Fake Bank

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BankWebApp

This is a banking web application developed using C#, JavaScript, and SQL.

Project Structure

The project is structured into several parts:

- env/Envs.cs: Contains the connection string for the MSSQL database.
- database.sql: Contains the SQL scripts for creating the necessary tables and indices in the

Setup

- Clone the repository.
 Install the necessary dependencies.
 Set up the MSSQL database using the provided SQL scripts.
 Update the connection string in env/Envs.cs with your database details.
- 5. Run the application.

Features

- User registration and login
- Bank account creation
- Transaction processing
- Transaction history
- Admin dashboard
- User dashboard

Custom User Components

- Navbar: The navigation bar at the top of the page. made with View Component.
- Footer: The footer at the bottom of the page. made with Partial View.

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Class Hierarchy

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Class List

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Namespace Documentation

BankWebApp Namespace Reference

Namespaces

• namespace Controllers

HomeController class that inherits from Controller. This class is responsible for handling the requests related to the Home page of the application.

• namespace Services

The DatabaseService class is responsible for managing the database connection. It implements the IDisposable interface to properly close the connection when it's no longer needed.

Classes

class **Program** The Program class is the entry point of the application.

BankWebApp.Components Namespace Reference

Classes

class NavbarViewComponent

BankWebApp.Controllers Namespace Reference

HomeController class that inherits from Controller. This class is responsible for handling the requests related to the Home page of the application.

Classes

class AccountControllerThe AccountController class is responsible for handling requests related to the user's bank account. It includes actions for displaying the account index, transferring funds, adding funds (admin only), listing users (admin only), showing user details (admin only), deleting a user (admin only), and viewing transaction history.

class HomeController

Detailed Description

HomeController class that inherits from Controller. This class is responsible for handling the requests related to the Home page of the application.

BankWebApp.env Namespace Reference

Classes

• class Envs

The Envs static class contains environment variables for the application.

BankWebApp.Models Namespace Reference

Classes

- class AccountHistoryModelclass AccountIndexModel
- class AddFundsViewModel
- class AddressModel
- class BankAccountModel
- class ContactModel
- class ErrorViewModel
- class ListUsersViewModel
- class LoginModel
- class RegisterModel
- class RolesModel
- class TransactionModel
- class TransferViewModel
- class UserModel

Represents a User in the system.

BankWebApp.Services Namespace Reference

The DatabaseService class is responsible for managing the database connection. It implements the IDisposable interface to properly close the connection when it's no longer needed.

Classes

class **DatabaseService**The DatabaseService class is responsible for managing the database operations. It contains methods for getting users, checking if a username exists, registering a user, getting bank accounts by user id, transferring funds, getting roles by user id, getting all bank accounts, adding funds, and getting transactions.

class MySignInManagerThis class is responsible for managing user sign in and sign out operations.

class **TransferService** This class provides services for transferring money between bank accounts. class **UserService** Service class for managing users.

Detailed Description

The DatabaseService class is responsible for managing the database connection. It implements the IDisposable interface to properly close the connection when it's no longer needed.

BankWebApp.Tools Namespace Reference

Classes

- class ClaimTools
- class PasswordHashes

Class Documentation

BankWebApp.Controllers.AccountController Class Reference

The AccountController class is responsible for handling requests related to the user's bank account. It includes actions for displaying the account index, transferring funds, adding funds (admin only), listing users (admin only), showing user details (admin only), deleting a user (admin only), and viewing transaction history.

Inheritance diagram for BankWebApp.Controllers.AccountController:

Controller

BankWebApp.Controllers.AccountController

Public Member Functions

 AccountController (ILogger< AccountController > logger, UserService userService, TransferService transferService)

Initializes a new instance of the AccountController class.

- IActionResult Index ()
 Displays the account index page.
- IActionResult **Transfer** (bool? success=null, string? reason=null) *Displays the transfer page.*
- IActionResult **Transfer** (**TransferViewModel** model) Handles a POST request to transfer funds.
- IActionResult **AddFunds** (bool? success=null, string? reason=null) Displays the add funds page (admin only).
- IActionResult **AddFunds** (**AddFundsViewModel** model)

 Handles a POST request to add funds to an account (admin only).
- IActionResult ListUsers ()
 Displays the list users page (admin only).
- IActionResult **Show** (string id)

 Displays the details of a user (admin only).
- IActionResult **History** ()
 Displays the transaction history page.

