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P1 — Egg Production  
COP 2800-98672  
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AI Statement: AI was not used in the development of this program.

Assignment Requirements: Write a Java program and associated documentation. Your program will:

* Print to the screen your name, course, assignment, and the date and time the program is run
* Prompt the user to enter the total number of chickens on the farm.
* Prompt the user to enter the number of chickens on the farm who are roosters.
* Prompt the user to enter the percentage chance any random chicken lays an egg in a day.
* Prompt the user to enter the number of days.
* Print to the screen the estimated number of eggs that will be produced on the farm.

Installation and Run Instructions: This program calculates the estimated number of eggs produced on a farm. Run the program and follow the on-screen prompts to enter the required data. The program will output the estimated number of eggs.

Design Notes:

* I included input validation to prevent negative numbers, incorrect probability values, and logical errors (e.g., roosters exceeding the total number of chickens).
* The program prints my name, course, assignment, and the current date/time before collecting input.
* I used separate print statements for clarity and to ensure user-friendly prompts.

Test Plan:

| **Test Case** | **Input Values** | **Expected Output** | **Actual Output** | **Pass/Fail** |
| --- | --- | --- | --- | --- |
| Normal case | Chickens: 50, Roosters: 10, Probability: 0.75, Days: 7 | Estimated eggs: (50 - 10) \* 0.75 \* 7 = 210.00 | 210.00 | Pass |
| Edge case (0 days) | Chickens: 30, Roosters: 5, Probability: 0.8, Days: 0 | Estimated eggs: 0.00 | 0.00 | Pass |
| Invalid input (roosters > chickens) | Chickens: 20, Roosters: 25, Probability: 0.6, Days: 5 | Error message | Error message | Pass |
| Invalid probability (> 1.0) | Chickens: 40, Roosters: 15, Probability: 1.2, Days: 3 | Error message | Error message | Pass |
| Negative input | Chickens: -5, Roosters: 2, Probability: 0.9, Days: 4 | Error message | Error message | Pass |

All tests pass, confirming that the program correctly calculates the estimated number of eggs while handling invalid inputs properly.

Successful Run: A computer screen with white text

Description automatically generated