

# **IdentityUser — Authentication Starter Kit Documentation**

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## Contents

Introduction.....	1
What this document contains .....	1
Intended audience.....	1
1. Overview (README) .....	2
Features .....	2
Installation.....	2
Initialize the Authentication Module .....	2
Required Dependencies .....	3
2. Zod Validation Note .....	3
3. Folder Structure (Generated After Init) .....	4
4. IdentityUser Database Structure (Tables & Fields) .....	5
4.1. IdentityUser_Users Table .....	5
4.2. IdentityUser_UserRoles Table.....	6
4.3. IdentityUser_UserClaims Table .....	6
4.4. IdentityUser_Roles Table .....	6
4.5. IdentityUser_RoleClaims Table.....	6
4.6. IdentityUser_Claims Table.....	7
5. NextAuth Integration & Authentication Flow .....	8
5.1. Overview .....	8
5.2. Default NextAuth Session Structure .....	8
5.3. Default NextAuth Session Structure .....	9
5.4. Authentication Flow Architecture.....	9
5.5. File-by-File Explanation.....	10
5.5.1. src/app/api/auth/[...nextauth]/route.ts .....	10
5.5.2. identityUser/app/api/auth/[...nextauth]/authHelpers.ts.....	10
Functions .....	10
5.5.3. identityUser/app/api/auth/[...nextauth]/options.ts.....	11
5.5.4. /identityUser/app/api/session/update/route.ts .....	12
5.6. Type Extensions (types/next-auth.d.ts) .....	12
5.7. Summary: Why This Authentication System Is Better.....	13
6. Session Management & Access Control Helpers .....	14
6.1. SessionWatcher Component.....	14
6.2. AuthGuard (Server-Side Page Protection).....	15

6.3. Session Utilities (Roles & Claims Checking) .....	16
7. Action Handlers (Helper Layer).....	17
7.1. signUpFormAction (Signup) .....	17
7.2. signInFormAction (Signin) .....	18
7.3. canUserSignInAction.....	18
7.4. signInFailedAction .....	18
7.5. signInSuccessAction .....	19
7.6. UserAction File .....	19
7.6.1. AddUserAction .....	19
7.6.2. UserUpdateAction.....	20
7.6.3. deleteUserAction.....	20
7.6.4. resetPasswordAction (Admin Panel Only).....	20
7.6.5. getAllUsersAction .....	21
7.6.6. getUserByIdAction.....	21
7.6.7. getUserByUsernameAction.....	21
7.6.8. getUserByPhoneNumberAction.....	21
7.6.9. getUserByEmailAction .....	21
7.6.10. changeNameAction (Profile) .....	21
7.6.11. changePasswordAction.....	22
7.6.12. checkUserExistByUsernameAction .....	22
7.6.13. checkUserExistByEmailAction.....	22
7.6.14. checkUserExistByIdAction .....	22
7.6.15. checkUserExistByPhoneNumberAction.....	22
7.6.16. changeUserNameAction .....	23
7.6.17. changeEmailAction .....	23
7.6.18. LockUnlockUserAction.....	23
7.6.19. resetSecurityStampAction .....	23
7.6.20. getCurrentCCSAction .....	23
7.7. RoleAction File.....	24
7.7.1. roleAddAction .....	24
7.7.2. roleUpdateAction .....	24
7.7.3. deleteRoleAction .....	24
7.7.4. getRolesAction .....	25
7.7.5. getRoleByIdAction .....	25
7.8. ClaimAction File .....	25

7.8.1. addClaimAction.....	25
7.8.2. getClaimsAction.....	25
7.8.3. deleteClaimsAction.....	26
7.8.4. updateClaimsAction.....	26
7.9. SharedFunction File .....	26
7.10. Additional Notes.....	27
8. Code Samples & Usage Tips .....	27
8.1. Sign-In Form Component Logic (useEffect Example) .....	27
8.2. Using requireAuth, requireGuest, and SessionWatcher .....	29
8.2.1. Example: Account Layout (Protected Pages) .....	29
8.2.2. Example: SignIn / SignUp Page Layout (Guests Only).....	30
8.3. Tips for Permissions (hasClaim, hasAnyClaim, hasRole, hasAnyRole) .....	31
8.4. Additional Notes .....	32
9. Compatibility .....	32
9.1. Upgrade Note (Next.js 15 → 16).....	32
10. Contributing & Support .....	33
11. Author & Contact.....	33
12. License .....	33
13. Support & Star .....	33

## Introduction

IdentityUser is a lightweight authentication starter kit inspired by Microsoft Identity for ASP.NET Core.