Detailed Description

The AccountController class is responsible for handling requests related to the user's bank account. It includes actions for displaying the account index, transferring funds, adding funds

(admin only), listing users (admin only), showing user details (admin only), deleting a user (admin only), and viewing transaction history.

Constructor & Destructor Documentation

BankWebApp.Controllers.AccountController.AccountController (ILogger< AccountController > logger, UserService userService, TransferService transferService)

Initializes a new instance of the AccountController class.

Parameters

logger	The logger used to log information about program execution.
userService	The service used to interact with user data.
transferService	The service used to handle money transfers.

Member Function Documentation

IActionResult BankWebApp.Controllers.AccountController.AddFunds (AddFundsViewModel model)

Handles a POST request to add funds to an account (admin only).

Parameters

model	The data from the add funds form.

Returns

A redirect to the add funds page, with success and reason parameters.

| IActionResult BankWebApp.Controllers.AccountController.AddFunds (bool? success = null, string? reason = null)

Displays the add funds page (admin only).

Parameters

success	Indicates whether the last add funds operation was successful.
reason	The reason for the last add funds operation's failure, if it failed.

Returns

The add funds view.

IActionResult BankWebApp.Controllers.AccountController.History ()

Displays the transaction history page.

Returns

The history view.

IActionResult BankWebApp.Controllers.AccountController.Index ()

Displays the account index page.

Returns

The account index view.

IActionResult BankWebApp.Controllers.AccountController.ListUsers ()

Displays the list users page (admin only).

Returns

The list users view.

IActionResult BankWebApp.Controllers.AccountController.Show (string id)

Displays the details of a user (admin only).

Parameters

id	The ID of the user to show.

Returns

The show view.

IActionResult BankWebApp.Controllers.AccountController.Transfer (bool? success = null, string? reason = null)

Displays the transfer page.

Parameters

success	Indicates whether the last transfer was successful.
reason	The reason for the last transfer's failure, if it failed.

Returns

The transfer view.

IActionResult BankWebApp.Controllers.AccountController.Transfer (TransferViewModel model)

Handles a POST request to transfer funds.

Parameters

model	The data from the transfer form.

Returns

A redirect to the transfer page, with success and reason parameters.

The documentation for this class was generated from the following file:

• Controllers/AccountController.cs

BankWebApp.Models.AccountHistoryModel Class Reference

Properties

• IList< TransactionModel > Transactions [get, set]

The documentation for this class was generated from the following file:

• Models/AccountHistoryModel.cs

BankWebApp.Models.AccountIndexModel Class Reference

Properties

- UserModel SignedInUser [get, set]
- IList< BankAccountModel > BankAccounts [get, set]

The documentation for this class was generated from the following file:

• Models/AccountIndexModel.cs

BankWebApp.Models.AddFundsViewModel Class Reference

Properties

- IList< BankAccountModel > BankAccounts [get, set]
- decimal Amount [get, set]
- string SelectedBankAccountNumber [get, set]
- bool? **Success** [get, set]
- string? Reason [get, set]

The documentation for this class was generated from the following file:

• Models/AddFundsViewModel.cs

BankWebApp.Models.AddressModel Class Reference

Properties

- int Id [get, set]
- string **Street** [get, set]
- string City [get, set]
- string PostCode [get, set]
- string Country [get, set]

The documentation for this class was generated from the following file:

• Models/AddressModel.cs

BankWebApp.Models.BankAccountModel Class Reference

Properties

- int Id [get, set]
- string AccountNumber [get, set]
- decimal Balance [get, set]
- int UserId [get, set]
- UserModel User [get, set]

The documentation for this class was generated from the following file:

• Models/BankAccountModel.cs

BankWebApp.Models.ContactModel Class Reference

Properties

- int Id [get, set]
- string **Email** [get, set]
- string **PhoneNumber** [get, set]

The documentation for this class was generated from the following file:

• Models/ContactModel.cs

BankWebApp.Services.DatabaseService Class Reference

The DatabaseService class is responsible for managing the database operations. It contains methods for getting users, checking if a username exists, registering a user, getting bank accounts by user id, transferring funds, getting roles by user id, getting all bank accounts, adding funds, and getting transactions.

