Working with tidy data in R: dplyr

Fundamental actions on data tables:

- select rows — `filter()`
- select columns — `select()`
- make new columns — `mutate()`
- arrange rows — `arrange()`
- calculate summary statistics — `summarize()`
- work on groups of data — `group_by()`

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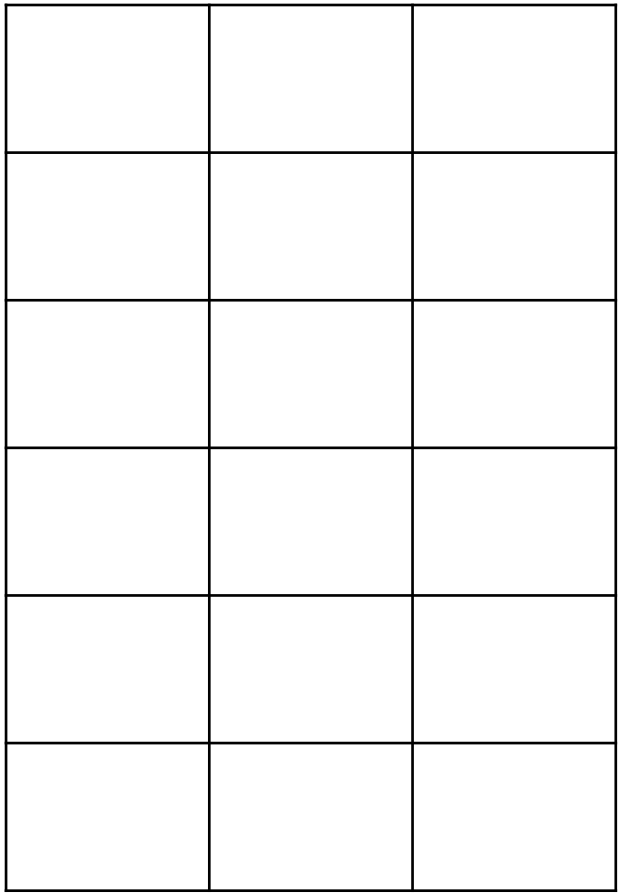
- calculate summary statistics — `summarize()`
- work on groups of data — `group_by()`
- combine tables — `left_join(), ...`

`filter()`: pick rows



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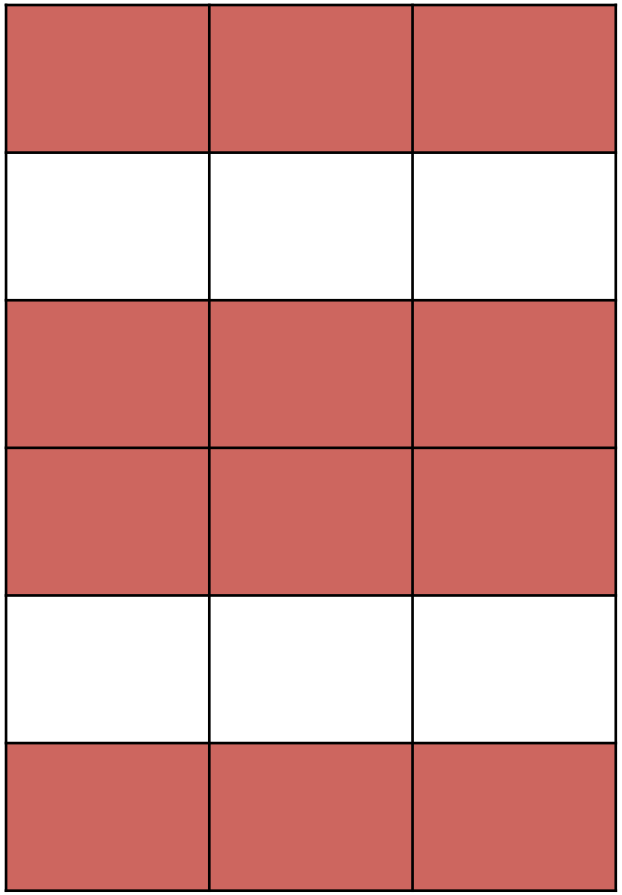