It is developed to provide Next.js applications with a modular, secure and ready-to-use user authentication system including roles, claims, models, validation schemas, services, utilities, and optional NextAuth integration.

This documentation explains what IdentityUser is, what it contains, how to install and initialize it, and how to use its main components. The examples and instructions are based on the repository named `identityusers\_sample` which will be linked in this document once the repository is published to GitHub.

## What this document contains

- A high-level overview of IdentityUser and its design goals.
- Step-by-step installation and initialization instructions.
- Description of folder structure and important files.
- Code snippets demonstrating common tasks (hashing passwords, adding claims, fetching roles).
- Compatibility and upgrade notes.
- Contribution, license and author/contact information.

## Intended audience

This document targets frontend and full-stack developers using Next.js (v15+) who want a quick and reliable authentication solution with minimal setup. Basic knowledge of Node.js, Next.js, MongoDB (Mongoose), and TypeScript/JavaScript is assumed.

## 1. Overview (README)

IdentityUser — A lightweight and ready-to-use User Authentication Starter Kit for Next.js applications.

IdentityUser helps you quickly scaffold a fully functional authentication system into your project — including models, validation schemas, services, utilities, and optional NextAuth integration. Perfect for developers who want a clean, modular, and production-ready user system with minimal setup.

### Features

- Auto-copy authentication boilerplate into your project.
- Built-in Zod validation.
- Mongoose user model.
- Password hashing with bcrypt.
- NextAuth-ready structure.
- Zero configuration — just install & run one command.
- Fully TypeScript-compatible.
- Clean and maintainable folder structure.

### Installation

Run the following command inside your Next.js project:

```
npm install identityuser
```

### Initialize the Authentication Module

IdentityUser includes a CLI tool that copies the entire `src/identityUser` folder into your project. Run:

```
npm run identityuser
```

After running this command, a folder like `src/identityUser/` will appear inside your project.

If a folder named `src/identityUser` already exists the CLI will avoid overwriting by creating a versioned folder (`identityUser-2`, `identityUser-3`, ...). You may need to adjust imports or merge files manually after running the CLI.

## Required Dependencies

IdentityUser relies on several peer dependencies that must be installed manually (npm does not auto-install peerDependencies).

Install required packages with:

```
npm install next-auth bcrypt mongoose zod @conform-to/zod @conform-to/react
```

If using TypeScript add the typing for bcrypt:

```
npm install -D @types/bcrypt
```

## 2. Zod Validation Note

If you are using Zod v4, note that the `required_error` field has been removed. Use `error` or direct validators such as `.min()`, `.email()`, `.max()`.

Example (Zod v4 compatible):

```
z.string({ error: "Please fill the Username field first" })
```

IdentityUser's internal schemas follow Zod v4 syntax.

### 3. Folder Structure (Generated After Init)

A full authentication starter pack will be added to: `src/identityUser/`

Included folders and files (summary):

```
app
└─ api
  └─ auth
    └─ [...nextauth]/route.ts

identityUser/
├─ api/
│ └─ auth/
│   └─ [...nextauth]/
│     └─ authHelpers.ts
│     └─ options.ts
│   └─ session/
│     └─ update/route.ts
├─ components/
│   └─ sessionWatcher/SessionWatcher.tsx
├─ helper/
│   └─ claimsAction.ts
│   └─ userAction.ts
├─ lib/
│   └─ models/
│     └─ identityUser_users.ts
│     └─ identityUser_roles.ts
│   └─ authGuard.ts
│   └─ db.ts
│   └─ session.ts
├─ providers/SessionProvider.tsx
├─ Type/next-auth.d.ts
└─ validation/*.ts
```



## 4. IdentityUser Database Structure (Tables & Fields)

This section provides a detailed overview of all database tables used in the IdentityUser package.

