Republic of the Philippines
Laguna State Polytechnic University
Province of Laguna

Machine Problem No. 1			
Topic:	**Propositional Logic**	**Week No.**	2-3
Course Code:	**CSST101**	**Term:**	1st Semester
Course Title:	**Advance Knowledge Representation and Reasoning**	**Academic Year:**	2025-2026
Student Name		**Section**	
Due date		**Points**	

University Logic Rules Application

I. Title

Assessment Task: Applying Propositional Logic in Real-World Scenarios through a Mini Expert System

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II. Intended Learning Outcomes (ILOs)

At the end of this activity, students should be able to:

1. Translate real-world conditions into propositional logic expressions.
2. Apply logical implication (P → Q) to decision-making scenarios.
3. Develop a Python program that implements logic rules.
4. Record and analyze system results using CSV as a simple database.
5. Communicate findings through a short written report.

III. Instructions for Students

1. **Download or recreate the Mini Expert System** provided in class.
2. Run the program and test at least **3 different students** with different conditions for:
    - Attendance Rule
    - Grading Rule
    - Login System Rule
    - Bonus Points Rule
3. Verify that all results are logged in the **CSV file (logic_results.csv)**.
4. Extend the program by **adding one new rule of your own**. Examples:
    - Library borrowing (If ID is valid → Allowed to borrow books).
    - Enrollment clearance (If fees are paid → Enrollment confirmed).
    - Laboratory access (If safety gear is worn → Access granted).

5. Submit the following:
    - Source code (.py file).
    - Generated **CSV file** with results from at least 3 students.
    - A **short report (1–2 pages)** containing:
        - Explanation of rules tested.
        - Screenshots of program runs.
        - Description of the new rule you added.

IV. Assessment Criteria (Rubric)

Criteria	Excellent (100%)	Proficient (85%)	Developing (70%)	Beginning (50%)
Logic Translation	All rules correctly translated into propositional logic.	Minor errors in translation.	Some rules incorrectly expressed.	Little/no understanding of logic.
Program Implementation	Program runs smoothly with all rules implemented correctly.	Program runs with minor errors.	Program partially working.	Program does not run.
Extension Rule	Original and correctly implemented additional rule.	Additional rule included but minor errors.	Additional rule unclear/incomplete.	No additional rule added.
CSV Logging & Data Handling	All results properly logged and organized in CSV.	Most results logged correctly.	CSV incomplete or inconsistent.	No CSV output.
Report & Presentation	Clear, well-organized, with screenshots and explanations.	Clear but missing details.	Report incomplete or unclear.	No report submitted.

V. Sample Assessment Questions (for Written Part)

1. Represent the following in propositional logic:
   a. *"If a student is late, then they must bring an excuse letter."*
   b. *"If a grade ≥ 75, then the student passes."*
2. Why is the rule **P → Q** considered satisfied when **P is false**?
3. Examine the following CSV excerpt:

```
2025-09-04 14:33:15, Juan Dela Cruz, Grading Rule, Satisfied ✅
2025-09-04 14:34:22, Ana Santos, Login Rule, Access denied ❌
```

- What does each row represent?
- Which logical implication failed and why?