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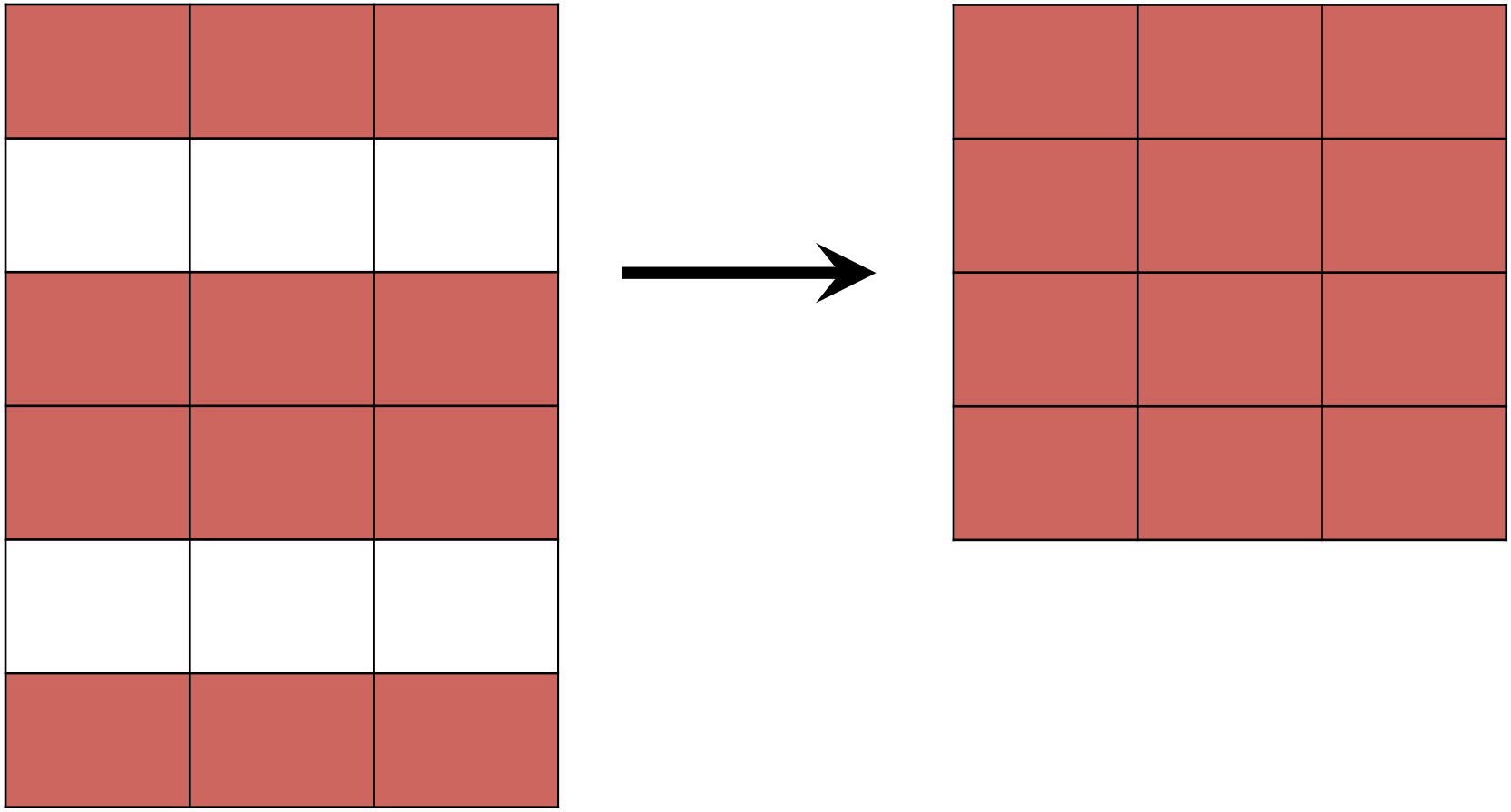
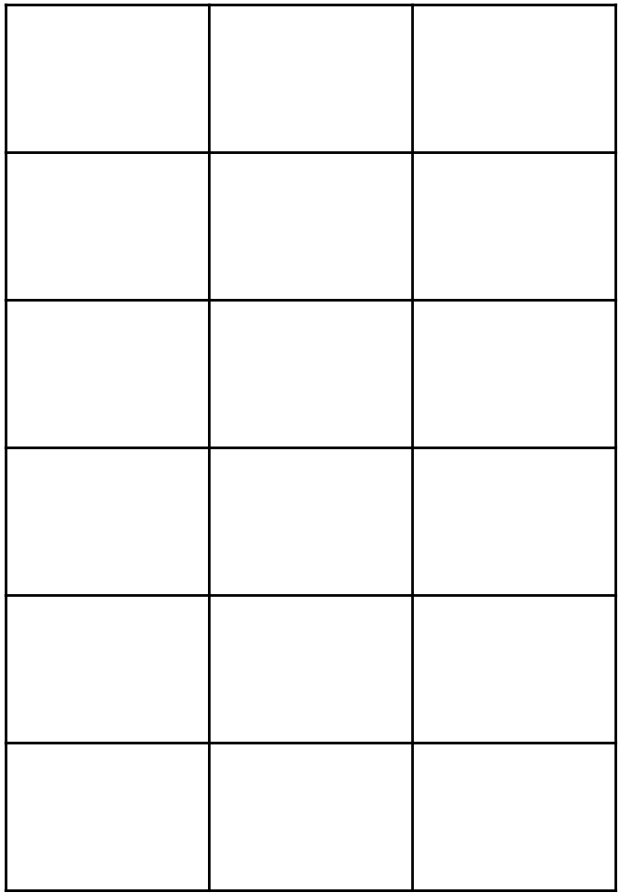


`select()`: pick columns



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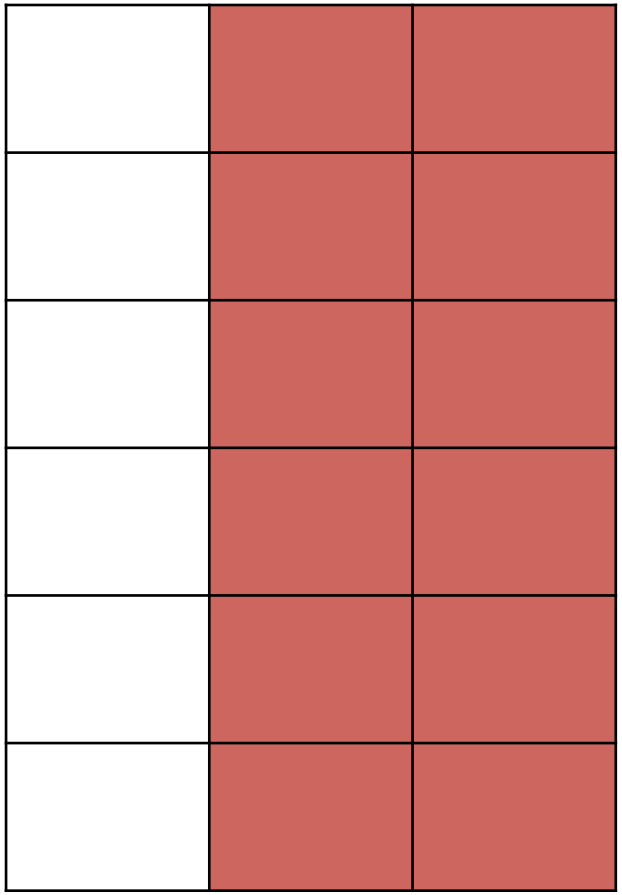

