r quosures

James Bain

5/15/2019

Quosures in R

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

glue for Interpreting String Literals

an example

```
day <- "Monday"
glue::glue("{day} sucks!")
```

```
## Monday sucks!
```

```
gripe <- function(day){
  "day sucks!"
}

gripe("Monday")
```

```
## [1] "day sucks!"
```

```
gripe <- function(day){
  glue::glue("{day} sucks!")
}

gripe("Monday")
```

```
## Monday sucks!
```

```
age <- 7
glue::glue("last year, Pippa was {age - 1} years old")
```

```
## last year, Pippa was 6 years old
```

```
glue::glue("next year, Prairie will be {age + 1} years old", age = 5)
```

```
## next year, Prairie will be 6 years old
```

```r
cats <- tibble(name = c('murphey', 'justine'),
               daily_food = c(1, 2),
               nightly_food = c(2, 1),
               age = c(4, 5))

dogs <- tibble(name = c('spaghetti', 'ronda'),
               daily_food = c(7, 5),
               age = c(5, 4))
```

```r
cats %>% glue::glue_data("{name} gets {daily_food} oz of food in the morning \\
                          and {nightly_food} oz of food in the evening.")
```

```
## murphey gets 1 oz of food in the morning and 2 oz of food in the evening.
## justine gets 2 oz of food in the morning and 1 oz of food in the evening.
```

```r
dogs %>% mutate(schedule = glue::glue("{name} eats {daily_food} oz in the \\
                                       morning."))
```

```
## # A tibble: 2 x 4
##   name      daily_food   age schedule
##   <chr>          <dbl> <dbl> <S3: glue>
## 1 spaghetti          7     5 spaghetti eats 7 oz in the morning.
## 2 ronda              5     4 ronda eats 5 oz in the morning.
```

```r
find_total_food <- function(df){
  dplyr::mutate(df, total_food = daily_food + nightly_food)
}

find_total_food(cats)
```

```
## # A tibble: 2 x 5
##   name    daily_food nightly_food   age total_food
##   <chr>        <dbl>        <dbl> <dbl>      <dbl>
## 1 murphey          1            2     4          3
## 2 justine          2            1     5          3
```

```r
nightly_food <- 10

find_total_food(dogs)
```

```
## # A tibble: 2 x 4
##   name      daily_food   age total_food
##   <chr>          <dbl> <dbl>      <dbl>
## 1 spaghetti          7     5         17
## 2 ronda              5     4         15
```

```r
find_total_food <- function(df){
  dplyr::mutate(df, total_food = .data$daily_food + .data$nightly_food)
}

find_total_food(dogs)
```

```
## Error: Column `nightly_food` not found in `.data`
```

```r
pets <- bind_rows(mutate(cats, pet = 'cat'),
                  mutate(dogs, pet = 'dog'))
```

```r
pets %>%
  group_by(pet) %>%
  summarize(average_daily_food = mean(daily_food))
```

```
## # A tibble: 2 x 2
##   pet   average_daily_food
##   <chr>              <dbl>
## 1 cat                  1.5
## 2 dog                  6
```

```r
pets %>%
  group_by(age) %>%
  summarize(average_daily_food = mean(daily_food))
```

```
## # A tibble: 2 x 2
##     age average_daily_food
##   <dbl>              <dbl>
## 1     4                  3
## 2     5                  4.5
```

```r
find_average_food <- function(df, group_var){
  df %>%
    dplyr::group_by(group_var) %>%
    summarize(average_daily_food = mean(.data$daily_food))
}

find_average_food(pets, pet)
```

```
## Error: Column `group_var` is unknown
```

```r
find_average_food(pets, 'age')
```

```
## Error: Column `group_var` is unknown
```

```r
quo(age)
```

```
## <quosure>
## expr: ^age
## env:  global
```

```r
quo(daily_food + nightly_food)
```

```
## <quosure>
## expr: ^daily_food + nightly_food
## env:  global
```

```r
quo("age")
```

```
## <quosure>
## expr: ^"age"
## env:  empty
```

```r
find_average_food(pets, quo(age))
```

```
## Error: Column `group_var` is unknown
```

```r
find_average_food <- function(df, group_var){
  df %>%
    group_by(!! group_var) %>%
```

```
    summarize(average_daily_food = mean(.data$daily_food))
}

find_average_food(pets, quo(age))
```

```
## # A tibble: 2 x 2
##     age average_daily_food
##   <dbl>              <dbl>
## 1     4                3
## 2     5                4.5
```

```
find_average_food <- function(df, group_var){
  quoted_group_var <- quo(group_var)
  print(quoted_group_var)

  df %>%
    group_by(!! group_var) %>%
    summarize(average_daily_food = mean(.data$daily_food))
}

find_average_food(pets, pet)
```

```
## <quosure>
## expr: ^group_var
## env:  0x7fa084b84598
```

```
## Error in quos(...): object 'pet' not found
```

```
find_average_food <- function(df, group_var){
  quoted_group_var <- enquo(group_var)
  print(quoted_group_var)

  df %>%
    group_by(!! quoted_group_var) %>%
    summarize(average_daily_food = mean(.data$daily_food))
}

find_average_food(pets, pet)
```

```
## <quosure>
## expr: ^pet
## env:  global
```

```
## # A tibble: 2 x 2
##   pet   average_daily_food
##   <chr>              <dbl>
## 1 cat                  1.5
## 2 dog                  6
```

```
cow_pop <- dplyr::tibble(city = c("New York City", "New York City",
                                  "New York City", "Columbia", "Columbia",
                                  "Columbia", "Columbia", "Columbia",
                                  "Columbia", "Columbia"),
                         state = c("NY", "NY", "NY", "MO", "MO", "MO", "MO",
                                   "SC", "SC", "SC"),
                         year = c(1990, 2000, 2010, 1980, 1990, 2000, 2010,
```

```
                                1990, 2000, 2010),
                          no_cows = c(500, 550, 500, 900, 1000, 1050, 1050, 800,
                                      700, 850))

cow_pop
```

```
## # A tibble: 10 x 4
##    city          state  year no_cows
##    <chr>         <chr> <dbl>   <dbl>
##  1 New York City NY     1990     500
##  2 New York City NY     2000     550
##  3 New York City NY     2010     500
##  4 Columbia      MO     1980     900
##  5 Columbia      MO     1990    1000
##  6 Columbia      MO     2000    1050
##  7 Columbia      MO     2010    1050
##  8 Columbia      SC     1990     800
##  9 Columbia      SC     2000     700
## 10 Columbia      SC     2010     850
```

```
find_average_pop <- function(df, ...){
  group_vars <- rlang::enquos(...)

  df %>%
    group_by(!!! group_vars) %>%
    summarize(average_pop = mean(.data$no_cows))
}

find_average_pop(cow_pop, city, state)
```

```
## # A tibble: 3 x 3
## # Groups:   city [2]
##   city          state average_pop
##   <chr>         <chr>       <dbl>
## 1 Columbia      MO          1000
## 2 Columbia      SC           783.
## 3 New York City NY           517.
```

```
find_average_pop(cow_pop, city)
```

```
## # A tibble: 2 x 2
##   city          average_pop
##   <chr>               <dbl>
## 1 Columbia             907.
## 2 New York City        517.
```

```
find_average_pop(cow_pop, year)
```

```
## # A tibble: 4 x 2
##    year average_pop
##   <dbl>       <dbl>
## 1  1980         900
## 2  1990         767.
## 3  2000         767.
## 4  2010         800
```