Learning Goals

- Distinguish between matrices, dataframes, and lists in R and describe when each is appropriate.
- Create and index two-dimensional data structures using row–column notation in addition to extracting, adding, and removing columns or rows from a dataframe.
- Filter dataframes using logical conditions.
- Access elements of a list using indices and names.

Key Definitions / Functions

- **Matrix:**
- **Dataframe:**
- **List:**
- `str()`:
- **Index selection** `[row, column]`**:**
- `rbind()` / `cbind()`:
- `names()`:

Practice Problems

For each task below, write the R code you would use *and* briefly describe what you expect the output to look like.

1. A dataframe called `employees` contains the columns `name`, `department`, and `salary` in that order. Write the code to display only the `salary` column using 2 different methods.

2. Using the same `employees` dataframe, write code to display only employees who earn more than $60,000.

3. Explain in words what the following line of code is doing. Incorporate both the rows and columns in your explanation (if applicable):

   ```
   employees[employees$department == "IT" & employees$salary >= 75000 , ]
   ```

4. A list named `class_info` contains several items, including a dataframe called `students`. Write the code to extract the `students` dataframe from the list, and explain what would happen if you used single brackets instead of double brackets.