Nagar Yuwak Shikshan Sanstha's
Yeshwantrao Chavan College of Engineering
(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)
Hingna Road, Wanadongri, Nagpur - 441 110
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Department of Computer Technology B. Tech in Computer Science and Engineering (IOT)

Vision of the Department

To be a well-known centre for pursuing computer education through innovative pedagogy, value-based education and industry collaboration.

Mission of the Department

To establish learning ambience for ushering in computer engineering professionals in core and multidisciplinary area by developing Problem-solving skills through emerging technologies.

Session 2025-2026

Vision: Dream of where you want.	**Mission:** Means to achieve Vision

Program Educational Objectives of the program (PEO): (broad statements that describe the professional and career accomplishments)

PEO1	**Preparation**	**P: Preparation**	**Pep-CL abbreviation pronounce as Pep-si-lL easy to recall**
PEO2	**Core Competence**	**E: Environment (Learning Environment)**	
PEO3	**Breadth**	**P: Professionalism**	
PEO4	**Professionalism**	**C: Core Competence**	
PEO5	**Learning Environment**	**L: Breadth (Learning in diverse areas)**	

Program Outcomes (PO): (statements that describe what a student should be able to do and know by the end of a program)

Keywords of POs:
Engineering knowledge, Problem analysis, Design/development of solutions, Conduct Investigations of Complex Problems, Engineering Tool Usage, The Engineer and The World, Ethics, Individual and Collaborative Team work, Communication, Project Management and Finance, Life-Long Learning

PSO Keywords: Cutting edge technologies, Research

"I am an engineer, and I know how to apply engineering knowledge to investigate, analyse and design solutions to complex problems using tools for entire world following all ethics in a collaborative way with proper management skills throughout my life." *to contribute to the development of cutting-edge technologies and Research*.

Integrity: I will adhere to the Laboratory Code of Conduct and ethics in its entirety.

Omkar V. Jadhav
(Signature and Date in Handwritten)

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Session	2024-25 (ODD)	Course Name	MFDA
Semester	5	Course Code	23IOT1526
Roll No	49	Name of Student	Omkar Panchal

Practical Number	**7**
Course Outcome	
Aim	To implement the Chi-squaretest.
Problem Definition	Conduct a Chi-square test of independence to determine whether success on math exam scores (yes, no) is related to gender (male, female).
Theory (100 words)	The Chi-square test is a statistical method used to examine relationships between categorical variables and test how well observed data fits expected outcomes. It's especially useful for hypothesis testing in non-parametric data. **Types of Chi-Test:** 1. **Chi-square test of independence** o Checks if two categorical variables are related o Example: Is exam success related to gender? 2. **Chi-square goodness-of-fit test** • Checks if observed data matches expected distribution • Example: Do dice rolls match uniform probability? Conditions to Use Chi-Square • Data must be **categorical** (not continuous) • Observations must be **independent** • Expected frequency in each cell should be **≥ 5** for reliable results • Sample size should be **large enough** for approximation to hold
Procedure and Execution (100 Words)	**Step-by-Step Process:** 1. Define Hypotheses: • Null Hypothesis (H_0): Success on the math exam is independent of gender. • Alternative Hypothesis (H_1): Success on the math exam is dependent on gender. 2. Create a Contingency Table 3. Calculate Expected Frequencies 4. Apply Chi-Square Formula

5. Find Degrees of Freedom
6. Compare with Critical Value

Code:

```
# Sample data: Gender vs Math Exam Success
data <- matrix(c(30, 20, 25, 25),
               nrow = 2,
               byrow = TRUE,
               dimnames = list(Gender = c("Male", "Female"),
                               Success = c("Yes", "No")))

# Print the contingency table
print(data)

# Chi-square test of independence
chi_result <- chisq.test(data)
print(chi_result)

# Custom colors: Green for "Yes", Red for "No"
success_colors <- c("green", "red")

# Mosaic Plot with custom colors
mosaicplot(data,
           main = "Math Exam Success vs Gender",
           color = success_colors,
           xlab = "Gender",
           ylab = "Success",
           las = 1,
           border = "gray")
```

Output:

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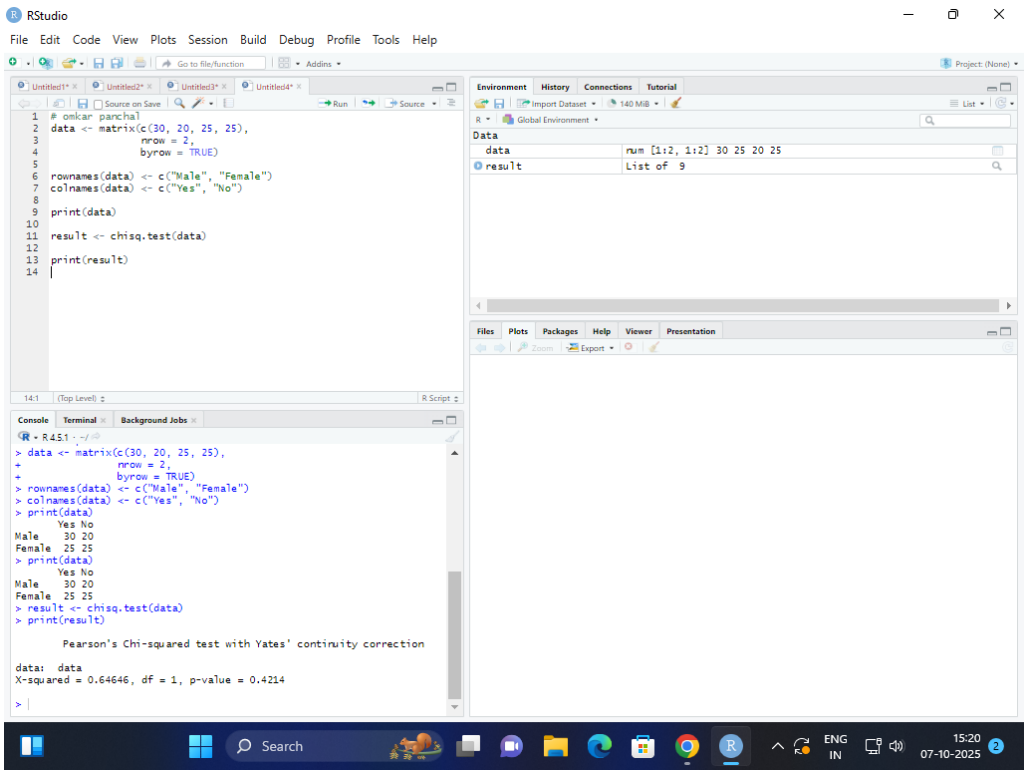
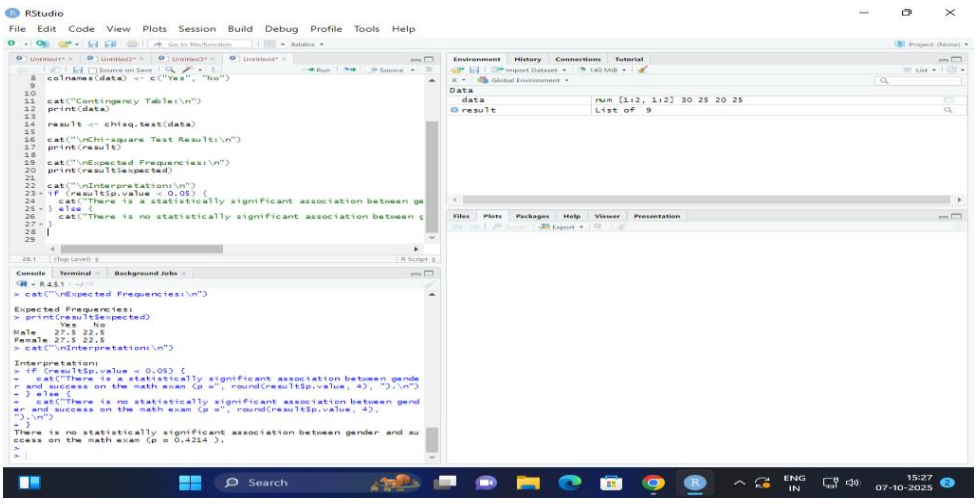
```
        Success
Gender    Yes No
  Male     30 20
  Female   25 25
> # Chi-square test of independence
> chi_result <- chisq.test(data)
> print(chi_result)

        Pearson's Chi-squared test with Yates' continuity correction

data:  data
X-squared = 0.64646, df = 1, p-value = 0.4214
```





