

# Namespace UrlShortener.App

## Namespaces

[UrlShortener.App.Backend](#)

[UrlShortener.App.Blazor](#)

[UrlShortener.App.Shared](#)

# Namespace UrlShortener.App.Backend

## Namespaces

[UrlShortener.App.Backend.Business](#)

[UrlShortener.App.Backend.Controllers](#)

[UrlShortener.App.Backend.Middleware](#)

[UrlShortener.App.Backend.Migrations](#)

[UrlShortener.App.Backend.Models](#)

## Classes

[AppDbContext](#)

Database context for the application.

[Program](#)

Entry point of the URL shortener web application. Configures services, middleware, authentication, and database migrations.

# Namespace UrlShortener.App.Backend. Business Interfaces

## [IJwtTokenGenerator](#)

Provides functionality for generating JSON Web Tokens (JWT).

## [IMappingsService](#)

Service to manage URL mappings

## [IRedirectLogService](#)

Provides functionality for logging redirect events for shortened URLs.

## [IUserService](#)

Provides functionality for retrieving and parsing user agent information from a user's browser.

# Interface IJwtTokenGenerator

Namespace: [UrlShortener.App.Backend.Business](#)

Assembly: UrlShortener.App.Backend.dll

Provides functionality for generating JSON Web Tokens (JWT).

```
public interface IJwtTokenGenerator
```

## Methods

### GenerateToken(string)

Generates a JWT token for the specified email address.

```
string GenerateToken(string email)
```

#### Parameters

`email` [string](#)

The email address for which to generate the token.

#### Returns

[string](#)

A signed JWT token as a string.

# Interface IMappingsService

Namespace: [UrlShortener.App.Backend.Business](#)

Assembly: UrlShortener.App.Backend.dll

Service to manage URL mappings

```
public interface IMappingsService
```

## Methods

### CreateMapping(string, string, string)

Create a new mapping for a long URL

```
Task<UrlMapping?> CreateMapping(string longUrl, string name, string email)
```

Parameters

`longUrl` [string](#)

Long url

`name` [string](#)

Name of mapping

`email` [string](#)

Email of user

Returns

[Task](#)<[UrlMapping](#)>

### DeleteMapping(string, int)

Delete a mapping of a user by its id

```
Task<bool> DeleteMapping(string email, int mappingId)
```

## Parameters

email [string](#)

Email of the user

mappingId [int](#)

Id of the mapping

## Returns

[Task](#)<[bool](#)>

True, if it was successfully deleted

## GetMappingByPath(string)

Get a mapping by its short url path

```
Task<UrlMapping?> GetMappingByPath(string path)
```

## Parameters

path [string](#)

Path

## Returns

[Task](#)<[UrlMapping](#)>

UrlMapping with matching path

## GetMappingsByUser(string)

Get all mappings of a user

```
Task<List<UrlMapping>?> GetMappingsByUser(string email)
```

## Parameters

**email** string

Email of the user

## Returns

Task<List<UrlMapping>>

All mappings found

# Interface IRedirectLogService

Namespace: [UrlShortener.App.Backend.Business](#)

Assembly: UrlShortener.App.Backend.dll

Provides functionality for logging redirect events for shortened URLs.

```
public interface IRedirectLogService
```

## Methods

**LogRedirectAsync(UrlMapping, UserAgentApiResponse?, string?, string?)**

Logs a redirect event, capturing metadata such as the user's IP address, user agent, and device information.

```
Task LogRedirectAsync(UrlMapping urlMapping, UserAgentApiResponse?  
userAgentApiResponse, string? ipAddress, string? userAgent)
```

### Parameters

**urlMapping** [UrlMapping](#)

The URL mapping associated with the redirection.

**userAgentApiResponse** [UserAgentApiResponse](#)

Optional parsed user agent data, such as browser and device info.

**ipAddress** [string](#)

Optional IP address of the user initiating the redirect.

**userAgent** [string](#)

Optional raw user agent string of the user's browser.

### Returns

## Task ↗

A task representing the asynchronous logging operation.