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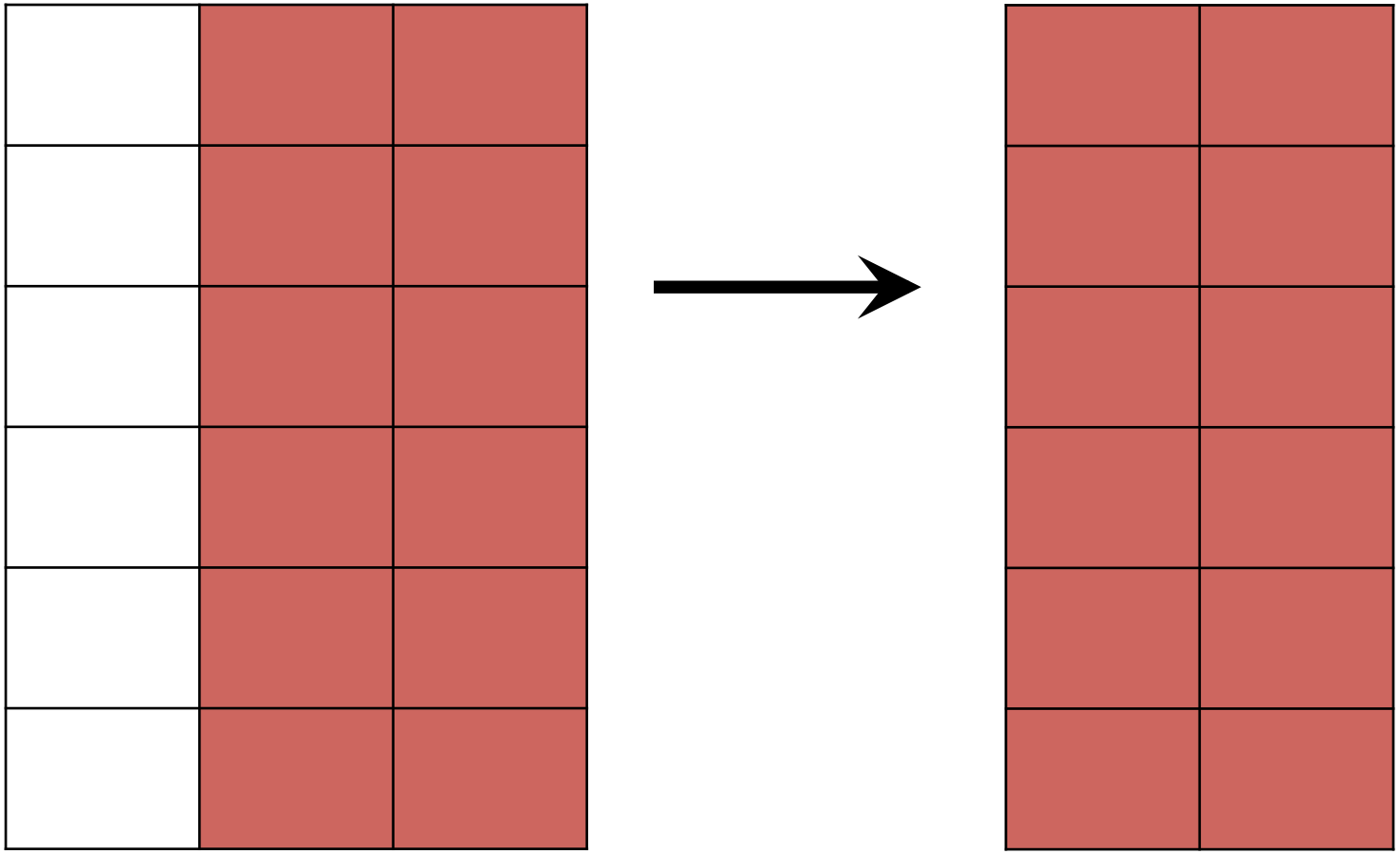
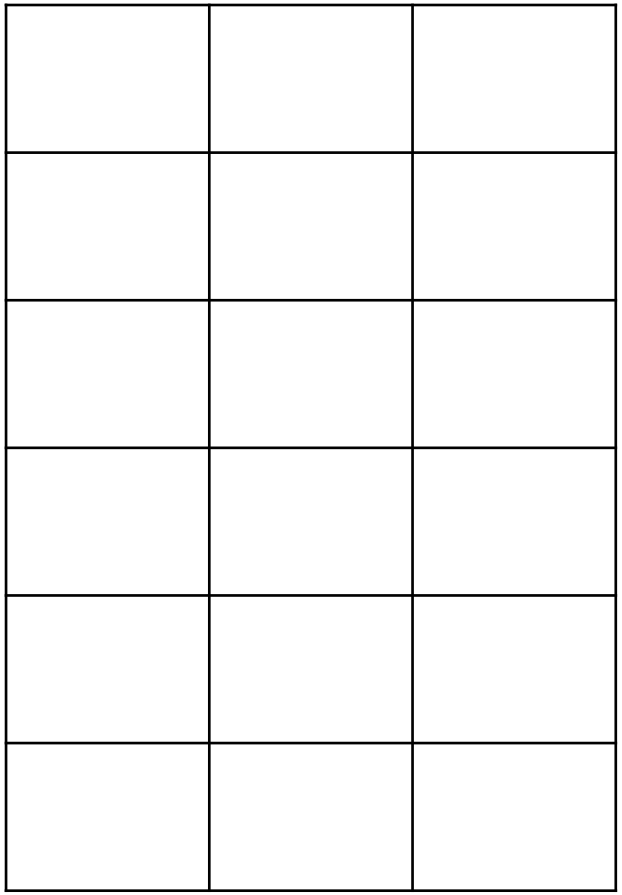