Inheritance diagram for BankWebApp.Services.DatabaseService:



Public Member Functions

• DatabaseService ()

The constructor initializes a new instance of the DatabaseService class. It sets the connection string and opens the connection.

void Dispose ()

The Dispose method is called when the DatabaseService object is being disposed. It closes the database connection.

IList< UserModel > GetUsers ()

Gets all users from the database.

• bool **UsernameExists** (string _username)

Gets all users from the database.

• bool RegisterUser (UserModel user)

Registers a new user in the database.

• IList< BankAccountModel >? GetBankAccountById (int UserId)

Gets a list of bank accounts by user id.

• BankAccountModel? GetBankAccountById (string Id)

Gets a bank account by account number.

• BankAccountModel? GetBankAccountByAccountId (int Id)

Gets a bank account by account id.

• bool **TransferFunds** (Guid from, Guid To, decimal Amount)

Transfers funds from one account to another.

IList< RolesModel > GetRolesById (int uid)

Gets a list of roles by user id.

• IList< BankAccountModel > GetAllBankAccounts ()

Gets all bank accounts from the database.

• void AddFunds (Guid guid, decimal amount)

Adds funds to a bank account.

• IList< TransactionModel > GetTransactions ()

Gets all transactions from the database.

• IList< TransactionModel > GetTransactions (int uid)

Gets a list of transactions by user id.

Detailed Description

The DatabaseService class is responsible for managing the database operations. It contains methods for getting users, checking if a username exists, registering a user, getting bank accounts by user id, transferring funds, getting roles by user id, getting all bank accounts, adding funds, and getting transactions.

Member Function Documentation

void BankWebApp.Services.DatabaseService.AddFunds (Guid guid, decimal amount)

Adds funds to a bank account.

Parameters

guid	The account number to add funds to.
amount	The amount to add.

IList< BankAccountModel > BankWebApp.Services.DatabaseService.GetAllBankAccounts ()

Gets all bank accounts from the database.

Returns

A list of BankAccountModel objects.

BankAccountModel?

BankWebApp.Services.DatabaseService.GetBankAccountByAccountId (int Id)

Gets a bank account by account id.

Parameters

Id	The account id to get the bank account for.

Returns

A BankAccountModel object.

IList< BankAccountModel >?

BankWebApp.Services.DatabaseService.GetBankAccountByld (int UserId)

Gets a list of bank accounts by user id.

Parameters

UserId	The user id to get the bank accounts for.	
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Returns

A list of BankAccountModel objects.

BankAccountModel? BankWebApp.Services.DatabaseService.GetBankAccountById (string Id)

Gets a bank account by account number.

Parameters

Id	The account number to get the bank account for.	
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Returns

A BankAccountModel object.

IList< RolesModel > BankWebApp.Services.DatabaseService.GetRolesByld (int uid)

Gets a list of roles by user id.

Parameters

uid	The user id to get the roles for.

Returns

A list of RolesModel objects.

IList< TransactionModel > BankWebApp.Services.DatabaseService.GetTransactions ()

Gets all transactions from the database.

Returns

A list of TransactionModel objects.

IList< TransactionModel > BankWebApp.Services.DatabaseService.GetTransactions (int uid)

Gets a list of transactions by user id.

Parameters

uid The user id to get the transactions for.
--

Returns

A list of TransactionModel objects.

IList< UserModel > BankWebApp.Services.DatabaseService.GetUsers ()

Gets all users from the database.

Returns

A list of UserModel objects.

bool BankWebApp.Services.DatabaseService.RegisterUser (UserModel user)

Registers a new user in the database.

Parameters

user	The user to register.

Returns

True if the registration was successful, false otherwise.

bool BankWebApp.Services.DatabaseService.TransferFunds (Guid from, Guid To, decimal Amount)

Transfers funds from one account to another.

Parameters

from	The account number to transfer funds from.
То	The account number to transfer funds to.
Amount	The amount to transfer.

Returns

True if the transfer was successful, false otherwise.

bool BankWebApp.Services.DatabaseService.UsernameExists (string _username)

Gets all users from the database.

Returns

A list of UserModel objects.