# Interface IUserAgentService

Namespace: [UrlShortener.App.Backend.Business](#)

Assembly: UrlShortener.App.Backend.dll

Provides functionality for retrieving and parsing user agent information from a user's browser.

```
public interface IUserAgentService
```

## Methods

### GetUserAgentAsync(string)

Retrieves and parses user agent data from the provided user agent string.

```
Task<UserAgentApiResponse?> GetUserAgentAsync(string userAgent)
```

#### Parameters

**userAgent** [string](#)

The raw user agent string from the user's browser.

#### Returns

[Task](#)<[UserAgentApiResponse](#)>

A task that represents the asynchronous operation. The task result contains the parsed [UserAgentApiResponse](#), or [null](#) if parsing failed or no data was returned.

# Namespace UrlShortener.App.Backend.Controllers

## Classes

### [AuthController](#)

Controller responsible for user authentication, including login and registration endpoints.

### [HealthCheckController](#)

Simple controller for checking the health status of the API. Useful for uptime monitoring and infrastructure health checks.

### [MappingsController](#)

Controller responsible for managing URL mappings for authenticated users. Allows users to create, retrieve, delete, and view statistics for their shortened URLs.

### [RedirectController](#)

Controller responsible for handling redirection from short URLs to their corresponding long URLs.

# Class AuthController

Namespace: [UrlShortener.App.Backend.Controllers](#)

Assembly: UrlShortener.App.Backend.dll

Controller responsible for user authentication, including login and registration endpoints.

```
[Route("api/auth")]
[ApiController]
[EnableRateLimiting("fixed")]
public class AuthController : ControllerBase
```

## Inheritance

[object](#) ← [ControllerBase](#) ← AuthController

## Inherited Members

[ControllerBase.StatusCode\(int\)](#) , [ControllerBase.StatusCode\(int, object\)](#) ,  
[ControllerBase.Content\(string\)](#) , [ControllerBase.Content\(string, string\)](#) ,  
[ControllerBase.Content\(string, string, Encoding\)](#) ,  
[ControllerBase.Content\(string, MediaTypeHeaderValue\)](#) , [ControllerBase.NoContent\(\)](#) ,  
[ControllerBase.Ok\(\)](#) , [ControllerBase.Ok\(object\)](#) , [ControllerBase.Redirect\(string\)](#) ,  
[ControllerBase.RedirectPermanent\(string\)](#) ,  
[ControllerBase.RedirectPreserveMethod\(string\)](#) ,  
[ControllerBase.RedirectPermanentPreserveMethod\(string\)](#) ,  
[ControllerBase.LocalRedirect\(string\)](#) , [ControllerBase.LocalRedirectPermanent\(string\)](#) ,  
[ControllerBase.LocalRedirectPreserveMethod\(string\)](#) ,  
[ControllerBase.LocalRedirectPermanentPreserveMethod\(string\)](#) ,  
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[ControllerBase.RedirectToAction\(string, string, string\)](#) ,  
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 [ControllerBase.RedirectToPage\(string, string, string\)](#)  ,  
 [ControllerBase.RedirectToPage\(string, string, object, string\)](#)  ,  
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 [ControllerBase.RedirectToPagePermanent\(string, string, string\)](#)  ,  
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 [ControllerBase.UnprocessableEntity\(ModelStateDictionary\)](#)  ,  [ControllerBase.Conflict\(\)](#)  ,  
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 [ControllerBase.Problem\(string, string, int?, string, string\)](#)  ,  
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 [ControllerBase.ValidationProblem\(ValidationProblemDetails\)](#)  ,  
 [ControllerBase.ValidationProblem\(ModelStateDictionary\)](#)  ,  
 [ControllerBase.ValidationProblem\(\)](#)  ,  
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,

