Alright Riyad 👍 I'll teach you **LaTeX tables from absolute scratch**, slowly, clearly, and with intuition. No slide-copying. You'll *feel* what's happening.

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1 First idea: What is a LaTeX table?

A table in LaTeX has **two layers**:

1. `tabular` → draws rows & columns (MOST IMPORTANT)
2. `table` → floating container (caption, label, positioning)

👉 You can use `tabular` **alone** when learning. 👉 `table` is optional.

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2 The simplest possible table (start here)

```
\begin{tabular}{c c c}
A & B & C \\
1 & 2 & 3 \\
4 & 5 & 6
\end{tabular}
```

🔍 Understand this line-by-line

`{c c c}`

This defines **columns**.

- `c` → center aligned column
- 3 times `c` → 3 columns

Think:

> "I want 3 vertical boxes, centered"

`&` → **column separator**

`\\` → **end of row**

So:

```
  A & B & C \\   % row 1
  1 & 2 & 3 \\   % row 2
```

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3 Add borders (this is what people usually want)

```
\begin{tabular}{|c|c|c|}
\hline
A & B & C \\
\hline
1 & 2 & 3 \\
\hline
4 & 5 & 6 \\
\hline
\end{tabular}
```

New things:

- `|` → vertical line
- `\hline` → horizontal line

📌 Visual rule:

- `|` → vertical borders
- `\hline` → horizontal borders

4 Column alignment types (VERY IMPORTANT)

Symbol	Meaning
l	left aligned
c	centered
r	right aligned

Example:

```
\begin{tabular}{|l|c|r|}
\hline
Name & Age & GPA \\
\hline
Riyad & 23 & 3.75 \\
Nabi & 22 & 3.60 \\
\hline
\end{tabular}
```

5 Column headers (bold)

```
\textbf{Name} & \textbf{Age} & \textbf{GPA}
```

Full example:

```
\begin{tabular}{|c|c|c|}
\hline
\textbf{Name} & \textbf{Age} & \textbf{GPA} \\
\hline
Riyad & 23 & 3.75 \\
\hline
\end{tabular}
```

6 The `table` environment (caption + numbering)

Now we wrap `tabular` inside `table`.

```
\begin{table}[h]
\centering
\caption{Student Information}
\begin{tabular}{|c|c|c|}
\hline
Name & Age & GPA \\
\hline
Riyad & 23 & 3.75 \\
\hline
\end{tabular}
\end{table}
```

New things:

- `[h]` → place table **here**
- `\centering` → center table
- `\caption{}` → table title

7 Common beginner mistakes (you MUST know)

✘ Forgetting `\\`

```
A & B & C    % WRONG
```

✖ Extra &

```
A & B & C & \\   % WRONG
```

Rule:

> Number of & = columns − 1

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8 Merging columns (`\multicolumn`) — basic

```
\multicolumn{2}{c}{Total}
```

Example:

```
\begin{tabular}{|c|c|c|}
\hline
Name & Marks & Grade \\
\hline
Riyad & \multicolumn{2}{c|}{85 (A)} \\
\hline
\end{tabular}
```

Meaning:

> Merge 2 columns, center text, keep right border

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9 Mental model (remember this forever)

Think of tables like this:

```
|  cell  |  cell  |  cell  |
    &        &        \\
```

- & → move right
- \\ → go down

💧 Your practice task (DO THIS)

Create a table with:

- 3 columns: **Course | Code | Grade**
- At least 3 rows
- Borders
- Caption

Write it, paste it here, and I'll **correct it line by line** like a real teacher.

Next lesson (if you want):

- column width control (`p{}`)
- row spacing
- professional tables (`booktabs`)
- long tables (multiple pages)

Your move 💪