SELECT "Hello World!"

sql_select("Hello World!")
sql_query() |> sql_select("Hello World!")

```
Query
```
```
Query
SELECT  → Expr "Hello!"
```
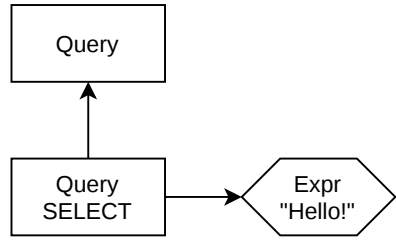
SELECT p.mrn FROM patient p

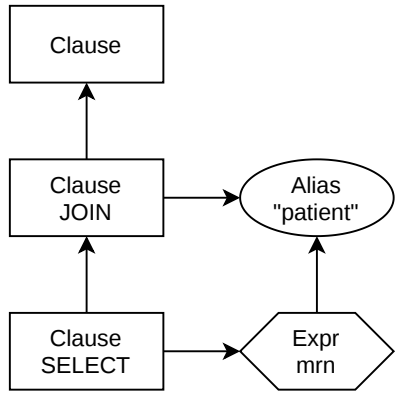p = sql_alias("patient")
sql_join(p) |> sql_select(p.mrn)

p = sql_alias("patient")
p |> sql_select(p.mrn)

(p = sql_from("patient")) |> sql_select(p.mrn)

```
Clause

Clause
JOIN   → Alias "patient"

Clause
SELECT → Expr mrn
```

SELECT p.mrn FROM patient p

(p = sql_from("patient")) |> sql_select(p.mrn)

```
Clause

Clause
FROM   → Alias "patient"

Clause
JOIN   → Ref mrn

Clause
SELECT → Expr mrn
```

SELECT p.mrn, e.date
FROM patient p
JOIN encounter e ON (p.id = e.patient_id)

p = sql_alias("patient")
e = sql_alias("encounter")
sql_from(p) |> sql_join(e, p.id .== e.patient_id) |> sql_select(p.mrn, e.date)

p = sql_alias(catalog["public"]["patient"])
e = sql_alias(catalog["public"]["encounter"])
sql_from(p) |> sql_join(e, autojoin=p) |> sql_select(p.mrn, e.date)

p = sql_alias("patient")
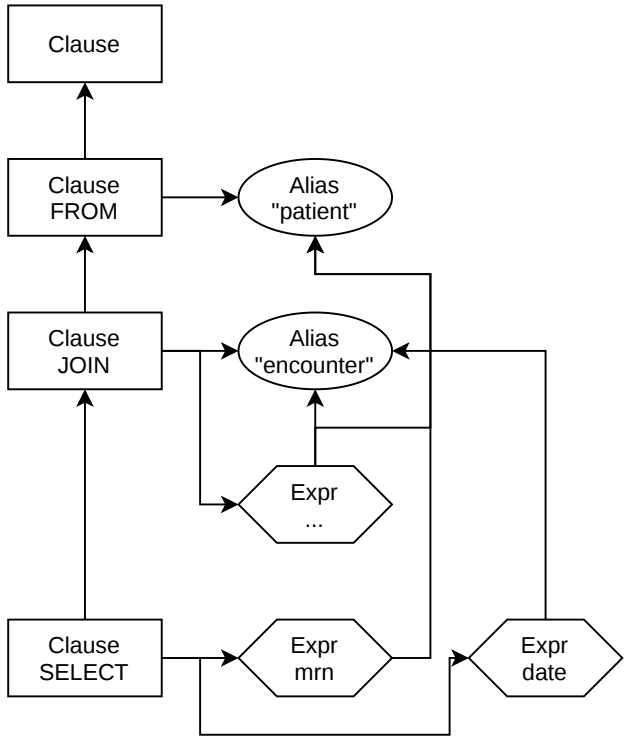e = sql_alias("encounter")
p |> sql_join(e, p.id .== e.patient_id) |> sql_select(p.mrn, e.date)

p = sql_alias("patient")
e = sql_alias("encounter")
sql_from(p) |> sql_join(e, p.id .== e.patient_id) |> sql_select(p.mrn) |> sql_select(e.date)

```
Clause

Clause
FROM   → Alias "patient"

Clause   → Alias "encounter"
JOIN         → Expr ...

Clause
SELECT → Expr mrn    Expr date
```