[ControllerBase.ValidationProblem\(string, string, int?, string, string, ModelStateDictionary, IDictionary<string, object>\)](#)  ,  
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[ControllerBase.AcceptedAtAction\(string, string\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, object\)](#)  ,  
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 [ControllerBase.AcceptedAtAction\(string, object, object\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, string, object, object\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(object\)](#)  ,  [ControllerBase.AcceptedAtRoute\(string\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(string, object\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(object, object\)](#)  ,  
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 [ControllerBase.Challenge\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.Challenge\(AuthenticationProperties, params string\[\]\)](#)  ,  
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 [ControllerBase.Forbid\(AuthenticationProperties, params string\[\]\)](#)  ,  
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 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties\)](#)  ,  
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties, string\)](#)  ,  
 [ControllerBase.SignOut\(\)](#)  ,  [ControllerBase.SignOut\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.SignOut\(params string\[\]\)](#)  ,  
 [ControllerBase.SignOut\(AuthenticationProperties, params string\[\]\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, params Expression<Func<TModel, object>>\[\] \)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, params Expression<Func<TModel, object>>\[\] \)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync\(object, Type, string\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync\(object, Type, string, IValueProvider, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryValidateModel\(object\)](#)  ,  
 [ControllerBase.TryValidateModel\(object, string\)](#)  ,  [ControllerBase.HttpContext](#)  ,  
 [ControllerBase.Request](#)  ,  [ControllerBase.Response](#)  ,  [ControllerBase.RouteData](#)  ,  
 [ControllerBase.ModelState](#)  ,  [ControllerBase.ControllerContext](#)  ,  
 [ControllerBase.MetadataProvider](#)  ,  [ControllerBase.ModelBinderFactory](#)  ,

[ControllerBase.Url](#) ,  [ControllerBase.ObjectValidator](#) ,  
 [ControllerBase.ProblemDetailsFactory](#) ,  [ControllerBase.User](#) ,  [ControllerBase.Empty](#) ,  
 [object.Equals\(object\)](#) ,  [object.Equals\(object, object\)](#) ,  [object.GetHashCode\(\)](#) ,  
 [object.GetType\(\)](#) ,  [object.MemberwiseClone\(\)](#) ,  [object.ReferenceEquals\(object, object\)](#) ,  
 [object.ToString\(\)](#)

## Remarks

Relies on  [IJwtTokenGenerator](#) for JWT creation and  [AppDbContext](#) for user persistence.

## Constructors

**AuthController(ILogger<AuthController>,  
IJwtTokenGenerator, AppDbContext)**

Controller responsible for user authentication, including login and registration endpoints.

```
public AuthController(ILogger<AuthController> Logger, IJwtTokenGenerator  
JwtTokenGenerator, AppDbContext DbContext)
```

## Parameters

Logger  [ILogger](#)< [AuthController](#)>

JwtTokenGenerator  [IJwtTokenGenerator](#)

DbContext  [AppDbContext](#)

## Remarks

Relies on  [IJwtTokenGenerator](#) for JWT creation and  [AppDbContext](#) for user persistence.

## Methods

**Login(LoginRequestDto)**

Authenticates a user and returns a JWT token if credentials are valid.

```
[HttpPost("login")]
```

```
public IActionResult Login(LoginRequestDto request)
```

## Parameters

request [LoginRequestDto](#)

The login request containing the user's email and password.

## Returns

[IActionResult](#)

[OkObjectResult](#) with a [LoginResponseDto](#) containing the JWT token, or [UnauthorizedObjectResult](#) if the credentials are invalid.

## Register(RegisterRequestDto)

Registers a new user and stores their credentials securely.

```
[HttpPost("register")]
public Task<IActionResult> Register(RegisterRequestDto request)
```

## Parameters

request [RegisterRequestDto](#)

The registration request containing the user's email and password.

## Returns

[Task](#)<[IActionResult](#)>

[OkObjectResult](#) with a successful [RegisterResponseDto](#) if registration succeeds, or a [BadRequestObjectResult](#) or [ConflictObjectResult](#) with an appropriate error.