These tables are inspired by the original ASP.NET Core Identity schema, but adapted for Next.js + MongoDB (Mongoose) environments.

Each table includes:

- Field name
- Data type (as used in MongoDB/Mongoose)
- Description and purpose

Note:

The classic ASP.NET Identity tables used for storing external logins (e.g., Google, GitHub, Microsoft OAuth providers) are not implemented here, because NextAuth already handles external authentication flows internally and does not require database tables for them.

### 4.1. IdentityUser\_Users Table

The main user table. Stores core authentication and profile data.

	Field	Type	Description
1	username	string	The unique username chosen by the user.
2	normalizedUserName	string	Uppercase username used for security and case-insensitive queries.
3	email	string	User's email address.
4	normalizedEmail	string	Uppercase email used for security and searching.
5	emailConfirmed	boolean	Whether the user's email has been verified.
6	passwordHash	string	The bcrypt-hashed password.
7	securityStamp	uuid	A random UUID that invalidates all user sessions when changed.
8	concurrencyStamp	uuid	Used to prevent update conflicts (similar to row versioning).
9	phoneNumber	string	User's phone number.
10	phoneNumberConfirmed	boolean	True if the phone has been verified.
11	twoFactorEnabled	boolean	Enables 2FA for the account.
12	lockoutEnd	Date / null	Until what date the user is locked out (if any).
13	lockoutEnabled	boolean	Whether lockout functionality is active.
14	accessFailedCount	number	Consecutive invalid login attempts.

15	avatar	string	URL of the profile image.
16	name	string	Full name displayed in the UI.

#### 4.2. IdentityUser\_UserRoles Table

Mapping table between Users and Roles (many-to-many).

	Field	Type	Description
1	role	ObjectId (Role)	The assigned role.
2	user	ObjectId (User)	The user receiving this role.

#### 4.3. IdentityUser\_UserClaims Table

Store user-specific claims independent of roles.

	Field	Type	Description
1	user	ObjectId (User)	Owner of the claim.
2	claim	ObjectId (Claim)	Claim assigned directly to the user.

#### 4.4. IdentityUser\_Roles Table

Stores system roles (e.g., Admin, User, Manager).

	Field	Type	Description
1	name	string	Role name.
2	normalizedName	string	Uppercase role name for database lookups.
3	concurrencyStamp	string	Used for safe updates.
4	claimStamp	string	Updated whenever role claims change (helps session refresh).
5	description	string	Human-readable role description.

#### 4.5. IdentityUser\_RoleClaims Table

Mapping table between Roles and Claims.

	Field	Type	Description
1	role	ObjectId (Role)	The role receiving the claim.
2	claim	ObjectId (Claim)	The claim assigned to this role.

#### 4.6. IdentityUser\_Claims Table

Stores all available claims in the system.

	Field	Type	Description
1	claimType	string	Category/type of claim (e.g., "access", "permissions").
2	claimValue	string	The specific value (e.g., "edit-users", "delete-posts").
3	description	string	Human-readable explanation of the claim.

## 5. NextAuth Integration & Authentication Flow

### 5.1. Overview

IdentityUser integrates NextAuth as its main authentication layer.

While NextAuth supports multiple OAuth providers (Google, GitHub, etc.), this project uses a custom Credentials Provider because:

- The system requires custom user fields (roles, claims, securityStamp).
- The app uses a fully custom user model stored in MongoDB.
- IdentityUser handles all user/role/claim logic internally.
- OAuth login tables used in Microsoft ASP.NET Identity are not required because NextAuth manages those internally.

### 5.2. Default NextAuth Session Structure

By default, a NextAuth session contains:

```
session = {  
  user: {  
    name: string | null,  
    email: string | null,  
    image: string | null  
  },  
  expires: string  
}
```

This structure is too limited for IdentityUser because the app needs:

- user.id
- username
- name
- email
- avatar
- roles[]
- claims[]
- securityStamp
- Therefore, the session and JWT were extended.

