Laboratorio 8 - ME315

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2025-09-25

```
library(DBI)
library(RSQLite)
```

```
# verificar as tabelas no banco de dados

conn <- dbConnect(SQLite(), "~/archive/database.sqlite3")

cat("Tabelas no arquivo:\n")
```

```
## Tabelas no arquivo:
```

```
print(dbListTables(conn))
```

```
##  [1] "course_offerings"    "courses"             "grade_distributions"
##  [4] "instructors"         "rooms"               "schedules"
##  [7] "sections"            "subject_memberships" "subjects"
## [10] "teachings"
```

```
get_cols <- function(tbl) {
  if (!(tbl %in% dbListTables(conn))) return(character(0))
  dbGetQuery(conn, sprintf("PRAGMA table_info('%s')", tbl))$name
}
```

```
# Consultar os professores que lecionaram disciplinas de Estatística
query_professores <- "
SELECT DISTINCT i.name AS professor
FROM instructors i
JOIN teachings t ON i.id = t.instructor_id
JOIN sections sec ON t.section_uuid = sec.uuid
JOIN course_offerings co ON sec.course_offering_uuid = co.uuid
JOIN subject_memberships sm ON co.uuid = sm.course_offering_uuid
JOIN subjects s ON sm.subject_code = s.code
WHERE s.abbreviation = 'STAT';
"
professores_stat <- dbGetQuery(conn, query_professores)
```

```
# Quantidade de professores
n_professores <- nrow(professores_stat)
head(professores_stat, 5)
```

```
##       professor
## 1   MINJING TAO
## 2 DONALD PORTER
## 3    SHENG WANG
## 4 KUNLING HUANG
```

```
## 5      DONG XIA
```

```
n_professores
```

```
## [1] 377
```

```
# Consultar o GPA médio dos oferecimentos de disciplinas de Estatística
query_gpa <- "
SELECT
  co.uuid AS course_offering_uuid,
  co.name AS course_name,
  i.name AS professor,
  CAST(
    (g.a_count * 4 + g.ab_count * 3.5 + g.b_count * 3 + g.bc_count * 2.5 + g.c_count * 2 + g.d_count *
    /
    (g.a_count + g.ab_count + g.b_count + g.bc_count + g.c_count + g.d_count + g.f_count)
    AS FLOAT
  ) AS gpa_medio
FROM course_offerings co
JOIN sections sec ON sec.course_offering_uuid = co.uuid
JOIN teachings t ON t.section_uuid = sec.uuid
JOIN instructors i ON t.instructor_id = i.id
JOIN subject_memberships sm ON co.uuid = sm.course_offering_uuid
JOIN subjects s ON sm.subject_code = s.code
JOIN grade_distributions g ON g.course_offering_uuid = co.uuid
WHERE s.abbreviation = 'STAT';
"
gpa_oferecimentos <- dbGetQuery(conn, query_gpa)
```

```
# Identificar o professor mais difícil e o mais fácil
professor_dificil <- gpa_oferecimentos[which.min(gpa_oferecimentos$gpa_medio), c("professor", "gpa_medi
professor_facil <- gpa_oferecimentos[which.max(gpa_oferecimentos$gpa_medio), c("professor", "gpa_medio"

professor_dificil
```

```
##             professor gpa_medio
## 4647 BEN ADAM HAALAND   2.30531
```

```
professor_facil
```

```
##        professor gpa_medio
## 6326 SHENGJI JIA         4
```

```
# Identificar a disciplina mais difícil e a mais fácil
gpa_cursos <- aggregate(gpa_medio ~ course_name, data = gpa_oferecimentos, FUN = mean)
disciplina_dificil <- gpa_cursos[which.min(gpa_cursos$gpa_medio), ]
disciplina_facil <- gpa_cursos[which.max(gpa_cursos$gpa_medio), ]

# Resultados das disciplinas
disciplina_dificil
```

```
##                    course_name gpa_medio
## 20 Intro-Theory of Probability  2.901418
```

```
disciplina_facil
```

```
##              course_name gpa_medio
## 6 Data Science Practicum         4
```

```r
dbDisconnect(conn)
```