

Stats102A, Summer 2023 - Homework 3

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1. Cook's relational data

```
food <- read.csv("food_item.csv")
ingredient <- read.csv("ingredient.csv")
recipe <- read.csv("recipe.csv")
stock <- read.csv("stock.csv")
```

a.

```
ingredient %>% filter(recipe == "Beef Burger") %>% pull(food_item)
```

```
## [1] "Bread"          "Ground Beef"    "Onions"         "Tomato Sauce"
```

b.

```
ingredient %>% filter(str_detect(toupper(food_item), "TOMATO|BREAD"))
```

```
##           recipe    food_item weight..oz.
## 1 Spaghetti and Meatballs Tomato Sauce      5
## 2           Beef Burger      Bread      10
## 3           Beef Burger Tomato Sauce      3
## 4           Sandwich      Bread      15
## 5           Sandwich      Tomato      2
## 6       Turkey Burger      Bread      10
## 7       Turkey Burger Tomato Sauce      4
```

c.

```
food %>% filter(type == "Meat") %>% rename(food_item = item) %>% inner_join(stock, by = "food_item") %>%
```

```
##      food_item type      shop price..US.dollars.per.lb.
## 1  Meatballs Meat    MyMart           5.5
## 2  Ground Beef Meat    MyMart           5.8
## 3    Turkey Meat    MyMart           7.0
## 4    Turkey Meat  Coco Mart           6.0
```

d.

```
res <- food %>% filter(type == "Wheat product") %>% rename(food_item = item) %>% inner_join(ingredient,
# change tomato
res$item[11] <- "Tomato"

res %>% left_join(food, by = "item") %>% group_by(recipe) %>% summarise(Total_Calories = sum(calories))
```

```
## # A tibble: 4 x 2
##   recipe                Total_Calories
##   <chr>                  <int>
## 1 Beef Burger              76
## 2 Sandwich                 46
## 3 Spaghetti and Meatballs  66
## 4 Turkey Burger            46
```

2. Regular Expression Exercises

1.

a.

```
pat_1_a(names$names)
```

```
## [1] "abc123"          "myUsernameis210" "123fionaFog"      "Red chihuahua5"
## [5] "1"               "Omaha p0shy"
```

b.

```
pat_1_b(names$names)
```

```
## [1] "asm1" "john"
```

c.

```
pat_1_c(names$names)
```

```
## [1] "Edward Lazowska"
```

2.

a.

```
pat_2_a(cards$cards)
```

```
## [1] "5123 4567 8910 1112" "5234 4567 8910 1112" "5192 9295 9182 8818"
```

b.

```
pat_2_b(cards$cards)
```

```
## [1] "4789 0123 8910 1112" "4444 9321 1230 3"
```

3.

a.

```
pat_3_a(passwords$passwords)
```

```
## [1] "Strings78" "apple007" "1brownie" "glhf1234"
```

b.

```
pat_3_b(passwords$passwords)
```

```
## [1] "Strings78" "apple007"
```

4.

a.

```
pat_4_a(wordlists$Ranges$x, wordlists$Ranges$y)
```

```
## [1] "x matches:"  
## [1] "abac" "accede" "adead" "babe" "bead" "bebed" "bedad" "bedded"  
## [9] "bedead" "bedeaf" "caba" "caffa" "dace" "dade" "daff" "dead"  
## [17] "deed" "deface" "faded" "faff" "feed"  
## [1] "y matches:"  
## character(0)
```

b.

```
pat_4_b(wordlists$Backrefs$x, wordlists$Backrefs$y)
```

```
## [1] "x matches:"  
## [1] "allochirally"      "anticovenanting" "barbary"         "calelectrical"  
## [5] "entablement"      "ethanethiol"    "froufrou"        "furfuryl"  
## [9] "galagala"         "heavyheaded"    "linguatuline"    "mathematic"  
## [13] "monoammonium"     "perpera"        "photophonic"     "purpuraceous"  
## [17] "salpingonasal"    "testes"         "trisectrix"      "undergrounder"  
## [21] "untaunted"  
## [1] "y matches:"  
## character(0)
```

c.

```
pat_4_c(wordlists$Anchors$x, wordlists$Anchors$y)
```

```
## Warning: `str_view()` was deprecated in stringr 1.5.0.  
## i Please use `str_view_all()` instead.  
## This warning is displayed once every 8 hours.  
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was  
## generated.  
  
## [1] "x matches:"  
## [1] "Mick"              "Rick"            "allocochick"     "backtrick"       "bestick"  
## [6] "candlestick"      "counterprick"    "heartsick"       "lampwick"        "lick"  
## [11] "lungsick"         "potstick"        "quick"           "rampick"         "rebrick"  
## [16] "relick"           "seasick"         "slick"           "tick"            "unsick"  
## [21] "upstick"  
## [1] "y matches:"  
## character(0)
```