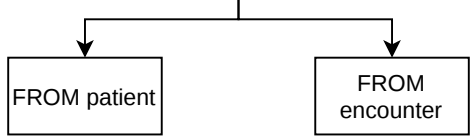SELECT p.mrn, e.date
FROM patient p
JOIN encounter e ON (p.id = e.patient_id)

p = From("patient")
e = From("encounter")
j = Join(p, e, p.id .== e.patient_id)
Select(j, p.mrn, e.date)

sql_from((p = ...t"))) |> sql_join((e = sql_alias("encounter")), p.id .== e.patient_id) |> sql_select(p.mrn, e.date)

```
JOIN
├── FROM patient → Query
└── FROM encounter → Query
```

```
JOIN
├── FROM patient
└── FROM encounter
```

SELECT p.sex, COUNT(p)
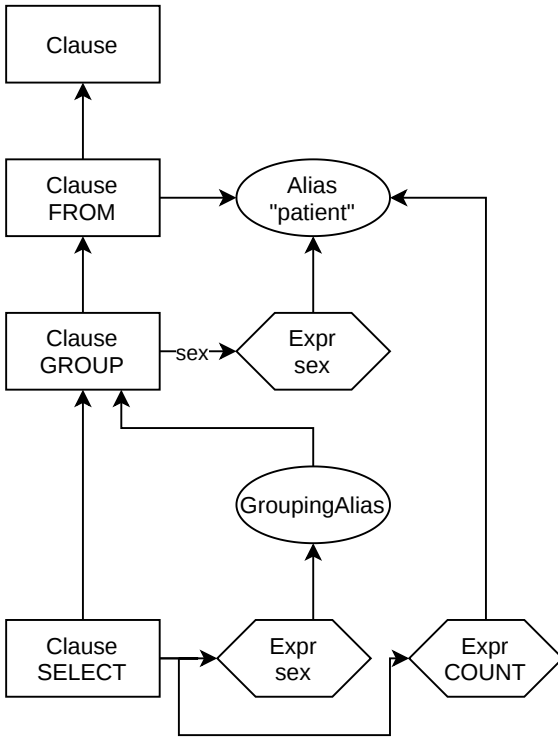FROM patient p
GROUP BY p.sex

p = sql_alias("patient")
g = sql_from(p) |> sql_group(sex = p.sex)
g |> sql_select(g.sex, sql_count(p))

p = From("patient")
g = Group(p, sex = p.sex)
Select(g, g.sex, Count(p))

```
Clause

Clause
FROM   → Alias "patient"

Clause   sex→  Expr
GROUP          sex

         GroupingAlias

Clause
SELECT → Expr sex    Expr COUNT
```

SELECT p.mrn, COALESCE(g.n_e, 0)
FROM patient p
LEFT JOIN (
    SELECT e.patient_id, COUNT(e) AS n_e
    FROM encounter e
    GROUP BY e.patient_id) g ON (p.id = g.patient_id)

p = From("patient")
e = From("encounter")
g = Group(e, patient_id = e.patient_id)
j = LeftJoin(p, g, p.id .== g.patient_id, omit_if_unused=true)
Select(j, p.mrn, Coalesce(Count(e), 0))

p = From("patient")
e = From("encounter")
g = Group(e, patient_id = e.patient_id)
gs = Select(g, patient_id = g.patient_id, n = Count(e))
j = LeftJoin(p, gs, p.id .== gs.patient_id)
Select(j, p.mrn, Coalesce(gs.n, 0))

p = From("patient")
e = From("encounter")
g = Group(e, patient_id = e.patient_id, summarize=(; n = Count(e)))
j = LeftJoin(p, g, p.id .== g.patient_id)
Select(j, p.mrn, Coalesce(g.n, 0))

SELECT p.mrn
FROM patient p
WHERE p.sex = 'male'

p = From("patient")
w = Where(p, p.sex .== "male")
Select(w, p.mrn)

p = From("patient", columns=["mrn", "sex"])
w = Where(p, Ref(1, 2) .== "male", select=[Ref(1,1)])
Select(w, select=[Ref(1,1)])

patient_tbl = Table("patient", [("id", Int), ("sex", String), ("mrn", String)])
encounter_tbl = Table("encounter", [("id", Int), ("patient_id", Int), ("date", Date)])

auto_connect(patient_tbl, encounter_tbl, [("id", "patient_id")])

p = From(patient_tbl)
e = From(encounter_tbl)
j = LeftJoin(p, e)
Select(j, p.mrn, e.date)

```
Original
Query
```