# Class HealthCheckController

Namespace: [UrlShortener.App.Backend.Controllers](#)

Assembly: UrlShortener.App.Backend.dll

Simple controller for checking the health status of the API. Useful for uptime monitoring and infrastructure health checks.

```
[ApiController]
[Route("api/health")]
public class HealthCheckController : ControllerBase
```

## Inheritance

[object](#) ← [ControllerBase](#) ← HealthCheckController

## Inherited Members

[ControllerBase.StatusCode\(int\)](#) , [ControllerBase.StatusCode\(int, object\)](#) ,  
[ControllerBase.Content\(string\)](#) , [ControllerBase.Content\(string, string\)](#) ,  
[ControllerBase.Content\(string, string, Encoding\)](#) ,  
[ControllerBase.Content\(string, MediaTypeHeaderValue\)](#) , [ControllerBase.NoContent\(\)](#) ,  
[ControllerBase.Ok\(\)](#) , [ControllerBase.Ok\(object\)](#) , [ControllerBase.Redirect\(string\)](#) ,  
[ControllerBase.RedirectPermanent\(string\)](#) ,  
[ControllerBase.RedirectPreserveMethod\(string\)](#) ,  
[ControllerBase.RedirectPermanentPreserveMethod\(string\)](#) ,  
[ControllerBase.LocalRedirect\(string\)](#) , [ControllerBase.LocalRedirectPermanent\(string\)](#) ,  
[ControllerBase.LocalRedirectPreserveMethod\(string\)](#) ,  
[ControllerBase.LocalRedirectPermanentPreserveMethod\(string\)](#) ,  
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[ControllerBase.RedirectToAction\(string, string\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, object\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, string\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, object, string\)](#) ,  
[ControllerBase.RedirectToActionPreserveMethod\(string, string, object, string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, object\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, string, string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, string, object\)](#) ,

[ControllerBase.RedirectToActionPermanent\(string, string, object, string\)](#)  ,  
 [ControllerBase.RedirectToActionPermanentPreserveMethod\(string, string, object, string\)](#)  ,  
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 [ControllerBase.RedirectToRoutePermanentPreserveMethod\(string, object, string\)](#)  ,  
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[ControllerBase.File\(string, string, string\)](#)  ,  [ControllerBase.File\(string, string, string, bool\)](#)  ,  
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 [ControllerBase.PhysicalFile\(string, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#)  ,  
 [ControllerBase.Unauthorized\(\)](#)  ,  [ControllerBase.Unauthorized\(object\)](#)  ,  
 [ControllerBase.NotFound\(\)](#)  ,  [ControllerBase.NotFound\(object\)](#)  ,  
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 [ControllerBase.BadRequest\(ModelStateDictionary\)](#)  ,  
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 [ControllerBase.Conflict\(object\)](#)  ,  [ControllerBase.Conflict\(ModelStateDictionary\)](#)  ,  
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 [ControllerBase.Problem\(string, string, int?, string, string, IDictionary<string, object>\)](#)  ,  
 [ControllerBase.ValidationProblem\(ValidationProblemDetails\)](#)  ,  
 [ControllerBase.ValidationProblem\(ModelStateDictionary\)](#)  ,  
 [ControllerBase.ValidationProblem\(\)](#)  ,  
 [ControllerBase.ValidationProblem\(string, string, int?, string, string, ModelStateDictionary\)](#)  ,  
  
 [ControllerBase.ValidationProblem\(string, string, int?, string, string, ModelStateDictionary, IDictionary<string, object>\)](#)  ,  
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 [ControllerBase.CreatedAtRoute\(string, object, object\)](#)  ,  [ControllerBase.Accepted\(\)](#)  ,  
 [ControllerBase.Accepted\(object\)](#)  ,  [ControllerBase.Accepted\(Uri\)](#)  ,  
 [ControllerBase.Accepted\(string\)](#)  ,  [ControllerBase.Accepted\(string, object\)](#)  ,  
 [ControllerBase.Accepted\(Uri, object\)](#)  ,  [ControllerBase.AcceptedAtAction\(string\)](#)  ,

