Get.location.locatin_id)),
    q6 = q5 |> Select(Get.person_id)
    q6
end
```