The documentation for this class was generated from the following files:

- Services/DatabaseService.cs
- Services/DatabaseServiceFunctions.cs

BankWebApp.Models.ErrorViewModel Class Reference

Properties

- string? RequestId [get, set]
- bool **ShowRequestId** [get]

The documentation for this class was generated from the following file:

• Models/ErrorViewModel.cs

BankWebApp.Controllers.HomeController Class Reference

Inheritance diagram for BankWebApp.Controllers.HomeController:

Controller

BankWebApp.Controllers.HomeController

Public Member Functions

• HomeController (ILogger< HomeController > logger, UserService userService, MySignInManager signInManager)

HomeController constructor. Initializes a new instance of the HomeController class.

• IActionResult Index ()

Handles the GET request for the Index view.

• IActionResult Privacy ()

Handles the GET request for the Privacy view.

• IActionResult Login ()

Handles the GET request for the Login view.

• IActionResult Login (LoginModel loginModel)

Handles the POST request for the Login view.

• IActionResult Logout ()

Handles the request to log out the user.

• IActionResult Error ()

Handles the GET request for the Error view.

• IActionResult AccessDenied ()

Handles the request when the user is denied access.

• IActionResult Register ()

Handles the GET request for the Register view.

• IActionResult Register (RegisterModel registerModel)

Handles the POST request for the Register view.

Constructor & Destructor Documentation

BankWebApp.Controllers.HomeController.HomeController (ILogger< HomeController > logger, UserService userService, MySignInManager signInManager)

HomeController constructor. Initializes a new instance of the HomeController class.

Parameters

logger	An instance of ILogger interface to handle logging.
userService	An instance of UserService to handle user related operations.
signInManager	An instance of MySignInManager to handle user sign in operations.

Member Function Documentation

IActionResult BankWebApp.Controllers.HomeController.AccessDenied ()

Handles the request when the user is denied access.

Returns

The Error view along with the request id.

IActionResult BankWebApp.Controllers.HomeController.Error ()

Handles the GET request for the Error view.

Returns

The Error view along with the request id.

IActionResult BankWebApp.Controllers.HomeController.Index ()

Handles the GET request for the Index view.

Returns

The Index view.

IActionResult BankWebApp.Controllers.HomeController.Login ()

Handles the GET request for the Login view.

Returns

The Login view.

lActionResult BankWebApp.Controllers.HomeController.Login (LoginModel loginModel)

Handles the POST request for the Login view.

Parameters

loginModel	The login details provided by the user.
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Returns

The Login view if the model state is invalid, otherwise redirects to the appropriate view based on the login details.

IActionResult BankWebApp.Controllers.HomeController.Logout ()

Handles the request to log out the user.

Returns

Redirects to the Login view after successfully logging out the user.

IActionResult BankWebApp.Controllers.HomeController.Privacy ()

Handles the GET request for the Privacy view.

Returns

The Privacy view.

IActionResult BankWebApp.Controllers.HomeController.Register ()

Handles the GET request for the Register view.

Returns

The Register view.

IActionResult BankWebApp.Controllers.HomeController.Register (RegisterModel registerModel)

Handles the POST request for the Register view.

Parameters

registerModel	The registration details provided by the user.

Returns

The Register view if the model state is invalid, otherwise redirects to the Login view after successful registration.

The documentation for this class was generated from the following file:

• Controllers/HomeController.cs

BankWebApp.Models.ListUsersViewModel Class Reference

Properties

- UserModel UserModel [get, set]
- IList< BankAccountModel > BankAccounts [get, set]
- IList< TransactionModel > Transactions [get, set]

The documentation for this class was generated from the following file:

• Models/ListUsersViewModel.cs

BankWebApp.Models.LoginModel Class Reference

Properties

- string Username [get, set]
- string Password [get, set]
- bool RememberMe [get, set]

The documentation for this class was generated from the following file:

• Models/LoginModel.cs

BankWebApp.Services.MySignInManager Class Reference

This class is responsible for managing user sign in and sign out operations.

Public Member Functions

- MySignInManager (IHttpContextAccessor httpContextAccessor, UserService userService) Initializes a new instance of the MySignInManager class.
- async Task SignInAsync (UserModel user, bool isPersistent=false)
 Signs in the specified user.
- async Task **SignOutAsync** () Signs out the current user.