`mutate()`: make new columns



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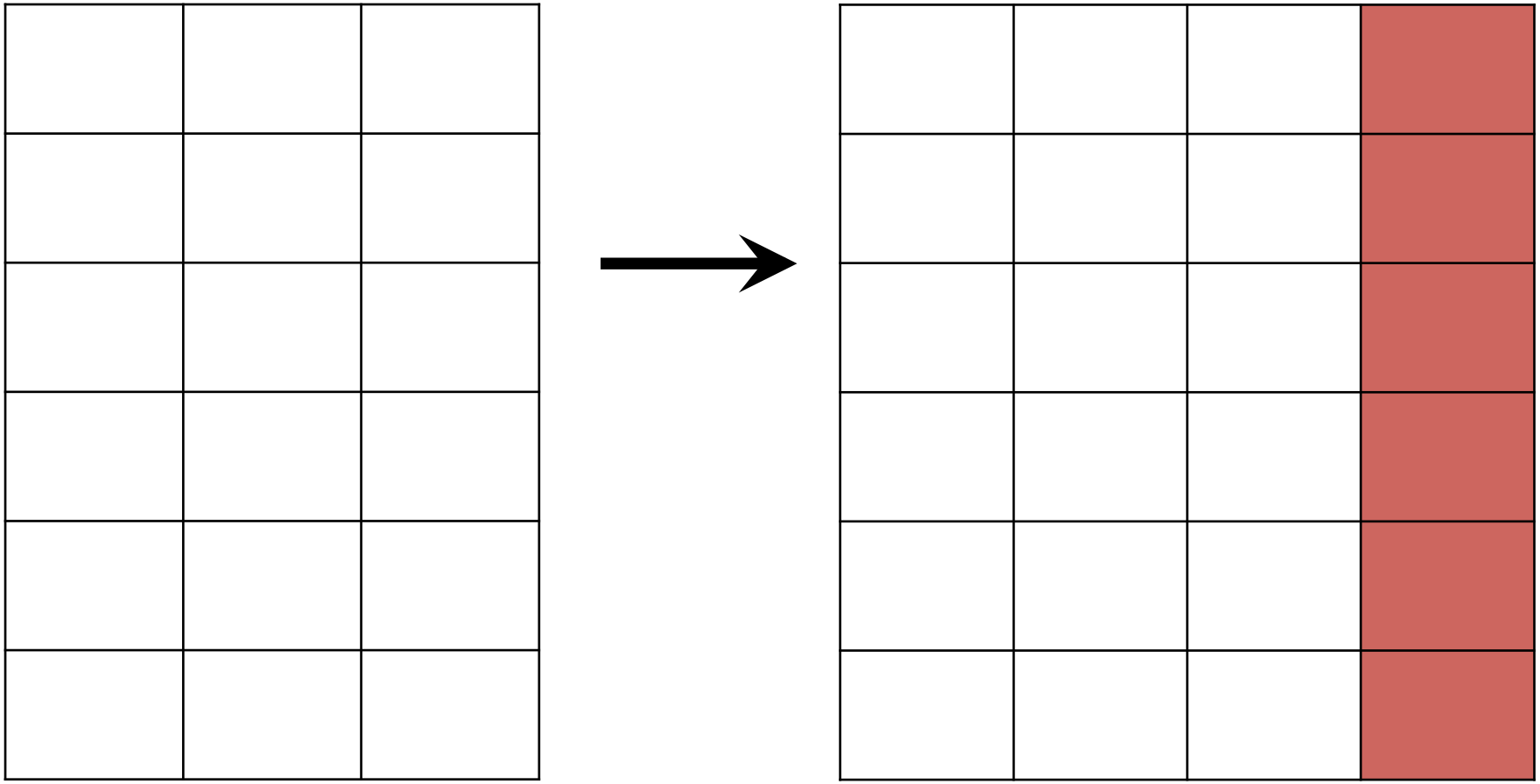
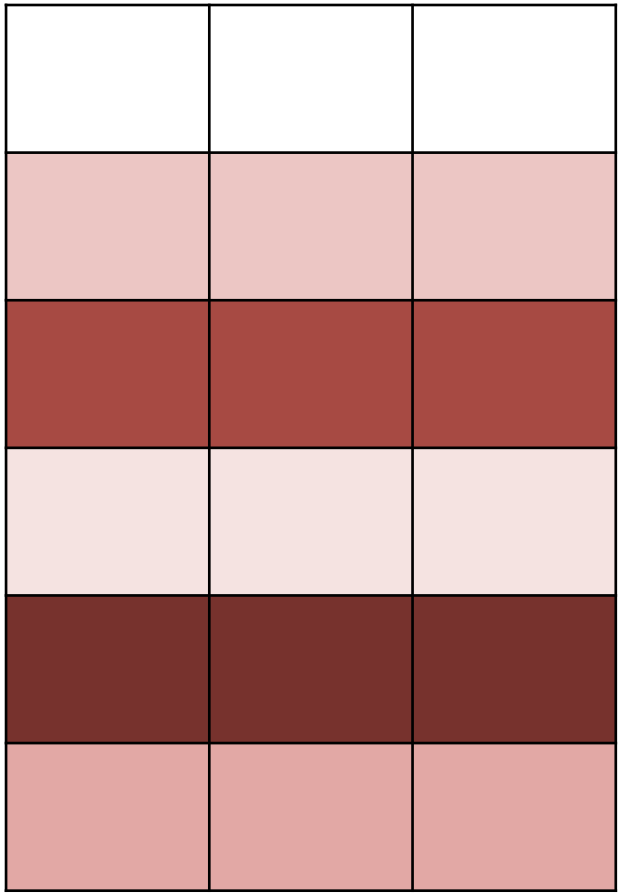


