

# Exercise 1: Beautiful Tables with knitr::kable()

Beamer Presentation Practice - SOLUTIONS

Solution Guide

# Introduction

# Exercise Overview

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- Create a professional Beamer presentation
- Format tables using `knitr::kable()` and `kableExtra`
- Apply incremental reveals and pauses
- Use multiple column layouts
- Add callout blocks and formatting

# Dataset

We'll use the `mtcars` dataset to demonstrate various table formatting techniques.



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**Task:** Load the necessary packages and prepare the data.

```
# Load required packages
library(knitr)
library(kableExtra)
library(dplyr)

# Preview the data
head(mtcars, 3)
```

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear
Mazda RX4	21.0	6	160	110	3.90	2.620	16.46	0	1	4
Mazda RX4 Wag	21.0	6	160	110	3.90	2.875	17.02	0	1	4
Datsun 710	22.8	4	108	93	3.85	2.320	18.61	1	1	4

## Basic Tables

## Task 1: Simple Table - Solution

Create a basic table showing the first 6 rows of `mtcars` with only these columns: `mpg`, `cyl`, `disp`, `hp`.

Table 1: Motor Trend Car Road Tests

	mpg	cyl	disp	hp
Mazda RX4	21.0	6	160	110
Mazda RX4 Wag	21.0	6	160	110
Datsun 710	22.8	4	108	93
Hornet 4 Drive	21.4	6	258	110
Hornet Sportabout	18.7	8	360	175
Valiant	18.1	6	225	105

## Task 2: Formatted Column Names - Solution

Improve the table from Task 1 with better column names and formatting:

Table 2: Motor Trend Car Road Tests

	Miles/gallon	Cylinders	Displacement	Horsepower
Mazda RX4	21.0	6	160	110
Mazda RX4 Wag	21.0	6	160	110
Datsun 710	22.8	4	108	93
Hornet 4 Drive	21.4	6	258	110
Hornet Sportabout	18.7	8	360	175
Valiant	18.1	6	225	105

## Advanced Formatting

## Task 3: Grouped Data Summary - Solution

Create a summary table showing average mpg by cylinders:

Table 3: Fuel Efficiency by Cylinder Count

Cylinders	Count	Avg MPG	SD
4	11	26.66	4.51
6	7	19.74	1.45
8	14	15.10	2.56

## Task 4: Conditional Formatting - Solution

Create a table with conditional formatting:

Table 4: Cars with Conditional Highlighting

	MPG	Horsepower	Weight
Mazda RX4	21.0	110	2.6
Mazda RX4 Wag	21.0	110	2.9
Datsun 710	22.8	93	2.3
Hornet 4 Drive	21.4	110	3.2
Hornet Sportabout	18.7	175	3.4
Valiant	18.1	105	3.5
Duster 360	14.3	245	3.6
Merc 240D	24.4	62	3.2

*Note:*

Green rows indicate  $\text{MPG} > 25$

## Multi-Column Layouts



## Task 5: Side-by-Side Comparison - Solution

Create two tables side by side:

Automatic Transmission

Count	Avg MPG	Avg HP
19	17.1	160.3

Manual Transmission

Count	Avg MPG	Avg HP
13	24.4	126.8

## Challenge Tasks

## Task 6: Complex Table Styling - Solution

Table 7: Vehicle Performance Metrics

	Engine			Performance		
	mpg	cyl	disp	hp	wt	qsec
Mazda RX4	21.0	6	160	110	2.6	16.5
Mazda RX4 Wag	21.0	6	160	110	2.9	17.0
Datsun 710	22.8	4	108	93	2.3	18.6
Hornet 4 Drive	21.4	6	258	110	3.2	19.4
Hornet Sportabout	18.7	8	360	175	3.4	17.0

## Task 7: Top Performers Table - Solution

Table 8: Top 5 Most Fuel-Efficient Cars

	Rank	MPG	Cyl	HP	Weight
<b>Toyota Corolla</b>	<b>1</b>	<b>33.9</b>	<b>4</b>	<b>65</b>	<b>1.8</b>
Fiat 128	2	32.4	4	66	2.2
Honda Civic	3	30.4	4	52	1.6
Lotus Europa	4	30.4	4	113	1.5
Fiat X1-9	5	27.3	4	66	1.9

## Bonus Challenge

## Task 8: Incremental Table - Solution

Table 9: Step 1 - Car Names and MPG

Car	mpg
Toyota Corolla	33.9
Fiat 128	32.4
Honda Civic	30.4
Lotus Europa	30.4
Fiat X1-9	27.3

## Task 8: Incremental Table - Solution

Table 10: Step 2 - Add Performance Metrics

Car	mpg	hp	qsec
Toyota Corolla	33.9	65	19.9
Fiat 128	32.4	66	19.5
Honda Civic	30.4	52	18.5
Lotus Europa	30.4	113	16.9
Fiat X1-9	27.3	66	18.9

## Task 8: Incremental Table - Solution

Table 11: Step 3 - Add Weight and Summary Row

Car	mpg	hp	qsec	wt
Toyota Corolla	33.9	65.0	19.9	1.8
Fiat 128	32.4	66.0	19.5	2.2
Honda Civic	30.4	52.0	18.5	1.6
Lotus Europa	30.4	113.0	16.9	1.5
Fiat X1-9	27.3	66.0	18.9	1.9
<b>Average</b>	<b>30.9</b>	<b>72.4</b>	<b>18.7</b>	<b>1.8</b>



Wrap Up

# Summary

Today you practised:

- Basic table creation with `knitr::kable()`
- Advanced formatting with `kableExtra`
- Conditional formatting and styling
- Multi-column table layouts
- Integrating tables into Beamer presentations

# Tips for Success

## Do's

- Keep tables simple and readable
- Use appropriate decimal places
- Add meaningful captions
- Align numbers consistently

## Don'ts

- Avoid cluttered tables
- Don't use too many colours
- Avoid tiny font sizes
- Don't overuse borders