OFFICE AUTOMATION

EXCEL ASSIGNMENT # 1

SEPTEMBER 15, 2025

PUNJAB INSTITUTE OF COMPUTER & TECHNOLOGY - PICT

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CONTENTS

General Instructions (Excel Professional Assignments)

Dear Students,

Prepare records in excel as per requirement / mention against each assignment; datasets containing **Customer, Employee, Product, Sales, Finance, Marketing, and IT Logs** fields. Your task is to perform **data preparation, analysis, reporting, and visualization** using **Microsoft Excel**.

1. File Handling & Setup

- File name should be StudentName_PICT_2025_Data.xlsx or .csv).
- Always **create a copy** of the original dataset before starting work.
- Maintain **one workbook per assignment** with separate worksheets for:
    1. Raw Data (unmodified copy)
    2. Cleaned Data (after removing duplicates, blanks, formatting)
    3. Calculations (formula-based solutions)
    4. Report/Dashboard (final output with charts, tables, and insights)

2. Data Cleaning & Preparation

- Remove duplicates using Remove Duplicates tool.
- Handle blank/missing data using:
    - IFERROR()
    - IFNA()
    - Replace with averages (AVERAGE()) or zero.
- Standardize data:
    - Convert text to proper case (PROPER())
    - Remove extra spaces (TRIM())
    - Clean unwanted characters (CLEAN())

3. Formulas & Functions to Use

In every assignment, make sure to apply as many formulas as possible:

- **Lookup & Reference**: VLOOKUP(), INDEX(), MATCH(), CHOOSE()
- **Logical**: IF(), IFS(), AND(), OR(), NOT()
- **Text**: LEFT(), RIGHT(), MID(), LEN(), TEXT(), SEARCH(), FIND(), CONCATENATE(), TEXTJOIN()
- **Date & Time**: TODAY(), NOW(), YEAR(), MONTH(), DAY(), WEEKDAY(), EDATE()
- **Math & Stats**: SUM(), SUMIF(), SUMIFS(), COUNT(), COUNTA(), COUNTIF(), COUNTIFS(), ROUND(), ROUNDUP(), ROUNDDOWN(), RAND(), RANDBETWEEN()
- **Error Handling**: IFERROR(), ISNUMBER()

4. Pivot Tables & Charts

- Create **PivotTables** for summarizing data (Sales by Region, Employee Performance, Product Profitability, etc.).
- Apply **Slicers** and **Timelines** for interactive reports.

5. Report & Dashboard Building

- Every assignment must have a **final dashboard/report** with:
    - Clean headings & formatting
    - At least 2 charts (Column/Line/Pie)
    - At least 1 PivotTable summary
    - KPIs (Total Sales, Average Profit, Top 5 Products, Employee Attendance Rate)
- Use **conditional formatting** (color scales, icon sets, data bars) to highlight important insights.

6. Submission Guidelines

- Save your work as:
  StudentName_PICT_2025_AssignmentNo.xlsx (e.g., AliKhan_PICT_2025_1.xlsx)
- Ensure your workbook includes:
    - Cleaned Data sheet
    - Calculations sheet with formulas (do NOT paste only values)
    - Final Report/Dashboard sheet
- Submit via the email "info@punjabict.com"

7. Evaluation Criteria

Your assignments will be graded on:
✅ Correct use of formulas
✅ Data cleaning & preparation
✅ Creativity in report/dashboard design
✅ Accuracy of calculations
✅ Professional formatting (Readability, Headings, Color Coding, Standard Size, Professional steps)

8. Best Practices

- Use **absolute references (A1)** wherever necessary.
- Format numbers (Currency, % values, Dates) properly.
- Use **named ranges** for easier formula writing.
- Keep your dashboard **minimalistic but informative**.
- Always **double-check calculations** with manual logic.

Each assignment includes:

- 🎯 **Objective**
- 📂 **Fields to Use**
- 📝 **Tasks**
- 📊 **Formulas/Functions Required**
- 📂 **Complete documentation (if required)**

ASSIGNMENTS

1. Customer Age Group Analysis

- **Fields**: Name, Age, Gender, City, Region
- **Tasks**:
    1. Create Age Groups: <25, 25–40, 41–60, >60.
    2. Count customers per group.
    3. Show distribution in Pivot Table & Bar Chart.
- **Formulas**:
    - =IF(Age<25,"<25",IF(Age<=40,"25-40",IF(Age<=60,"41-60",">60")))
    - COUNTIF, COUNTIFS, ROUND, TEXT