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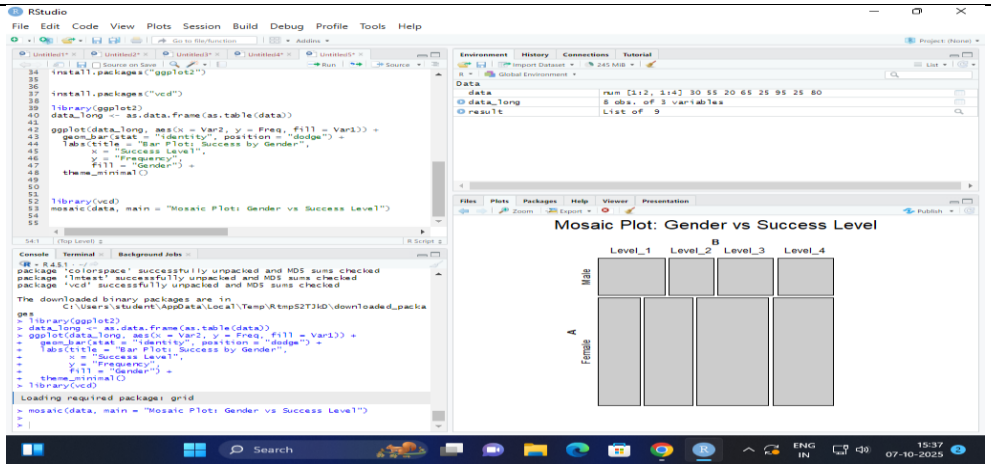

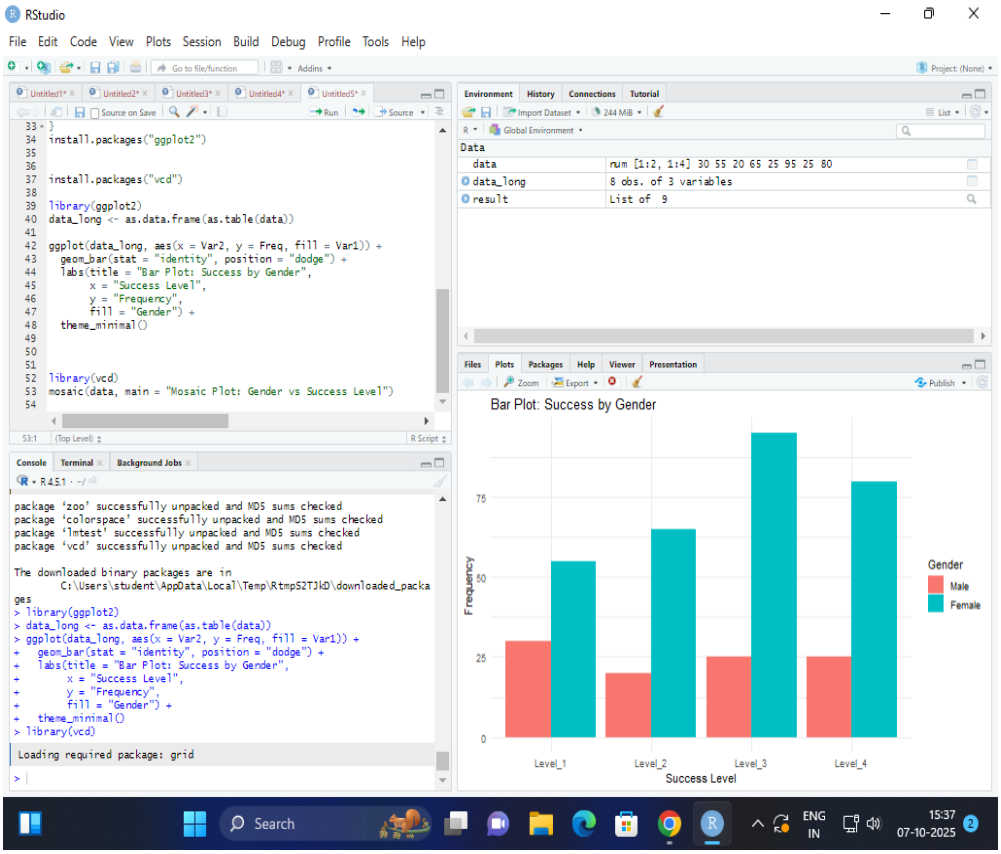

Output Analysis	**Result**: No significant relationship between gender and exam success. **Interpretation**: Gender does **not** affect math exam success in this sample.
Link of student Github profile where lab assignment has been uploaded	https://github.com/OmkarPanchal06/MFDA_LAB
Conclusion	Hence analyzed the data to find out the estimated value.