### 5.3. Default NextAuth Session Structure

IdentityUser overrides the default NextAuth types through:

**File: /types/next-auth.d.ts**

It extends:

- Session.user
- JWT
- User

This enables storing identity-specific information inside:

- The JWT (server-side)
- The session (client-side)
- The User object returned during login

This makes role-based pages, permissions, guards, and CMS admin panel possible.

### 5.4. Authentication Flow Architecture

Credentials [Login](#) → `authorize()` → JWT Callback → [Session](#) Callback → Client [Session](#)

Breakdown:

1. User submits username/password
2. `authorize()`
  - connect to MongoDB
  - load user with `getUserByUsernameAction`
  - validate password
  - return user object with roles & claims
3. `jwt()` callback
  - save user data into JWT
  - auto-sync every 30 minutes with DB
  - detect changes in roles/claims/securityStamp
4. `session()` callback
  - validate securityStamp
  - validate roles/claims
  - finalize session.user

## 5.5. File-by-File Explanation

### 5.5.1. src/app/api/auth/[...nextauth]/route.ts

```
import { options } from "@/identityUser/api/auth/[...nextauth]/options";
import NextAuth from "next-auth";

const handler = NextAuth(options);
export { handler as GET, handler as POST };
```

#### Purpose

- Bridges your global project structure with IdentityUser's authentication configuration.
- Enables both GET and POST requests for authentication-related operations.

### 5.5.2. identityUser/app/api/auth/[...nextauth]/authHelpers.ts

Utility functions for server authentication.

Functions

#### getSession()

- Returns the current NextAuth session using your custom options.

#### signIn(provider, data)

- Wrapper for next-auth/react signIn
- Enables custom provider login from the frontend.

#### auth()

- Returns NextAuth instance with your options (used in server components or route handlers).

### 5.5.3. `identityUser/app/api/auth/[...nextauth]/options.ts`

This is the core authentication engine.

#### **Providers**

Only CredentialsProvider is used:

- Reads username + password
- Loads user from MongoDB
- Compares hashed password
- Returns custom user object with roles & claims

#### **JWT Callback**

This part:

- Saves user data into JWT on login
- Applies updates when trigger === 'update'
- Auto-syncs database values every 30 minutes
- Detects:
  - role changes
  - claim changes
  - securityStamp changes
  - and instantly forces logout

#### **Session Callback**

This ensures session integrity:

- Loads securityStamp from DB
- Logs the user out if the stamp changed
- Validates updated roles
- Validates updated claims
- Returns full session.user object to client

#### **Why this matters**

- This design makes IdentityUser behave like:
- ASP.NET Identity (securityStamp invalidation)
- Enterprise Role-Based Access Control
- Dynamic permissions without requiring logout

#### 5.5.4. [/identityUser/app/api/session/update/route.ts](#)

A custom session refresh API.

##### **Purpose**

- Refresh session data manually from the client
- Returns updated roles, claims, avatar, securityStamp, etc.

##### **Used for:**

- CMS dashboards
- Role-change refresh
- Updating avatar or profile info without logout

#### 5.6. Type Extensions ([types/next-auth.d.ts](#))

These are essential to safely work with extended User & Session objects.

##### **Session.user**

Contains full identity data:

- id
- username
- name
- email
- avatar
- roles
- claims
- securityStamp

##### **JWT**

Stores all user identity info internally, plus:

- lastSync (used for auto-sync timing)



## 5.7. Summary: Why This Authentication System Is Better

Compared to default NextAuth:

	Feature	Default	IdentityUser
1	Role support	None	Built-in
2	Claims support	None	Full RBAC
3	securityStamp	No	Automatic logout on change
4	Auto-sync with DB	No	Every 30 minutes
5	Admin-ready session	Simple user	Full user profile
6	TypeScript safety	Limited	Full type extension

IdentityUser basically transforms NextAuth into:

**A fully custom identity management system similar to .NET Identity — but for Next.js.**

## 6. Session Management & Access Control Helpers

This section includes the utilities responsible for session validation, automatic logout handling, and access control throughout the application. These tools work alongside NextAuth to enhance security and ensure consistent user state across all browser tabs and server-side logic.