`arrange()`: change row order



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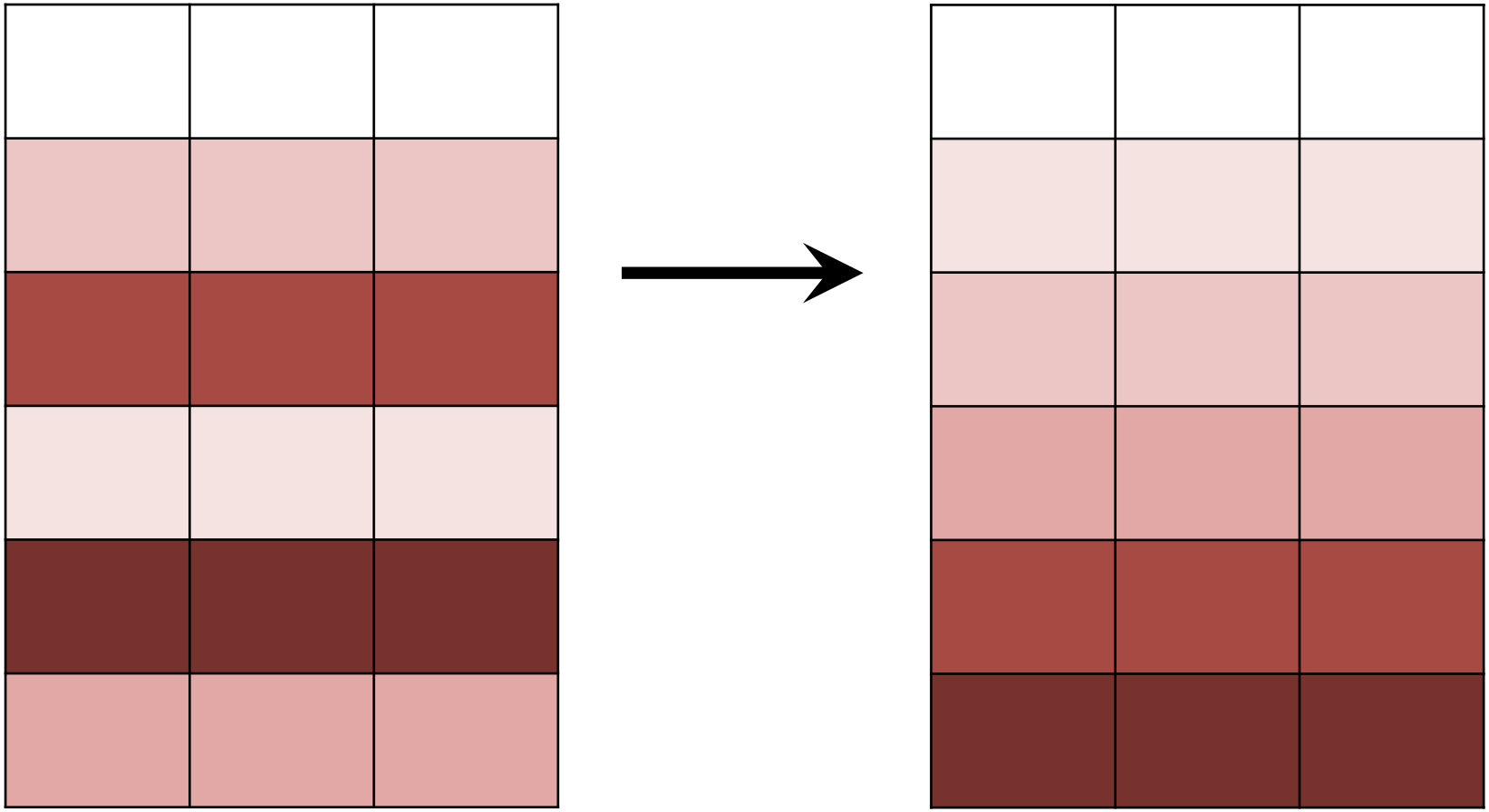
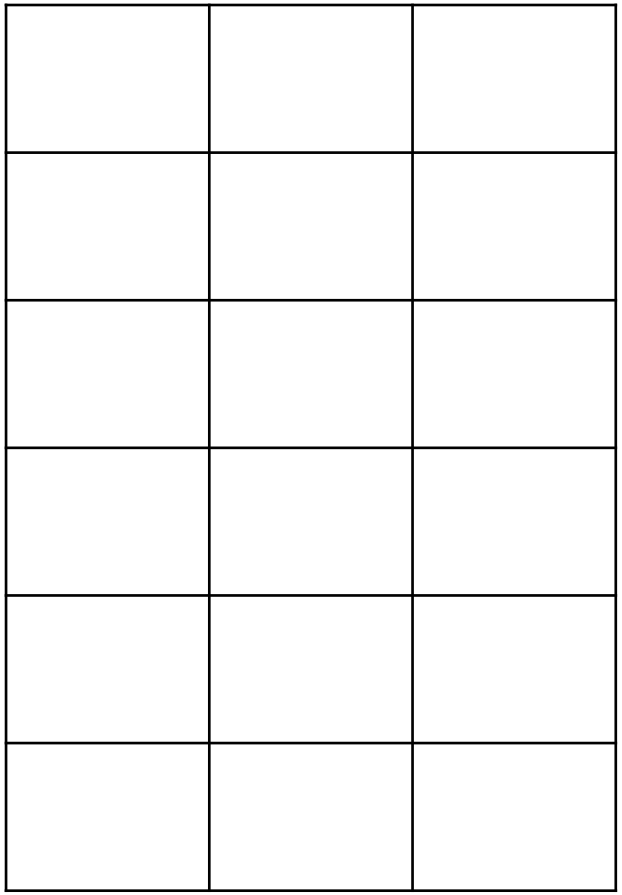


