**Covariance vs. Correlation Matrix**

* **Covariance Matrix**: Measures how two variables change together. The values are **not standardized**, so they depend on the units of the variables.
* **Correlation Matrix**: Measures the **strength and direction** of the relationship between two variables, standardized between **-1 and 1**.

#### Key Observations: from yhe co\_variance

1. **ssc\_p & hsc\_p (60.34)**: Positive covariance indicates that higher SSC percentages are generally associated with higher HSC percentages.
2. **degree\_p & salary (-8,064.35)**: Negative covariance suggests an **inverse relationship** — higher degree percentages don't directly correlate with higher salaries.
3. **etest\_p & salary (157,157.85)**: Strong positive covariance shows that higher employability test scores are generally linked to higher salaries.

**Key Observations from the Correlation Matrix**

**1. Correlation with Salary 💼**

* **ssc\_p (0.023)** → Very weak positive correlation.
  + *Insight:* SSC percentage has almost no impact on salary.
* **hsc\_p (0.054)** → Very weak positive correlation.
  + *Insight:* HSC percentage has minimal impact on salary.
* **degree\_p (-0.014)** → Very weak **negative** correlation.
  + *Insight:* Degree percentage slightly negatively correlates with salary.
* **etest\_p (0.152)** → Weak positive correlation.
  + *Insight:* Higher employability test scores slightly improve salary prospects.
* **mba\_p (0.146)** → Weak positive correlation.
  + *Insight:* Higher MBA scores slightly correlate with better salaries.

**Conclusion:**

* Salary shows the **strongest correlation with etest\_p and mba\_p**, but even these are weak (close to 0.15).
* Academic scores (ssc\_p, hsc\_p, degree\_p) have little to no significant impact on salary.

**2. Correlation Among Academic Scores 🎓**

* **ssc\_p ↔ hsc\_p (0.511)** → Moderate positive correlation.
  + *Insight:* Students with higher secondary school scores (SSC) also tend to perform well in higher secondary (HSC).
* **ssc\_p ↔ degree\_p (0.538)** → Moderate positive correlation.
  + *Insight:* Higher SSC scores are moderately linked to better degree performance.
* **hsc\_p ↔ degree\_p (0.434)** → Moderate positive correlation.
  + *Insight:* HSC scores are moderately associated with degree performance.

**Conclusion:**

* Academic scores (SSC, HSC, Degree) are moderately correlated with each other, suggesting consistency in student academic performance across levels.

**3. Employability Test (etest\_p) 📝**

* **etest\_p ↔ ssc\_p (0.261)** → Weak positive correlation.
* **etest\_p ↔ hsc\_p (0.245)** → Weak positive correlation.
* **etest\_p ↔ degree\_p (0.224)** → Weak positive correlation.

**Insight:**

* Employability test scores show weak but positive relationships with academic scores.

**4. MBA Scores (mba\_p) 🎓**

* **mba\_p ↔ degree\_p (0.402)** → Moderate positive correlation.
  + *Insight:* Students with higher degree scores tend to perform well in their MBA.
* **mba\_p ↔ ssc\_p (0.388)** → Weak to moderate positive correlation.
* **mba\_p ↔ hsc\_p (0.354)** → Weak to moderate positive correlation.

**Insight:**

* Academic scores moderately influence MBA performance.

**🔑 Key Takeaways**

1. **Salary Predictors:**
   * **etest\_p (0.152)** and **mba\_p (0.146)** are the best predictors for salary, though their impact is weak.
2. **Academic Consistency:**
   * SSC, HSC, and Degree scores are moderately correlated, showing consistent academic performance trends.
3. **Weak Link Between Academic Scores and Salary:**
   * Academic percentages (SSC, HSC, Degree) have little to no direct correlation with salary.
4. **Focus Areas for Better Salaries:**
   * Improving **employability test scores** and **MBA scores** can have a relatively better impact on salary outcomes.