### 6.1. SessionWatcher Component

#### Purpose

A client-side component that:

1. Automatically logs out the user if the session becomes invalid.
2. Synchronizes logout events across all open browser tabs using localStorage.

#### How It Works

- When status === "authenticated" but session.user is missing, the component triggers a logout and writes a timestamp to localStorage.logout.
- All other tabs listen for this change and immediately execute signOut().
- A callbackUrl is used to redirect the user to the homepage of the current locale.

## 6.2. AuthGuard (Server-Side Page Protection)

### Purpose

Server-side access control for protected and guest-only pages.

### Functions

#### 1. requireGuest()

- Redirects the user if they are already logged in.
- Useful for Login, Register, and Forgot Password pages.

#### 2. requireAuth()

- Ensures the user is authenticated.
- Redirects instantly if the session is missing or corrupted.
- Used for Dashboard, CMS, Profile, and all other private pages.

### Notes

- Works inside Server Components, providing true backend-level access protection.
- Prevents any possibility of bypassing authentication from the client side.
- Essential for building a secure CMS panel.

### 6.3. Session Utilities (Roles & Claims Checking)

This Session file location is in:

`identityUser/lib/session.ts`

#### Purpose

Utility functions for checking roles, claims, and session validity.

Used when building authorization logic for:

- CMS dashboards
- Server Actions
- Page-level and component-level permissions
- Conditional UI rendering

#### Features

- `getSession()` → Returns full server session
- `hasClaim(claim)` → Checks for a specific claim
- `hasRole(role)` → Checks for a specific role
- `hasAnyClaim()` → Returns true if user has at least one claim
- `hasAnyRole()` → Returns true if user has at least one role

#### Notes

These utilities enforce server-side authorization and guarantee that user permissions cannot be faked or manipulated from the client.

## 7. Action Handlers (Helper Layer)

This chapter documents all server actions inside the helper folder.

These actions are the core functional layer of the IdentityUser system, responsible for user creation, login flow, profile management, role/claim administration, concurrency control, and security stamping.

Each section below describes:

- The purpose of the action
- A clear step-by-step explanation of what the action does
- Important security and architectural notes

### 7.1. signUpFormAction (Signup)

#### **Purpose**

Creates a new user after validating the submitted data.

#### **Flow**

1. Validate the incoming form data.
2. Confirm that password and confirmPassword match.
3. Check whether the chosen username already exists.
4. Check whether the chosen email already exists.
5. Hash the password.
6. Create a new user.
7. Assign a default user type (if needed).
8. Return the username + password so NextAuth can auto-login the user after signup.

## 7.2. signInFormAction (Signin)

### Purpose

Passes the submitted credentials to NextAuth for authentication.

### Flow

1. Validate the incoming form data.
2. If valid, return username and password to the NextAuth login flow.

## 7.3. canUserSignInAction

### Purpose

Verifies whether the user is allowed to attempt signing in.

### Flow

1. Check whether the user exists.
2. If found, check whether the account is currently locked out or not.

## 7.4. signInFailedAction

### Purpose

Increases the failed login counter when the user enters invalid credentials.

### Details

- The maximum allowed failure count is configurable.
- In the sample project the default value is 5 failures.

## 7.5. signInSuccessAction

### Purpose

Resets login-related security fields when the user successfully signs in.

### Resets

- accessFailed
- lockoutEnabled
- lockoutEnd

## 7.6. UserAction File

This file contains multiple user-related management actions.

### 7.6.1. AddUserAction

#### Flow

1. Verify that the requester has the required claim/role to perform this action.
2. Validate input data.
3. Ensure the username is not already taken.
4. Ensure the email is not already taken.
5. Hash the password.
6. Create the user and retrieve the generated userId.
7. Assign claims to the user (if any were selected).
8. Assign a role to the user. (if any were selected).

#### Note

The sample implementation allows only one role per user, but the system structure makes multi-role support possible if needed.

