

## ✓ Task 11: A/B Testing – Hypothesis Testing in Python

### Tools:

- Primary: Google Colab
- Libraries: pandas, numpy, scipy
- Alternative: Excel basic t-test

### Dataset:

- Marketing A/B Testing Dataset
- E-commerce conversion dataset

### Hints / Mini Guide:

1. Load dataset and identify control vs test groups.
2. Define hypothesis ( $H_0$ ,  $H_1$ ) and  $\alpha = 0.05$ .
3. Calculate group conversion/mean metrics.
4. Choose test (t-test / chi-square based on metric).
5. Run test and extract p-value.
6. Interpret significance based on p-value.
7. Calculate confidence interval for difference.
8. Visualize group distributions.
9. Write final decision and business recommendation.

### Deliverables:

- task11\_abtest.ipynb
- ab\_test\_summary.csv
- final\_recommendation.txt

### Final Outcome:

- ✓ Ability to make data-driven product decisions.

### Interview Questions Related To Above Task:

- What is p-value?
- Statistical vs business significance?
- When to use chi-square?
- What is confidence interval?
- What is Type I error?

## 📌 Task Submission Guidelines

- 🕒 **Time Window:**

You can complete the task anytime between 10:00 AM to 10:00 PM on the given day. Submission link closes at 10:00 PM

- 🔍 **Self-Research Allowed:**

You are free to explore, Google, or refer to tutorials to understand concepts and complete the task effectively.

- 🔧 **Debug Yourself:**

Try to resolve all errors by yourself. This helps you learn problem-solving and ensures you don't face the same issues in future tasks.

- 💰 **No Paid Tools:**

If the task involves any paid software/tools, do not purchase anything. Just learn the process or find free alternatives.

- 📁 **GitHub Submission:**

Create a new GitHub repository for each task.

Add everything you used for the task — code, datasets, screenshots (if any), and a short README.md explaining what you did.

- 📤 **Submit Here:**

After completing the task, paste your GitHub repo link and submit it using the link below:

- 👉 [[Submission Link](#)]

Best  
of  
Luck