2. Employee Salary Analysis

- **Fields**: Employee Name, Department, Salary, Bonus %
- **Tasks**:
    1. Calculate **Total Salary = Salary + (Salary×Bonus%)**.
    2. Rank employees by total salary within each department.
    3. Compare Salary vs Bonus using Pivot Chart.
- **Formulas**:
    - =Salary + (Salary*Bonus%)
    - VLOOKUP, IFERROR

3. Monthly Sales Trend

- **Fields**: Sale Date, Total Amount, Channel
- **Tasks**:
    1. Extract **Month & Year** from Sale Date.
    2. Summarize sales per month.
    3. Compare Online vs Offline sales trend.
- **Formulas**:
    - =TEXT(Sale Date,"MMM-YYYY")
    - SUMIFS, IF, MONTH, YEAR

4. Profitability Report

- **Fields**: Product Name, Cost Price, Sale Price, Quantity
- **Tasks**:
  1. Calculate **Profit per unit & Total Profit**.
  2. Highlight products with negative profit.
  3. Find **Top 10 profitable products**.
- **Formulas**:
  - =Sale Price – Cost Price
  - =Profit Per Unit*Quantity
  - LARGE, INDEX+MATCH, IF

5. Customer Retention Check

- **Fields**: Customer ID, Sale Date, Total Amount
- **Tasks**:
  1. Find **Last Purchase Date per Customer**.
  2. Mark customers with >6 months inactivity as “Churned”.
  3. Create Churn % report.
- **Formulas**:
  - =MAXIFS(SaleDate,CustomerID,[CustomerID])
  - =IF(TODAY()- Last Purchase Date>180,"Churned","Active")
  - COUNTIF, AVERAGEIF

6. Campaign ROI Report

- **Fields**: Campaign Name, Leads, Conversion Rate, Budget Allocated, Budget Used
- **Tasks**:
  1. Calculate **Effective Leads = Leads × Conversion Rate**.
  2. Compute **ROI = (Revenue – Budget Used)/Budget Used**.
  3. Rank campaigns by ROI.
- **Formulas**:
  - =Leads * Conversion Rate
  - =(Revenue-Budget Used)/Budget Used
  - RANK, IFERROR

7. Financial Statement Check

- **Fields**: Debit, Credit, Net Balance
- **Tasks**:
  1. Verify Debit – Credit = Net Balance.
  2. Highlight mismatches.
  3. Prepare total Debit, Credit, Balance by Account Type.
- **Formulas**:
  - =IF(Debit-Credit=Net Balance,"OK","Error")
  - SUMIFS, IF, ROUND

8. Low Stock Alert

- **Fields**: Product ID, Product Name, Quantity, Reorder Level
- **Tasks**:
    1. Mark products below reorder level.
    2. Count total products needing reorder.
    3. Create Stock Status Dashboard.
- **Formulas**:
    - =IF(Quantity<Reorder Level,"Reorder","OK")
    - COUNTIF, CONCATENATE

9. Employee Attendance Report

- **Fields**: Employee Name, Attendance Days
- **Tasks**:
    1. Calculate Attendance % = Attendance Days/365.
    2. Categorize employees as Excellent (>95%), Good (85–95%), Poor (<85%).
    3. Display summary in Pivot Table.
- **Formulas**:
    - =Attendance Days/365
    - =IF(Attendance%>=0.95,"Excellent",IF(Attendance%>=0.85,"Good","Poor"))

10. Discount & Tax Calculation

- **Fields**: Unit Price, Quantity, Discount %, Tax %
- **Tasks**:
    1. Calculate Final Price after Discount & Tax.
    2. Find total tax collected per region.
    3. Create Sales vs Discount chart.
- **Formulas**:
    - =(UnitPrice*Quantity*(1-Discount%))*(1+Tax%)
    - SUMIFS, IF, ROUND

11. Customer Lifetime Value

- **Fields**: Customer ID, Total Amount
- **Tasks**:
    1. Sum all sales per customer.
    2. Rank top 20 customers by revenue.
    3. Create Pareto Chart (80/20 rule).
- **Formulas**:
    - SUMIFS, RANK, PERCENTILE

12. Regional Sales Analysis

- **Fields**: Region, Total Amount
- **Tasks**:
    1. Compare sales per region.
    2. Compute Market Share % = Region Sales / Total Sales.
    3. Display in Pie Chart.
- **Formulas**:
    - =Region Sales/Total Sales
    - SUMIFS, IF

13. Salary vs Performance Study

- **Fields**: Salary, Performance Score
- **Tasks**:
    1. Compute Salary per Performance Point.
    2. Plot scatter with trendline.
    3. Find correlation.
- **Formulas**:
    - =Salary/Performance Score
    - CORREL, TREND

