

## **Assignment 1: Importance of user module for “Online Tax Collector Software System”**

**Objective:** To design and implement user module in “Online Tax Collector Software System”.

**Role:** Developer/Architect

### **Problem Description:**

User authentication and privileges are things based on which different type of user have access to different resources in the system.

Authentication means, is current user a valid user or not.

Authorization means, what all features, a given user shall be able to access.

In the “Online Tax Collector Software System”, we have following types of users.

- Citizen
- Officials of Taxation Department

For the security concerns, client has demanded for login and access features.

Please, Propose, logical processes (minimum three) and give model solution to implement the same.

**Estimated Time:** 60 minutes

### **Model Solution:**

For login to the system, we have to create user accounts with following basic information:

- type of user (From the user domain)
- login name (Unique, used to login into system)
- password (Encrypted)

For managing authorization to the system, we have to create user authorizations with following basic information:

- login name
- role as of his/her individual
- role as of his/her group which it belongs to
- Features for each individual role and each group role

In addition to the basic requirement of user module, following can achieve affirmative confirmation of user convenience and security at the same time.

### ***Authentication***

To achieve security,

MAX\_ATTEMPT\_BEFORE\_CAPTCHA 3

MAX\_ATTEMPT\_BEFORE\_LOCK 5

MAX\_DAYS\_OF\_INACTIVITY\_DURATION\_BEFORE\_DISABLE 15

- User when types wrong password more than certain threshold times (i.e MAX\_ATTEMPT\_BEFORE\_CAPTHA), let's support captcha to stop internet bots
- If user enters wrong password more than certain threshold times (i.e MAX\_ATTEMPT\_BEFORE\_LOCK), mark user account as **locked** until further analysis and clearance.
- If user does not use the system for more than certain number of days threshold (i.e. MAX\_DAYS\_OF\_INACTIVITY\_DURATION\_BEFORE\_DISABLE) then **disable** the account.

To achieve convenience,

- Support to change password via user's preferred way as below
  - Email
  - SMS
  - Security Questions answering

So,

In the table, we need to have following additional columns:

- Last Access Date
- Security questions and answers (Encrypted)
- Locked/Unlocked
- Enabled/Disabled
- Number of wrong passwords attempts

In the content management system, we need to incorporate captcha module.

In the code, we need to right logic for achieving the internal details for referring and updating above mentioned additional columns and display messages as below:

MessageCode	MessageText
Login_001	The user account is locked because of <> incorrect attempts.
Login_002	The user account is disabled because of <> days of inactivity.
Login_003	Please, enter the captcha as shown in the image and then press login to confirm human presence.

### ***Authorization***

Here, instead of role type and if else condition, we can achieve dynamic behavior of the features based

on another table contents. This table contains role and features allowed for that role. Again of course the individual role and group role have different tables.

Once, user successfully login, system shall check first his individual role and find out features the user shall have been made available. Also, then let's union the result set with his corresponding group role features.

This is how, we have current user access to certain features and let now display only those panels which are following this final list of available features.

**Summary of the assignment:** Most software systems world wide requires user involvement. Also, users nowadays wishes to have similar policies for the authentication and features. User satisfaction with security, is the ultimate goal of software systems. We, from this assignment, have learn that the more time we give on designing user module we get the thing right at the early stage of the SDLC. And it is also, important to convey the requirement of salient user login features and establishment of business rules for the authorization is very important for data quality, consistency and security.

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