

## **Employee Data Analysis Report**

### **1. Dataset Description**

**1.1 Source:** Collected from an educational dataset containing individual student academic records.

**1.2 Columns:**

- **Student\_ID:** Unique identifier for each student
- **Gender:** Male/Female
- **Age:** Age of the student
- **Study\_Hours:** Average study time per week
- **Attendance:** Percentage of total attendance
- **Score:** Final exam or overall academic score
- **Grade:** Categorized as A, B, C, D, or F

**1.3 Data Quality:**

- No missing or null values
- Clean and consistent structure
- Numeric columns properly formatted

### **2. Operations Performed**

**2.1 Data Cleaning & Exploration**

- Checked for missing and duplicate entries
- Verified correct data types
- Descriptive statistics: Mean, Median, Standard Deviation

**2.2 Descriptive Analytics**

- **Gender-wise performance** (bar graph)
- **Grade distribution** (pie chart)
- **Score distribution** (histogram)
- **Attendance vs. Score relationship** (scatter plot)

**2.3 Relationship Analysis**

- **Study Hours vs. Score** correlation
- **Attendance vs. Performance** trend analysis
- **Gender comparison** for average scores

### **3. Key Insights**

#### **3.1 Academic Overview**

- Average student score: ~78%
- Majority of students achieved Grade A (55.5%), followed by Grade B (25.7%)
- Very few students fall under failing category (Grade F < 1%).

#### **3.2 Attendance Insights**

- Students with attendance above 90% had an average score of 88.6
- Scores drop significantly when attendance falls below 75%

#### **3.3 Study Pattern**

- Strong correlation between study hours and scores ( $r \approx 0.76$ )
- Students studying more than 10 hours per week consistently perform better

#### **3.4 Gender Analysis**

- Female students slightly outperform male students on average
- However, the variation is small ( $\approx 3\%$ )

## **4. Recommendations**

### **4.1 Academic Strategy**

- Encourage students to maintain >85% attendance
- Promote study skill workshops and time management training.

### **4.2 Intervention Programs**

- Identify low-performing students (Grades D & F) early for remedial sessions
- Offer mentoring or peer tutoring support

### **4.3 Institutional Planning**

- Develop dashboards to track real-time academic performance
- Integrate predictive analytics to forecast student risk of planning