`group_by()`: set up groupings



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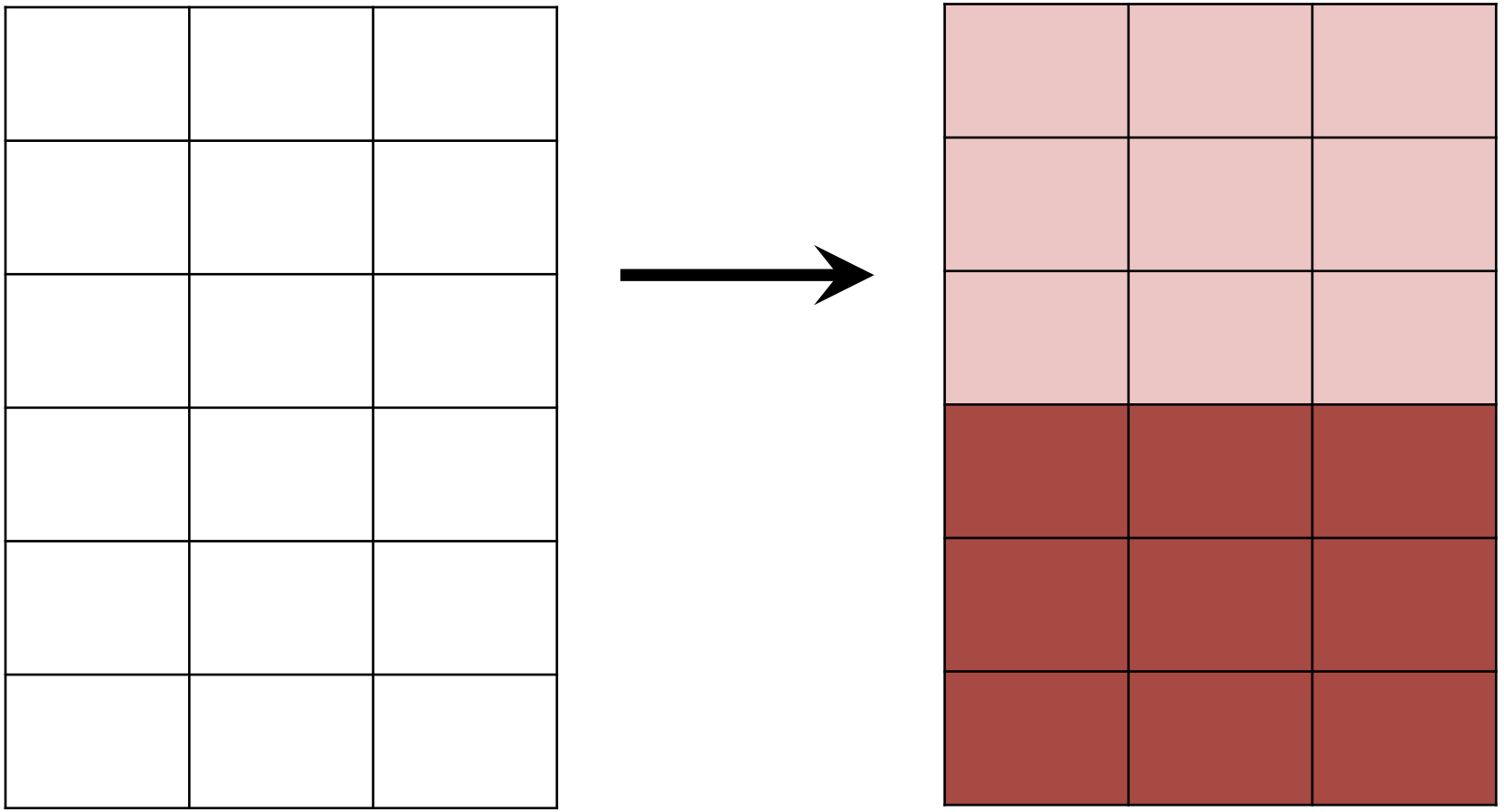
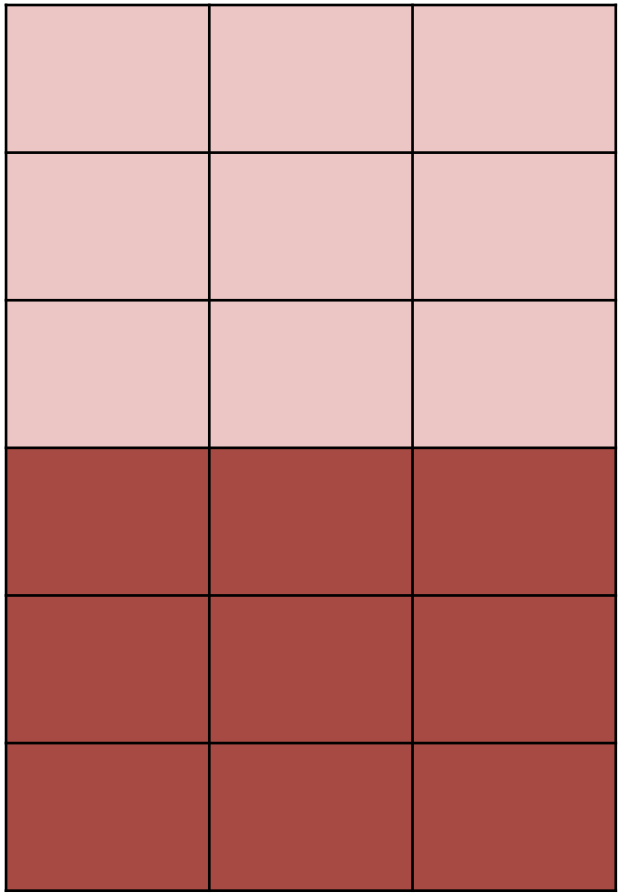