[ControllerBase.AcceptedAtAction\(string, string\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, object\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, string, object\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, object, object\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, string, object, object\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(object\)](#)  ,  [ControllerBase.AcceptedAtRoute\(string\)](#)  ,  
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 [ControllerBase.AcceptedAtRoute\(object, object\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(string, object, object\)](#)  ,  [ControllerBase.Challenge\(\)](#)  ,  
 [ControllerBase.Challenge\(params string\[\]\)](#)  ,  
 [ControllerBase.Challenge\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.Challenge\(AuthenticationProperties, params string\[\]\)](#)  ,  
 [ControllerBase.Forbid\(\)](#)  ,  [ControllerBase.Forbid\(params string\[\]\)](#)  ,  
 [ControllerBase.Forbid\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.Forbid\(AuthenticationProperties, params string\[\]\)](#)  ,  
 [ControllerBase.SignIn\(ClaimsPrincipal\)](#)  ,  [ControllerBase.SignIn\(ClaimsPrincipal, string\)](#)  ,  
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties\)](#)  ,  
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties, string\)](#)  ,  
 [ControllerBase.SignOut\(\)](#)  ,  [ControllerBase.SignOut\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.SignOut\(params string\[\]\)](#)  ,  
 [ControllerBase.SignOut\(AuthenticationProperties, params string\[\]\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, params Expression<Func<TModel, object>>\[\] \)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, params Expression<Func<TModel, object>>\[\] \)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync\(object, Type, string\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync\(object, Type, string, IValueProvider, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryValidateModel\(object\)](#)  ,  
 [ControllerBase.TryValidateModel\(object, string\)](#)  ,  [ControllerBase.HttpContext](#)  ,  
 [ControllerBase.Request](#)  ,  [ControllerBase.Response](#)  ,  [ControllerBase.RouteData](#)  ,  
 [ControllerBase.ModelState](#)  ,  [ControllerBase.ControllerContext](#)  ,  
 [ControllerBase.MetadataProvider](#)  ,  [ControllerBase.ModelBinderFactory](#)  ,

[ControllerBase.Url](#) ,  [ControllerBase.ObjectValidator](#) ,  
 [ControllerBase.ProblemDetailsFactory](#) ,  [ControllerBase.User](#) ,  [ControllerBase.Empty](#) ,  
 [object.Equals\(object\)](#) ,  [object.Equals\(object, object\)](#) ,  [object.GetHashCode\(\)](#) ,  
 [object.GetType\(\)](#) ,  [object.MemberwiseClone\(\)](#) ,  [object.ReferenceEquals\(object, object\)](#) ,  
 [object.ToString\(\)](#)

## Methods

### Get()

Returns a basic health check response.

```
[HttpGet]  
public IActionResult Get()
```

Returns

[IActionResult](#)

[OkObjectResult](#) containing the current status and a UTC timestamp.

# Class MappingsController

Namespace: [UrlShortener.App.Backend.Controllers](#)

Assembly: UrlShortener.App.Backend.dll

Controller responsible for managing URL mappings for authenticated users. Allows users to create, retrieve, delete, and view statistics for their shortened URLs.

```
[ApiController]
[Route("api/mappings")]
[EnableRateLimiting("fixed")]
[Authorize]
public class MappingsController : ControllerBase
```

## Inheritance

[object](#) ← [ControllerBase](#) ← MappingsController

## Inherited Members

[ControllerBase.StatusCode\(int\)](#) , [ControllerBase.StatusCode\(int, object\)](#) ,  
[ControllerBase.Content\(string\)](#) , [ControllerBase.Content\(string, string\)](#) ,  
[ControllerBase.Content\(string, string, Encoding\)](#) ,  
[ControllerBase.Content\(string, MediaTypeHeaderValue\)](#) , [ControllerBase.NoContent\(\)](#) ,  
[ControllerBase.Ok\(\)](#) , [ControllerBase.Ok\(object\)](#) , [ControllerBase.Redirect\(string\)](#) ,  
[ControllerBase.RedirectPermanent\(string\)](#) ,  
[ControllerBase.RedirectPreserveMethod\(string\)](#) ,  
[ControllerBase.RedirectPermanentPreserveMethod\(string\)](#) ,  
[ControllerBase.LocalRedirect\(string\)](#) , [ControllerBase.LocalRedirectPermanent\(string\)](#) ,  
[ControllerBase.LocalRedirectPreserveMethod\(string\)](#) ,  
[ControllerBase.LocalRedirectPermanentPreserveMethod\(string\)](#) ,  
[ControllerBase.RedirectToAction\(\)](#) , [ControllerBase.RedirectToAction\(string\)](#) ,  
[ControllerBase.RedirectToAction\(string, object\)](#) ,  
[ControllerBase.RedirectToAction\(string, string\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, object\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, string\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, object, string\)](#) ,  
[ControllerBase.RedirectToActionPreserveMethod\(string, string, object, string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, object\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, string, string\)](#) ,

