Fundamental actions on data tables:

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

- choose rows — `filter()`
- choose columns — `select()`
- make new columns — `mutate()`
- arrange rows — `arrange()`
- calculate summary statistics — `summarize()`
- work on groups of data — `group_by()`
- combine tables — `left_join()`, ...
left_join(): combine two tables
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Example: Joining tables

Let’s extract two tables from `msleep`:
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```r
> 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
```
Example: Joining tables

Let’s extract two tables from `msleep`:

```r
> 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
```
Example: Joining tables

And put them back together:

```r
> left_join(order_table, awake_table)
```
Example: Joining tables

And put them back together:

```> left_join(order_table, awake_table)
Joining by: "name"
```

<table>
<thead>
<tr>
<th>name</th>
<th>order</th>
<th>awake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheetah</td>
<td>Carnivora</td>
<td>11.90</td>
</tr>
<tr>
<td>Owl monkey</td>
<td>Primates</td>
<td>7.00</td>
</tr>
<tr>
<td>Mountain beaver</td>
<td>Rodentia</td>
<td>9.60</td>
</tr>
<tr>
<td>Greater short-tailed shrew</td>
<td>Soricomorpha</td>
<td>9.10</td>
</tr>
<tr>
<td>Cow</td>
<td>Artiodactyla</td>
<td>20.00</td>
</tr>
<tr>
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<tr>
<td>Dog</td>
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<td>13.90</td>
</tr>
<tr>
<td>Roe deer</td>
<td>Artiodactyla</td>
<td>21.00</td>
</tr>
</tbody>
</table>
left_join(): missing values in 2\textsuperscript{nd} table are set to NA
`left_join()`: missing values in 2\textsuperscript{nd} table are set to NA
left_join(): values from 2\textsuperscript{nd} table are duplicated where necessary
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Several different join functions are available

- `left_join()`
- `right_join()`
- `inner_join()`
- `semi_join()`
- `full_join()`
- `anti_join()`