Detailed Description

This class is responsible for managing user sign in and sign out operations.

Constructor & Destructor Documentation

BankWebApp.Services.MySignInManager.MySignInManager (IHttpContextAccessor httpContextAccessor, UserService userService)

Initializes a new instance of the MySignInManager class.

Parameters

httpContextAccess	The HTTP context accessor.
or	
userService	The user service.

Member Function Documentation

async Task BankWebApp.Services.MySignInManager.SignInAsync (UserModel user, bool isPersistent = false)

Signs in the specified user.

Parameters

user	The user to sign in.	
isPersistent	if set to true the sign in is persistent.	

Returns

A Task representing the asynchronous operation.

The user model should already be validated before calling this method.

async Task BankWebApp.Services.MySignInManager.SignOutAsync ()

Signs out the current user.

Returns

A Task representing the asynchronous operation.

The documentation for this class was generated from the following file:

• Services/MySignInManager.cs

BankWebApp.Components.NavbarViewComponent Class Reference

Inheritance diagram for BankWebApp.Components.NavbarViewComponent:



Public Member Functions

• IViewComponentResult Invoke ()

The documentation for this class was generated from the following file:

• Components/NavbarViewComponent.cs

BankWebApp.Program Class Reference

The Program class is the entry point of the application.

Static Public Member Functions

• static void **Main** (string[] args)

The Main method is responsible for setting up and running the web application.

Detailed Description

The Program class is the entry point of the application.

Member Function Documentation

static void BankWebApp.Program.Main (string[] args)[static]

The Main method is responsible for setting up and running the web application.

Parameters

args	Command-line arguments passed to the application.	
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The documentation for this class was generated from the following file:

• Program.cs

BankWebApp.Models.RegisterModel Class Reference

Properties

- string Username [get, set]
- string **Password** [get, set]
- string ConfirmPassword [get, set]
- string Email [get, set]
- string **PhoneNumber** [get, set]
- string Street [get, set]
- string City [get, set]
- string **PostCode** [get, set]
- string Country [get, set]
- bool? **Success** [get, set]
- string? Reason [get, set]

The documentation for this class was generated from the following file:

• Models/RegisterModel.cs

BankWebApp.Models.RolesModel Class Reference

Properties

- int Id [get, set]
- string RoleName [get, set]
- int **UserId** [get, set]

The documentation for this class was generated from the following file:

• Models/RolesModel.cs

BankWebApp.Models.TransactionModel Class Reference

Properties

- int Id [get, set]
- int **SenderId** [get, set]
- BankAccountModel Sender [get, set]
- int ReceiverId [get, set]
- BankAccountModel Receiver [get, set]
- decimal Amount [get, set]
- DateTime SentAt [get, set]

The documentation for this class was generated from the following file:

• Models/TransactionModel.cs

BankWebApp.Services.TransferService Class Reference

This class provides services for transferring money between bank accounts.

Public Member Functions

- TransferService ()
 Initializes a new instance of the TransferService class.
- bool string Reason TransferMoney (string FromAcc, string ToAcc, decimal Amount)
- void **PrintMoney** (string AccountNumber, decimal Amount) *Adds funds to a specified account.*

Public Attributes

bool Success

Transfers money from one account to another.

Detailed Description

This class provides services for transferring money between bank accounts.

Member Function Documentation

void BankWebApp.Services.TransferService.PrintMoney (string AccountNumber, decimal Amount)

Adds funds to a specified account.

Parameters

AccountNumber	The account number to add funds to.
Amount	The amount of money to add.

Member Data Documentation

bool BankWebApp.Services.TransferService.Success

Transfers money from one account to another.

Parameters

FromAcc	The account number to transfer money from.
ToAcc	The account number to transfer money to.
Amount	The amount of money to transfer.

Returns

A tuple containing a boolean indicating success or failure, and a string containing the reason for failure.

The documentation for this class was generated from the following file:

• Services/TransferService.cs

BankWebApp.Models.TransferViewModel Class Reference

Properties

- IList Sank Account Model > Bank Accounts [get, set]
- string FromAccountId [get, set]
- string ToAccountId [get, set]
- decimal Amount [get, set]
- bool? **Success** [get, set]
- string? Reason [get, set]
- static TransferViewModel Empty [get]

The documentation for this class was generated from the following file:

• Models/TransferViewModel.cs

BankWebApp.Models.UserModel Class Reference

Represents a User in the system.

