NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCES
FAST - PESHAWAR CAMPUS

Subject: Software Construction and Development Lab (CL-3001)
Instructor: Muhammad Saood Sarwar
Lab Task

Exception Handling

Custom Exception Handling for User Registration System

You are tasked with developing a registration system for a new application. The system will accept user inputs for details like username, password, age, and email address. Your goal is to build robust exception handling to validate each piece of information. Follow the steps below to complete this task.

1. **Create Multiple Custom Exception Classes:**
   - Define three custom exception classes inheriting from `Exception`:
     (a) `InvalidUsernameError` for invalid usernames.
     (b) `WeakPasswordError` for passwords that do not meet security criteria.
     (c) `AgeRestrictionError` for users under the minimum age requirement.
2. **Implement User Input Validations:**
   - Write code to:
     (a) Check if the username contains only alphanumeric characters and is at least 5 characters long.
     (b) Verify the password has at least one uppercase letter, one lowercase letter, one number, and is at least 8 characters long.
     (c) Ensure the user's age is 18 or above.
   - Raise the relevant exception for each invalid input.
3. **Use `try-except` Blocks with Complex Flow:**
   - Implement a `try-except-else-finally` block where:
     (a) The code tries to validate each user input.

(b) Catches each specific custom exception and displays a message describing the error and prompting re-entry of the invalid field.

(c) An `else` block executes if all inputs are valid, confirming successful registration.

(d) The `finally` block prints a message indicating that the registration process is complete, whether successful or not.

4. **Testing:**

   - Test the program with various valid and invalid input cases, such as a username with special characters, weak passwords, or ages below 18.
   - Document the results, including error messages and confirmations for successful entries.

5. **Deliverables:**

   - Submit the code in a Jupyter Notebook (‘.ipynb‘) file, including sample inputs and output.
   - Export the notebook as a PDF and submit both ‘.ipynb‘ and ‘.pdf‘ files.