### 7.6.2. UserUpdateAction

#### Flow

1. Verify that the requester has the required claim/role.
2. Validate input data.
3. Check whether the user exists.
4. Compare the submitted concurrencyStamp with the current one (to avoid conflicting updates).
5. Ensure the new username is not already taken.
6. Ensure the new email is not already taken.
7. Assign any updated roles or claims.
8. Build the updated user object.
9. If sensitive fields changed (password, role, claim, username, email), generate a new securityStamp, forcing logout on next request.
10. Generate a new concurrencyStamp.
11. Save the updated user.

### 7.6.3. deleteUserAction

#### Flow

1. Verify claim/role permission.
2. Validate input.
3. Check whether the user exists.
4. Remove user roles.
5. Remove direct user claims.
6. Delete the user account.

### 7.6.4. resetPasswordAction (Admin Panel Only)

#### Flow

1. Verify claim/role permission.
2. Validate input.
3. Check whether the user exists.
4. Hash the new password.
5. Update the password and assign a new securityStamp.

#### Note

This action does not check the old password — it is an admin-level override.



#### 7.6.5. **getAllUsersAction**

Fetches all users along with their roles and claims.

#### 7.6.6. **getUserByIdAction**

##### **Flow**

1. Retrieve user by ID.
2. Retrieve role list.
3. Retrieve direct user claims.
4. Combine role claims + direct claims and remove duplicates.
5. Return full user data.

#### 7.6.7. **getUserByUsernameAction**

Same as **getUserByIdAction**, but queries by username.

#### 7.6.8. **getUserByPhoneNumberAction**

Same as **getUserByIdAction**, but queries by PhoneNumber.

##### **Note:**

This Action should only be used when your project requires phone numbers to be unique.

#### 7.6.9. **getUserByEmailAction**

Same as **getUserByIdAction**, but queries by Email.

#### 7.6.10. **changeNameAction (Profile)**

##### **Flow**

1. Ensure the user has at least one claim/permission.
2. Validate input.
3. Check whether the user exists.
4. Compare the provided concurrencyStamp.
5. Update the name and assign a new concurrencyStamp.

### 7.6.11. changePasswordAction

#### Flow

1. Ensure the user has at least one valid claim.
2. Validate the submitted data.
3. Verify user existence.
4. Check the old password.
5. Verify new password matches confirmation.
6. Hash new password.
7. Update user password and assign a new securityStamp.

### 7.6.12. checkUserExistByUsernameAction

Checks whether the submitted username already exists.

### 7.6.13. checkUserExistByEmailAction

Checks whether the submitted email already exists.

### 7.6.14. checkUserExistByIdAction

Checks whether the submitted Id already exists.

### 7.6.15. checkUserExistByPhoneNumberAction

Checks whether the submitted PhoneNumber already exists.

#### Note:

Phone-number checks should only be used when your project requires phone numbers to be unique.

#### 7.6.16. changeUserNameAction

##### Flow

1. Ensure the user has at least one valid claim.
2. Validate the submitted data.
3. Verify user existence.
4. Check new username not submitted already.
5. Update username and assign a new securityStamp.

#### 7.6.17. changeEmailAction

##### Flow

1. Ensure the user has at least one valid claim.
2. Validate the submitted data.
3. Verify user existence.
4. Check new email not submitted already.
5. Update email and assign a new securityStamp.

#### 7.6.18. LockUnlockUserAction

Manually lock or unlock a user and assign a new securityStamp.

#### 7.6.19. resetSecurityStampAction

Manually reset the security stamp of selected user.

#### 7.6.20. getCurrentCCSAction

Returns the user's **concurrencyStamp**.

## 7.7. RoleAction File

This file contains multiple role-related management actions.

### 7.7.1. roleAddAction

#### Flow

1. Verify claim/role permission.
2. Validate input.
3. Create the new role.
4. Retrieve the generated role ID.
5. Retrieve the selected claims.
6. Assign the selected claims to the role in RoleClaims.