14. Multi-Currency Conversion

- **Fields**: Total Amount, Country
- **Tasks**:
    1. Convert sales to USD using given rates.
    2. Compare Pakistan vs International sales.
- **Formulas**:
    - =IF(Country="Pakistan", Amount/280,Amount)
    - VLOOKUP (for exchange rates table)

15. Duplicate Transaction Check

- **Fields**: Transaction ID
- **Tasks**:
    1. Identify duplicate IDs.
    2. Count duplicate transactions.
- **Formulas**:
    - =COUNTIF(TransactionIDRange,[@TransactionID])>1

16. IT Session Analysis

- **Fields**: Login Time, Logout Time, Failed Logins
- **Tasks**:
    1. Calculate session duration.
    2. Flag users with >3 failed logins.
- **Formulas**:
    - =Logout Time-Login Time
    - =IF(Failed Logins>3,"Security Alert","OK")

17. Category Contribution

- **Fields**: Category, Total Amount
- **Tasks**:
    1. Compute % contribution of each category.
    2. Show stacked column chart.
- **Formulas**:
    - =Category Sales/ Total Sales
    - SUMIFS, ROUND

18. Department Budget Variance

- **Fields**: Department, Salary, Budget Allocated
- **Tasks**:
    1. Compare actual salary cost vs budget.
    2. Show departments over budget.
- **Formulas**:
    - =Salary Cost – Budget Allocated
    - IF, ABS, ROUND

19. Payment Method Analysis

- **Fields**: Payment Method, Total Amount
- **Tasks**:
    1. Find most used method.
    2. Compare sales per payment method.
- **Formulas**:
    - SUMIFS

20. Forecasting Sales

- **Fields**: Sale Date, Total Amount
- **Tasks**:
    1. Use FORECAST.LINEAR to predict next 6 months.
- **Formulas**:
    - =FORECAST.LINEAR(New Month, KnownY, KnownX)

21. Promotion Eligibility

- **Fields**: Performance Score, Attendance Days
- **Tasks**:
    - If Performance ≥8 & Attendance ≥300 → Eligible.
- **Formulas**:
    - =IF(AND(Performance>=8,Attendance>=300),"Eligible","Not Eligible")

22. Loyalty Index

- **Fields**: Membership Level, Total Amount
- **Tasks**:
    1. Average revenue per membership level.
- **Formulas**:
    - =AVERAGEIFS(Total Amount, Membership Level,[@MembershipLevel])

23. Channel Effectiveness

- **Fields**: Marketing Channel, Leads, Conversion Rate
- **Tasks**:
    1. Effective Leads = Leads × Conversion Rate.
- **Formulas**:
    - =Leads*Conversion Rate

24. Employee Service Years

- **Fields**: Joining Date
- **Tasks**:
    1. Calculate Years of Service.
- **Formulas**:
    - =DATEDIF(Joining Date, TODAY(),"Y")

25. Inventory Valuation

- **Fields**: Quantity, Cost Price, Sale Price
- **Tasks**:
    - Inventory Value at Cost & Sale.
- **Formulas**:
    - =Quantity * Cost Price
    - =Quantity * Sale Price

26. P&L Statement

- **Fields**: Debit, Credit, Expense Category
- **Tasks**:
    - Monthly Profit = Credit – Debit.
- **Formulas**:

        - =SUMIFS(Credit, Month Range, Month)-SUMIFS(Debit, Month Range, Month)

27. Duplicate Customer Check

- **Fields**: Email, Phone
- **Tasks**:
    - Identify duplicates.
- **Formulas**:
    - =COUNTIFS(EmailRange,[@Email],PhoneRange,[@Phone])>1

28. Supplier Analysis

- **Fields**: Supplier ID, Quantity
- **Tasks**:
    - Rank suppliers by supply quantity.
- **Formulas**:
    - RANK.EQ, SUMIFS

29. Department Headcount

- **Fields**: Department, Employee ID
- **Tasks**:
    - Count employees per department.
- **Formulas**:
    - =COUNTIFS(Department Range,[@Department])

30. Executive Dashboard

- **Fields**: **All Fields**
- **Tasks**:
    - Build a Dashboard including:
        - Regional Sales
        - Top Customers
        - Budget vs Actual
        - Campaign ROI
- **Formulas**:
    - All major: SUMIFS, COUNTIFS, IF, INDEX, MATCH, VLOOKUP, TEXT, ROUND, AVERAGEIFS, RANK