



# Applications Development and Emerging Technologies

## ACTIVITY 1: Sales Data Analysis and Visualization

### Introduction

As a data analyst at Retail Insights, your task is to analyze and visualize sales data to provide meaningful insights to the management team. Using Python's pandas library for data manipulation and matplotlib for data visualization, this exercise will help you develop essential skills in data analysis and visualization, crucial for making data-driven decisions in a retail environment.

### Objective

This activity aims to assess students on:

- Loading, cleaning, analyzing, and visualizing sales data using the pandas library for data manipulation and matplotlib for data visualization.
- Skills in extracting insights from data and presenting them in a meaningful way.

### Materials

- Computer with internet access
- Text editor (e.g., Notepad++, Sublime Text, VS Code)

### Scenario

You are a data analyst at a retail company called "Retail Insights". The company has provided you with a sales dataset and tasked you with analyzing the data to generate insights and visualizations for a report to be presented to the management team. Your analysis will help the company understand sales trends, top-performing products, and overall sales performance.

### Dataset

Use the attached CSV dataset (SalesDataCSV.csv) containing information about sales transactions. The dataset should have columns like **Order ID**, **Date**, **Product**, **Category**, **Quantity**, **Price**, and **Total**.

### Tasks

#### 1. Load the Dataset

- Use pandas to load the CSV file into a DataFrame.
- Display the first few rows of the DataFrame to understand its structure.



# Applications Development and Emerging Technologies

## 2. Explore and Clean the Dataset

- Handle missing values (e.g., fill with mean, drop rows/columns).
- Correct any data inconsistencies (e.g., fix typos, strip extra spaces).

## 3. Data Analysis and Manipulation

- Calculate total sales for each product.
- Determine the top 5 products with the highest sales.

## 4. Data Visualization

- Create a bar chart to show total sales for each product.
- Create a line chart to show monthly sales trend.
- Add titles, labels, and legends to the plots.

## 5. Generate a Report

- Summarize your findings in a report (e.g., using the interactive python notebook).
- Include visualizations and key insights in the report.

## Submission and Evaluation

1. Upload your **interactive python notebook** file to the Google form provided. This activity is set to be performed **independently**.
2. For ease of tracking, the naming conventions for this laboratory will be **[CourseCode]\_[Section]\_Act1\_[StudentA'sSurnameFN].ipynb**. For example, **IT322\_BSIT3C\_Act1\_DelaCruzJ.py**

## ACTIVITY CRITERIA

COMPONENT	DESCRIPTION	POINTS
<b>Objective Alignment</b>		<b>10 POINTS</b>
Clear Objectives	The activity's objectives are clearly stated and easy to understand.	5 points
Relevance to Learning Goals	The activity directly supports and enhances the learning objectives.	5 points
<b>Content Quality</b>		<b>15 POINTS</b>
Accuracy	The information provided is accurate and reliable.	5 points
Depth	The content is thorough and covers the topic comprehensively.	5 points
Relevance	The content is highly relevant to the topic and objectives.	5 points
<b>Use of Tools/Resources</b>		<b>10 POINTS</b>
Effective Usage	Tools and resources are used effectively to enhance the learning experience.	5 points
Appropriateness	The chosen tools and resources are appropriate for the activity and audience.	5 points
<b>Creativity and Originality</b>		<b>15 POINTS</b>
Creativity	The activity shows creativity and innovative approaches.	5 points



Republic of the Philippines  
**BOHOL ISLAND STATE UNIVERSITY**  
Magsija, Balilihan, 6342, Bohol, Philippines  
Office of the College of Computing and Information Sciences  
*Balance | Integrity | Stewardship | Uprightness*



## Applications Development and Emerging Technologies

Engagement	The activity is engaging and captures participants' interest.	5 points
Originality	The activity is original and demonstrates unique ideas.	5 points
<b>TOTAL</b>		<b>50 POINTS</b>

### Deadline and Other Details

**Deadline:** January 31, 2025, at 11:59 pm

**Independent Submission:** Each student must submit their own file through the provided Google form.

**Who:** BSIT 3C students, taking up the IT 322 course