### 7.7.2. roleUpdateAction

#### Flow

1. Verify claim/role permission.
2. Validate input.
3. Check role existence.
4. Compare the submitted concurrencyStamp.
5. Generate a new concurrencyStamp.
6. Assign a new claimStamp.
7. Update the role information.
8. Update RoleClaims according to the new claim selection.
9. Find all users who have this role.
10. Update each affected user with a new securityStamp.

### 7.7.3. deleteRoleAction

#### Flow

1. Verify claim/role permission.
2. Validate input.
3. Check role existence.
4. Retrieve the default fallback role (USER).
5. Find all users assigned to the role being deleted.
6. Reassign those users to USER, and update their securityStamp.
7. Remove RoleClaims for the deleted role.
8. Delete the role itself.

## **Note**

The fallback logic is optional — developers may choose another strategy (e.g., assign no role).

### **7.7.4. getRolesAction**

Returns all roles along with their claims.

### **7.7.5. getRoleByIDAction**

Returns all roles Retrieves a role by ID along with all associated claims.with their claims.

## **7.8. ClaimAction File**

This file contains multiple Claims-related management actions.

### **7.8.1. addClaimAction**

#### **Flow**

1. Verify claim/role permission.
2. Validate input.
3. Create the new claim.

### **7.8.2. getClaimsAction**

Returns all available claims.

### 7.8.3. deleteClaimsAction

#### Flow

1. Verify claim/role permission.
2. Validate input.
3. Check whether the claim exists.
4. Find roles that have this claim.
5. Find users who have this claim directly.
6. Remove claim entries from RoleClaims.
7. Remove claim entries from UserClaims.
8. Update claimStamp for affected roles.
9. Update securityStamp for all users who were impacted.

### 7.8.4. updateClaimsAction

#### Flow

1. Verify claim/role permission.
2. Validate input.
3. Check whether the claim exists.
4. Update the claim.
5. Find roles that contain this claim.
6. Update their claimStamp.
7. Find users who have those roles.
8. Find users who have the claim directly.
9. Update the securityStamp for all affected users.

## 7.9. SharedFunction File

### hashPassword

Hashes a submitted password.

### comparePassword

Compares a submitted password with the stored one.

## 7.10. Additional Notes

1. All permission checks inside actions are commented by default.

Developers can customize the required claim/role names to match their own system.

2. The sample project uses a claim-based approach, but developers can choose:
  - claim-based
  - role-based
  - hybrid model
  - or no authorization at all
  - depending on the needs of their application.
3. Many more actions can be added, such as:
  - forgotPassword
  - Two-factor authentication
  - Manual unlock/lock for users
  - Device tracking

These are not included in the base version but are easy to extend.

## 8. Code Samples & Usage Tips

### 8.1. Sign-In Form Component Logic (useEffect Example)

The following example is taken from the sign-in form component.

It demonstrates how the system handles automatic login, logout protection, session sync between tabs, and fallback logic:

```

useEffect(() => {
  if (lastResult?.status === 'success') {
    if (hasPayload(lastResult)) {
      const { username, password } = lastResult.payload;
      (async () => {
        try {
          const logInAllow = await canUserSignInAction(username);
          if (logInAllow?.status === "success") {
            const res = await signIn("credentials", {
              username,
              password,
              redirect: false,
              callbackUrl: `/en/account/profile/${username}`,
            });
            if (res?.ok) {
              setSignInError(false);
              signInSuccessAction(username);
              try {
                const bc = new BroadcastChannel("auth");
                bc.postMessage({ type: "login", username, avatar: "/Avatar/Default Avatar.png" });
                bc.close();
              } catch (_) {}
              // fallback
              localStorage.setItem("auth-login", JSON.stringify({
                type: "login",
                username,
                avatar: "/Avatar/Default Avatar.png",
                time: Date.now()
              }));
              router.push(res.url || `/en/account/profile/${username}`);
            } else {
              signInFailedAction(username);
              setSignInError(true);
            }
          } else {
            setRemainingLockoutMinutes(Number(logInAllow?.message));
            setIsLockedOut(true);
          }
        } catch (error) {
          setSignInError(true);
        }
      })();
    }
  }
}, [lastResult]);

```

## Explanation

- After form submission, if validation succeeds, the effect receives the username/password returned by signInFormAction.
- The component calls canUserSignInAction to check if the account is locked.
- If not locked:



- We call NextAuth's built-in `signIn()` with the provided credentials.
- On a successful login:
  - We call `signInSuccessAction` to reset lockout counters.
  - We broadcast a "login" message using `BroadcastChannel` and also store a fallback entry in `localStorage`.
  - This ensures all open browser tabs log in simultaneously without waiting for the session to refresh (NextAuth session may take a second to sync).