`summarize()`: collapse multiple rows



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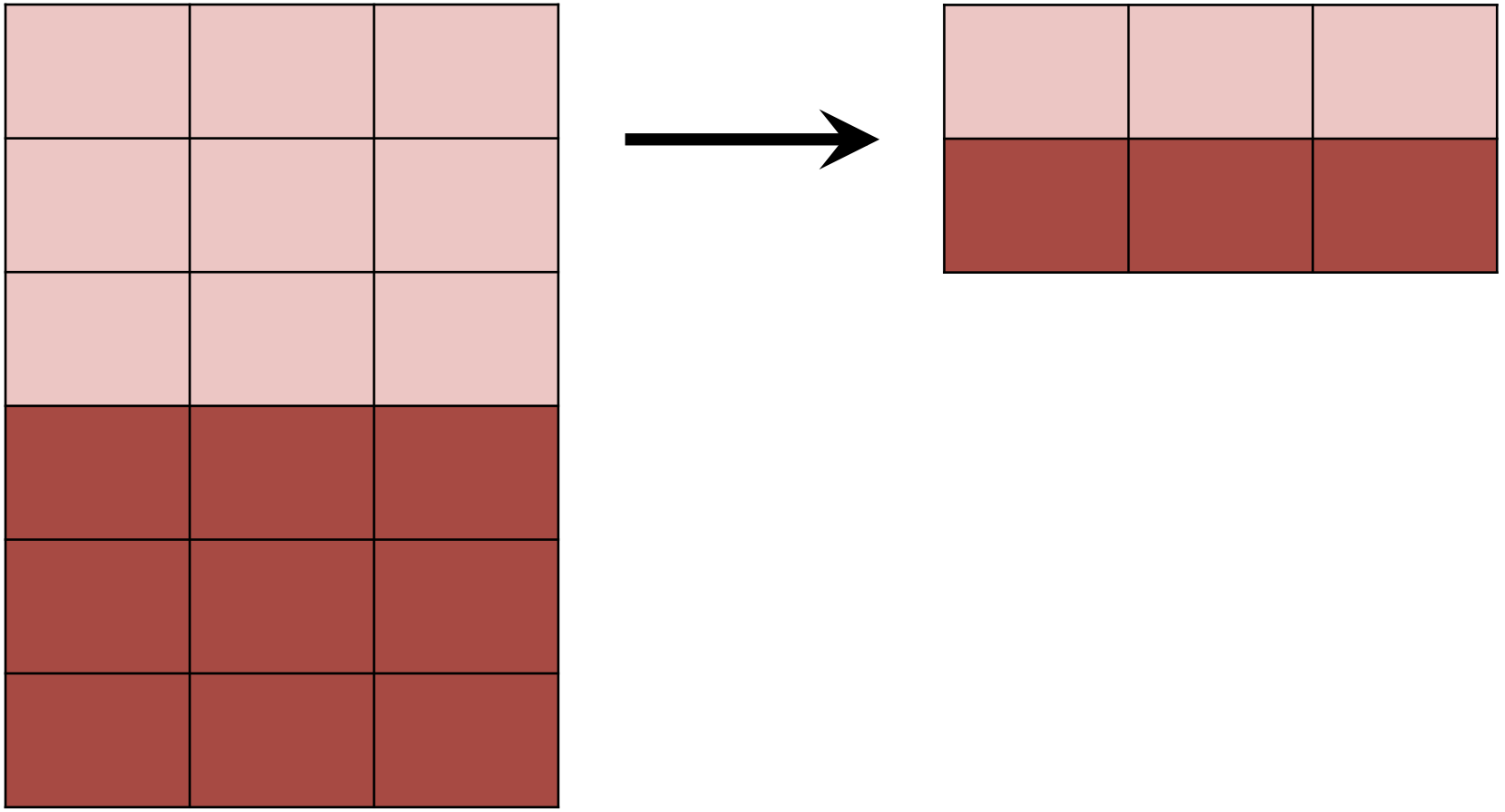
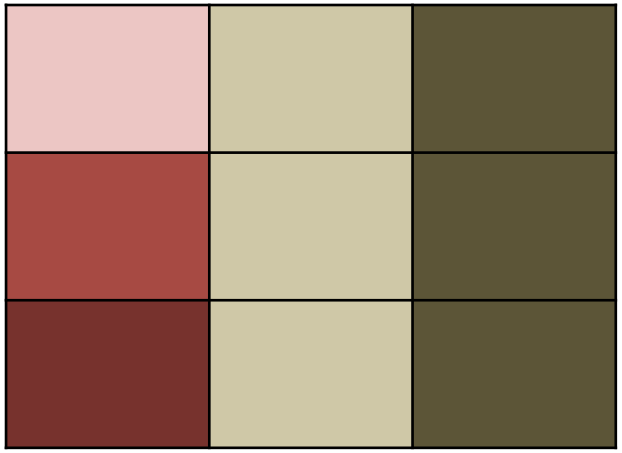
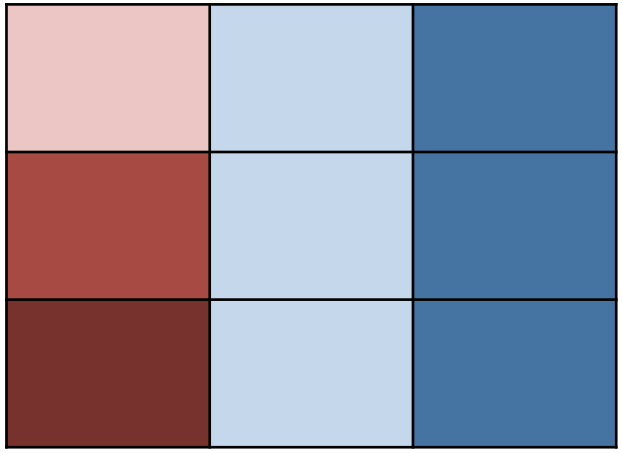