Properties

- int **Id** [get, set] *Unique identifier for the user.*
- string **Username** [get, set] *Username of the user.*
- string **PasswordHash** [get, set] Hashed password of the user. with bcrypt.
- DateTime CreatedAt [get, set]

 A date when the user was created. (in database)
- **Contact Model Contact** [get, set] *Contact model associated with the user.*
- Address Model Address [get, set] Address model associated with the user.

Detailed Description

Represents a User in the system.

The documentation for this class was generated from the following file:

• Models/UserModel.cs

BankWebApp.Services.UserService Class Reference

Service class for managing users.

Public Member Functions

• UserService ()

Constructor for UserService. Initializes a new instance of the DatabaseService and refreshes the cache

• IList< UserModel > GetUsers ()

Retrieves the list of users. If the cache is null or expired, it refreshes the cache before returning the users.

• UserModel? GetUserById (int id)

Retrieves a user by their ID.

• UserModel? GetUserByUsername (string username)

Retrieves a user by their username.

- bool string reason RegisterUser (RegisterModel newUser)
- IList< BankAccountModel > GetBankAccountsById (int uid)

Retrieves the bank accounts of a user by their ID.

• BankAccountModel? GetBankAccountsById (string id)

Retrieves a bank account by its account number.

• IList< BankAccountModel > GetAllBankAccounts ()

Retrieves all bank accounts.

• IList< RolesModel > GetRolesById (int uid)

Retrieves the roles of a user by their ID.

• IList< TransactionModel > GetAllTransactions ()

Retrieves all transactions.

• IList< TransactionModel > GetTransactionsByAccountId (int accountId)

Retrieves the transactions of a bank account by its ID.

Public Attributes

bool success

Registers a new user.

Detailed Description

Service class for managing users.

Member Function Documentation

IList< BankAccountModel > BankWebApp.Services.UserService.GetAllBankAccounts ()

Retrieves all bank accounts.

Returns

A list of all bank accounts.

IList< TransactionModel > BankWebApp.Services.UserService.GetAllTransactions ()

Retrieves all transactions.

Returns

A list of all transactions.

IList< BankAccountModel > BankWebApp.Services.UserService.GetBankAccountsByld (int uid)

Retrieves the bank accounts of a user by their ID.

Parameters

uid The ID of the user.	
-------------------------	--

Returns

A list of bank accounts owned by the user.

BankAccountModel? BankWebApp.Services.UserService.GetBankAccountsByld (string id)

Retrieves a bank account by its account number.

Parameters

id	The account number of the bank account.

Returns

The bank account with the given account number, or null if no such account exists.

IList< RolesModel > BankWebApp.Services.UserService.GetRolesByld (int uid)

Retrieves the roles of a user by their ID.

Parameters

-		
	uid	The ID of the user.

Returns

A list of roles assigned to the user.

IList< TransactionModel >

BankWebApp.Services.UserService.GetTransactionsByAccountId (int accountId)

Retrieves the transactions of a bank account by its ID.

Parameters

accountId	The ID of the bank account.

Returns

A list of transactions associated with the bank account.

UserModel? BankWebApp.Services.UserService.GetUserByld (int id)

Retrieves a user by their ID.

Parameters

Returns

The user with the given ID, or null if no such user exists.

UserModel? BankWebApp.Services.UserService.GetUserByUsername (string username)

Retrieves a user by their username.

Parameters

_		
	username	The username of the user.

Returns

The user with the given username, or null if no such user exists.

IList< UserModel > BankWebApp.Services.UserService.GetUsers ()

Retrieves the list of users. If the cache is null or expired, it refreshes the cache before returning the users.

Returns

A list of UserModel instances.

Member Data Documentation

bool BankWebApp.Services.UserService.success

Registers a new user.

Parameters

newUser	The details of the new user.
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Returns

A tuple indicating whether the registration was successful and a reason for failure, if applicable.

The documentation for this class was generated from the following file:

• Services/UserService.cs

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