If login fails:

- `signInFailedAction` increments failed attempts.
- After a configurable limit (default: 5), the account is locked for one hour.
- The same architecture is used for the sign-up form.

## 8.2. Using `requireAuth`, `requireGuest`, and `SessionWatcher`

### 8.2.1. Example: Account Layout (Protected Pages)

```
export default async function AccountLayout({ children, params }) {
  const { locale } = await params;

  const session = await requireAuth(`/${locale}`);

  return (
    <>
      <AuthProvider>
        <SessionWatcher locale={locale} />
        <div className="flex flex-row justify-start items-center my-20 rounded-2xl">
          {children}
        </div>
      </AuthProvider>
    </>
  );
}
```

### Explanation

- Pages under the account section should only be visible to authenticated users.
- `requireAuth()` checks the session on the server:
  - If no session exists → user is redirected to the home page.
- `SessionWatcher` must be placed inside `AuthProvider` and as the highest element in the tree.

- SessionWatcher continuously verifies session validity:
  - If the session becomes invalid, it signs the user out.
  - It triggers logout across all open tabs using both BroadcastChannel and localStorage

### 8.2.2. Example: SignIn / SignUp Page Layout (Guests Only)

```
export default async function SignInPage({ params }) {  
  const { locale } = await params;  
  
  await requireGuest(`/${locale}`);  
  
  return (  
    <>  
      <AuthProvider>  
        <SessionWatcher locale={"en"} />  
      </AuthProvider>  
    </>  
  );  
}
```

#### Explanation

- requireGuest() ensures this page is only visible when no session exists.
- If a logged-in user tries to access it, they are redirected away.
- Useful for login, registration, forgot-password, etc.

### 8.3. Tips for Permissions (`hasClaim`, `hasAnyClaim`, `hasRole`, `hasAnyRole`)

When checking permissions, always validate both on the frontend and backend.

#### Why?

- Frontend check controls UI visibility. (e.g., hide the “Edit Role” button if user lacks the required claim/role).
- Backend check protects security. (because UI can be bypassed and requests can be sent manually).

#### Example scenario

If editing a role requires the `role.edit` claim:

- The frontend hides the edit button if:

```
hasClaim(session, "role.edit")
```

- The backend action `roleUpdateAction` must also check:

```
if (!hasClaim(userClaims, "role.edit")) throw new Error("Access denied");
```

Never rely on frontend-only permission checks.

## 8.4. Additional Notes

- Many sample files in the project include comments to help developers understand the logic more easily.
- All permission checks in actions are commented by default.
- Developers can customize claim/role names and enable them as needed.
- The system can be designed:
  - claim-based
  - role-based
  - hybrid (recommended in most real-world apps)
  - or even no authorization layer, if not needed
- Additional actions can be added easily such as:
  - forgot password
  - two-factor authentication
  - manual lock/unlock
  - password reset via email
  - session invalidation
  - API rate limiting

These are not included in the default version but can be implemented with the same architecture.

## 9. Compatibility

IdentityUser supports:

- Next.js 15+
- Node 18+
- React 18+
- TypeScript or JavaScript

Tested with Next.js 15 and 16.

### 9.1. Upgrade Note (Next.js 15 → 16)

If you want to upgrade an older Next 15 project, run:

```
npm install next@latest react@latest react-dom@latest
```

Then update your tsconfig.json or next.config.js if needed. Contact the author for step-by-step guidance when ready.

## 10. Contributing & Support

Contributions, issues, and feature requests are welcome. Please open an issue or a pull request on the repository once published.

## 11. Author & Contact

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