`left_join()`: combine two tables





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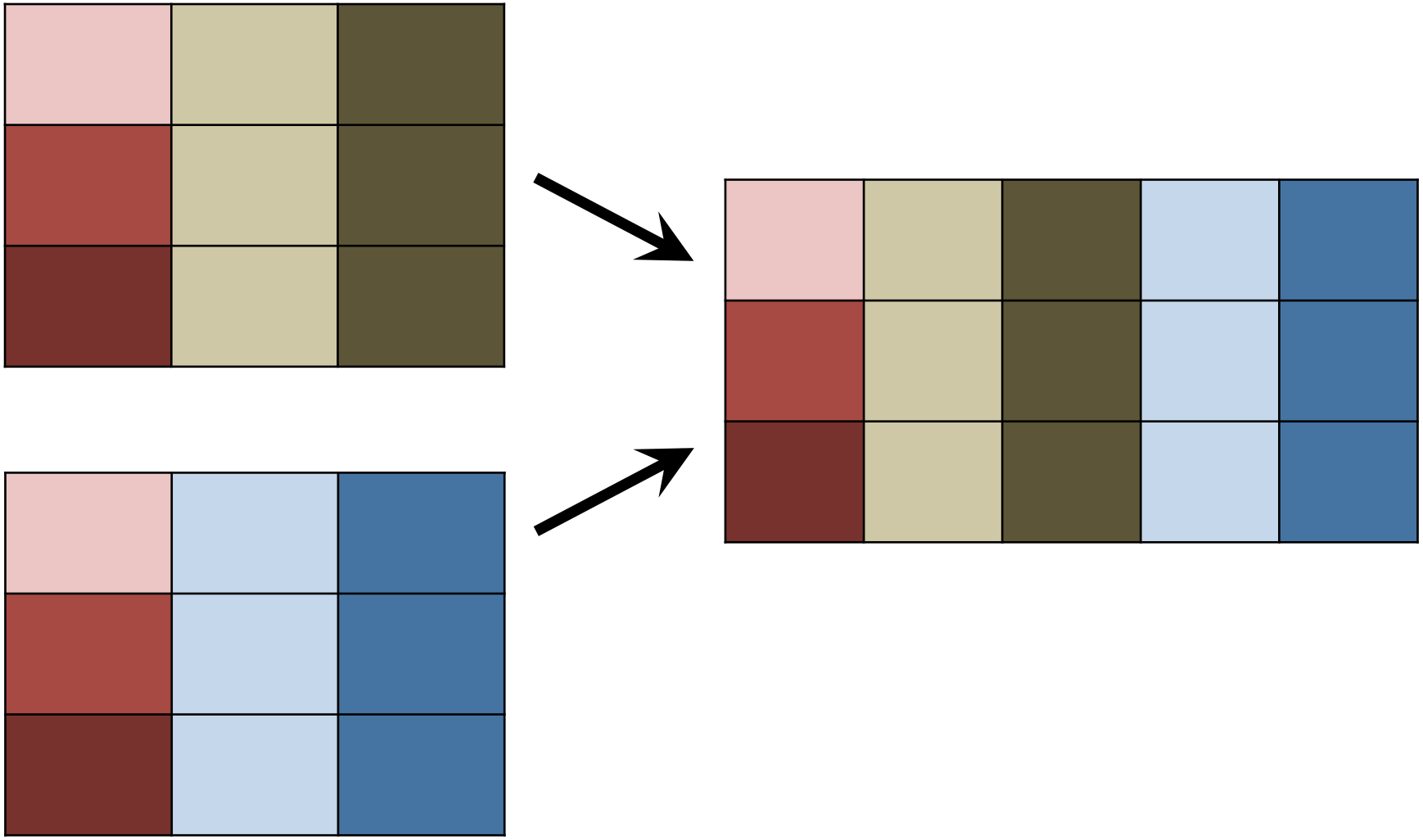

dplyr example 1: What is total day time for each animal in `msleep`?

```
> msleep
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> msleep %>%
    mutate(total_day_time = awake + sleep_total) %>%
    select(name, total_day_time)
```

dplyr example 1: What is total day time for each animal in `msleep`?

```
> msleep %>%
    mutate(total_day_time = awake + sleep_total) %>%
    select(name, total_day_time)
                                  name total_day_time
1                             Cheetah           24.00
2                           Owl monkey           24.00
3                      Mountain beaver           24.00
4        Greater short-tailed shrew           24.00
5                                 Cow           24.00
6                   Three-toed sloth           24.00
7                  Northern fur seal           24.00
8                       Vesper mouse           24.00
9                                 Dog           24.00
10                          Roe deer           24.00
```

dplyr example 2: What is the median awake time of different orders in `msleep`?

```
> msleep
```

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```
> msleep %>% group_by(order)
```

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> msleep %>% group_by(order) %>%
    summarize(med_awake=median(awake))
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```
> msleep %>% group_by(order) %>%
    summarize(med_awake=median(awake)) %>%
    arrange(med_awake)
```

dplyr example 2: What is the median awake time of different orders in `msleep`?

```
> msleep %>% group_by(order) %>%
    summarize(med_awake=median(awake)) %>%
    arrange(med_awake)
Source: local data frame [19 x 2]

             order med_awake
1        Chiroptera      4.20
2  Didelphimorphia      5.30
3         Cingulata      6.25
4     Afrosoricida      8.40
5            Pilosa      9.60
6          Rodentia     11.10
7    Diprotodontia     11.60
8     Soricomorpha     13.70
9        Carnivora     13.75
10  Erinaceomorpha     13.80
```

dplyr example 3: Joining tables

Let’s extract two tables from msleep:

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Let's extract two tables from msleep:

```
> order_table <- select(msleep, name, order)
> order_table
                                  name           order
1                              Cheetah       Carnivora
2                           Owl monkey        Primates
3                         Mountain beaver       Rodentia
4      Greater short-tailed shrew    Soricomorpha
5                                  Cow    Artiodactyla
6                       Three-toed sloth          Pilosa
7                     Northern fur seal       Carnivora
8                          Vesper mouse       Rodentia
9                                  Dog       Carnivora
10                            Roe deer    Artiodactyla
```

dplyr example 3: Joining tables

Let's extract two tables from msleep:

```
> awake_table <- select(msleep, name, awake)
> awake_table
                                    name awake
1                                Cheetah 11.90
2                            Owl monkey  7.00
3                         Mountain beaver  9.60
4      Greater short-tailed shrew  9.10
5                                    Cow 20.00
6                      Three-toed sloth  9.60
7                    Northern fur seal 15.30
8                         Vesper mouse 17.00
9                                    Dog 13.90
10                            Roe deer 21.00
```

dplyr example 3: Joining tables

And put them back together:

```
> left_join(order_table, awake_table)
```

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And put them back together:

```
> left_join(order_table, awake_table)
Joining by: "name"
                                  name          order awake
1                              Cheetah      Carnivora 11.90
2                           Owl monkey       Primates  7.00
3                       Mountain beaver       Rodentia  9.60
4      Greater short-tailed shrew    Soricomorpha  9.10
5                                  Cow    Artiodactyla 20.00
6                    Three-toed sloth         Pilosa  9.60
7                   Northern fur seal      Carnivora 15.30
8                        Vesper mouse       Rodentia 17.00
9                                  Dog      Carnivora 13.90
10                           Roe deer    Artiodactyla 21.00
```