Python Logic & Loops: Real-World Assignment (21-01-2026-UDS-2.0)

1. The Office Door Badge You are programming a smart door for a tech office. The door should only open if the user provides the correct "Access Code."

- **Input:** User enters a 4-digit code.
- **Scenario:** If the code is `1234`, print "Access Granted. Door Unlocked." Otherwise, print "Access Denied. Security Alerted."

2. The Weekend Grocery Trip A person is deciding whether to go to the supermarket.

- **Input:** User enters how many eggs are left in the fridge (integer).
- **Scenario:** If the number of eggs is less than 3, print "Time to go to the market!" Else, print "You have enough for breakfast today."

---

3. The Smart Home "Leaving for Work" Checklist When you leave your house, a smart assistant checks multiple independent things. These are not mutually exclusive.

- **Input:** Three separate inputs (Yes/No) for: "Is the AC on?", "Is the Coffee Maker on?", "Is the Front Door unlocked?"
- **Scenario:**
- If AC is on Print "Turning off AC to save energy."
- If Coffee Maker is on Print "Warning: Coffee Maker is still hot!"
- If Door is unlocked Print "Locking the front door now." *(Note: All three messages could potentially print.)*

4. The Pizza Topping Calculator A customer is choosing toppings. Each topping adds a specific cost regardless of the other toppings chosen.

- **Input:** Three boolean (True/False) inputs for: `extra_cheese`, `pepperoni`, and `olives`.
- **Scenario:** Initialize a `total_bill = 10`.
- If `extra_cheese` is True add 2 to bill.
- If `pepperoni` is True add 3 to bill.
- If `olives` is True add 1 to bill.
- **Output:** Print the final total bill.

---

5. The Traffic Light Sensor A self-driving car needs to interpret a single traffic light color.

- **Input:** User enters "Red", "Yellow", or "Green".
- **Scenario:** * If "Red" "Full Stop."
- If "Yellow" "Slow down and prepare to stop."
- If "Green" "Proceed with caution."
- Anything else "Error: Signal Malfunction!"

6. Movie Theater Ticket Pricing A theater charges based on the age of the customer.

- **Input:** User enters their age.
- **Scenario:**
- Age < 5 "Ticket is Free."
- Age 5 to 17 "Child Ticket: $10."
- Age 18 to 60 "Adult Ticket: $18."
- Age > 60 "Senior Ticket: $12."

---

7. The 7-Day Steps Tracker A fitness app wants to show your activity for the week.

- **Data:** A list of steps: `[4000, 7500, 10000, 2000, 8000, 12000, 5000]`.
- **Scenario:** Loop through the list and for each day, print: "Day [X]: You walked [Steps] steps."

8. The Email "Bcc" System A marketing manager has a list of 5 client names.

- **Input:** A list containing 5 names.
- **Scenario:** Use a loop to "send" an email to each person by printing: "Sending personalized promo code to [Name]..."