Problem Statements for Variance Analysis

1. Effect of Gender on Salary

Objective: Determine whether there is a significant difference in salaries between different genders (Male and Female).

Analysis Approach:

- **Type:** One-way ANOVA
- **Independent Variable:** Gender
- **Dependent Variable:** Salary

Documentation: This analysis aims to investigate if the mean salary differs significantly between male and female employees. By performing a one-way ANOVA, we will evaluate whether gender has a statistically significant impact on salary levels.

---

2. Impact of Specialisation on Salary

Objective: Examine if the choice of specialization (Marketing & HR vs. Marketing & Finance) affects the salary offered.

Analysis Approach:

- **Type:** One-way ANOVA
- **Independent Variable:** Specialisation
- **Dependent Variable:** Salary

Documentation: This analysis will focus on whether employees with different specializations receive different salaries. A one-way ANOVA will be used to test if there are significant differences in mean salaries across the two specializations.

---

3. Influence of Work Experience on Placement Status

Objective: Analyze if having work experience influences the likelihood of being placed (Placed vs. Not Placed).

Analysis Approach:

- **Type:** One-way ANOVA

- **Independent Variable:** Work Experience
- **Dependent Variable:** Placement Status (binary: Placed/Not Placed)

Documentation: The goal of this analysis is to determine if employees with work experience have a higher probability of being placed compared to those without work experience. The one-way ANOVA will help identify if there are significant differences in placement rates based on work experience.

---

4. Effect of SSC Background on Degree Performance

Objective: Assess whether the SSC background (Central vs. Others) impacts the degree performance scores.

Analysis Approach:

- **Type:** One-way ANOVA
- **Independent Variable:** SSC Background
- **Dependent Variable:** Degree Performance Score

Documentation: This analysis will evaluate if students with different SSC backgrounds have significantly different degree performance scores. The one-way ANOVA will test the impact of SSC background on degree scores.

---

5. Interaction Between Specialisation and Work Experience on Salary

Objective: Investigate whether the effect of specialisation on salary is influenced by work experience.

Analysis Approach:

- **Type:** Two-way ANOVA
- **Independent Variables:** Specialisation, Work Experience
- **Dependent Variable:** Salary

Documentation: This two-way ANOVA will explore if there is an interaction effect between specialization and work experience on salary. It will help determine if the impact of specialization on salary is different for employees with or without work experience.

---

6. Impact of HSC Background and Specialisation on Placement Status

Objective: Examine whether the interaction between HSC Background (Central vs. Others) and Specialisation affects the placement status.

Analysis Approach:

- **Type:** Two-way ANOVA
- **Independent Variables:** HSC Background, Specialisation
- **Dependent Variable:** Placement Status (binary: Placed/Not Placed)

Documentation: This analysis will assess if the combined effect of HSC background and specialization influences the likelihood of being placed. The two-way ANOVA will evaluate both the individual effects and the interaction between these factors on placement status.

---

7. Effect of Degree Background and Gender on Salary

Objective: Determine if the relationship between degree background (Commerce, Science, Arts) and salary differs by gender.

Analysis Approach:

- **Type:** Two-way ANOVA
- **Independent Variables:** Degree Background, Gender
- **Dependent Variable:** Salary

Documentation: The goal here is to analyze if the impact of degree background on salary is modified by gender. The two-way ANOVA will help understand if salary differences related to degree background are consistent across different genders.

---

8. Influence of SSC Background and HSC Background on Degree Performance

Objective: Analyze if the interaction between SSC background and HSC background affects degree performance.

Analysis Approach:

- **Type:** Two-way ANOVA
- **Independent Variables:** SSC Background, HSC Background
- **Dependent Variable:** Degree Performance Score

Documentation: This analysis will determine whether the degree performance is influenced by the interaction between SSC and HSC backgrounds. The two-way ANOVA will reveal if the combination of SSC and HSC backgrounds has a significant impact on degree performance scores.