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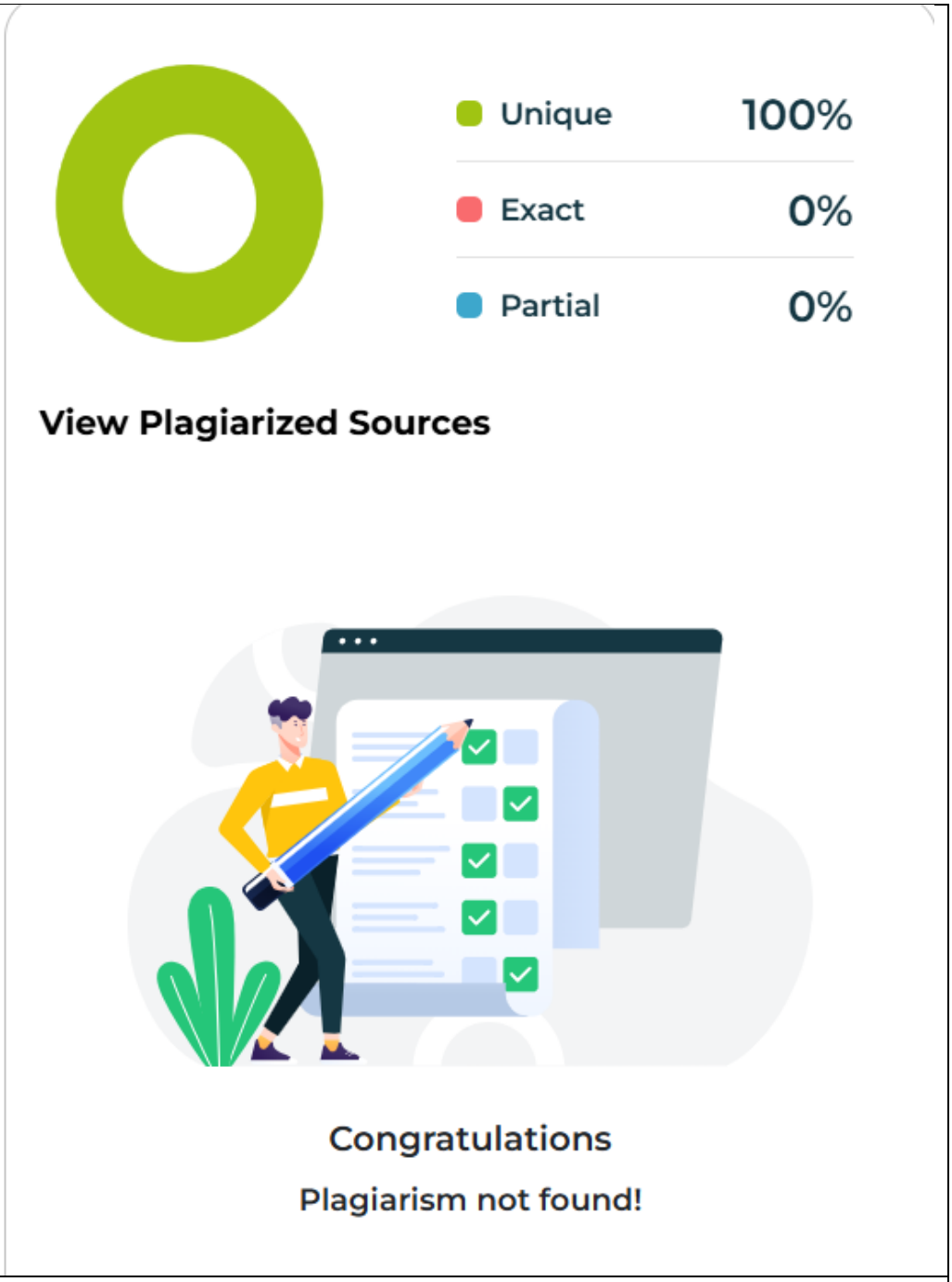
Plag Report (Similarity index < 12%)	
Date	**7/10/25**