[ControllerBase.RedirectToActionPermanent\(string, string, object\)](#)  ,  
 [ControllerBase.RedirectToActionPermanent\(string, string, object, string\)](#)  ,  
 [ControllerBase.RedirectToActionPermanentPreserveMethod\(string, string, object, string\)](#)  ,  
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 [ControllerBase.RedirectToRoute\(string, object\)](#)  ,  
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 [ControllerBase.RedirectToRoute\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToRoutePreserveMethod\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(string\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(object\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(string, object\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(string, string\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanentPreserveMethod\(string, object, string\)](#)  ,  
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 [ControllerBase.RedirectToPage\(string, string\)](#)  ,  
 [ControllerBase.RedirectToPage\(string, string, object\)](#)  ,  
 [ControllerBase.RedirectToPage\(string, string, string\)](#)  ,  
 [ControllerBase.RedirectToPage\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string, object\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string, string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string, string, string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string, string, object, string\)](#)  ,  
 [ControllerBase.RedirectToPagePreserveMethod\(string, string, object, string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanentPreserveMethod\(string, string, object, string\)](#)  ,  
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 [ControllerBase.File\(byte\[\], string, DateTimeOffset?, EntityTagHeaderValue\)](#)  ,  
 [ControllerBase.File\(byte\[\], string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#)  ,  
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 [ControllerBase.PhysicalFile\(string, string, string\) ↗](#) ,  
 [ControllerBase.PhysicalFile\(string, string, string, bool\) ↗](#) ,  
 [ControllerBase.PhysicalFile\(string, string, DateTimeOffset?, EntityTagHeaderValue\) ↗](#) ,  
 [ControllerBase.PhysicalFile\(string, string, DateTimeOffset?, EntityTagHeaderValue, bool\) ↗](#) ,  
 [ControllerBase.PhysicalFile\(string, string, string, DateTimeOffset?, EntityTagHeaderValue\) ↗](#) ,  
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 [ControllerBase.Problem\(string, string, int?, string, string\) ↗](#) ,  
 [ControllerBase.Problem\(string, string, int?, string, string, IDictionary<string, object>\) ↗](#) ,  
 [ControllerBase.ValidationProblem\(ValidationProblemDetails\) ↗](#) ,  
 [ControllerBase.ValidationProblem\(ModelStateDictionary\) ↗](#) ,  
 [ControllerBase.ValidationProblem\(\) ↗](#) ,  
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 [ControllerBase.ValidationProblem\(string, string, int?, string, string, ModelStateDictionary, IDictionary<string, object>\) ↗](#) ,  
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 [ControllerBase.CreatedAtAction\(string, object, object\) ↗](#) ,  
 [ControllerBase.CreatedAtAction\(string, string, object, object\) ↗](#) ,  
 [ControllerBase.CreatedAtRoute\(string, object\) ↗](#) ,  
 [ControllerBase.CreatedAtRoute\(object, object\) ↗](#) ,  
 [ControllerBase.CreatedAtRoute\(string, object, object\) ↗](#) ,  [ControllerBase.Accepted\(\) ↗](#) ,  
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 [ControllerBase.AcceptedAtAction\(string, object, object\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, string, object, object\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(object\)](#)  ,  [ControllerBase.AcceptedAtRoute\(string\)](#)  ,  
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 [ControllerBase.AcceptedAtRoute\(string, object, object\)](#)  ,  [ControllerBase.Challenge\(\)](#)  ,  
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 [ControllerBase.Forbid\(AuthenticationProperties, params string\[\]\)](#)  ,  
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 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties\)](#)  ,  
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties, string\)](#)  ,  
 [ControllerBase.SignOut\(\)](#)  ,  [ControllerBase.SignOut\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.SignOut\(params string\[\]\)](#)  ,  
 [ControllerBase.SignOut\(AuthenticationProperties, params string\[\]\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, params Expression<Func<TModel, object>>\[\] \)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, params Expression<Func<TModel, object>>\[\] \)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync\(object, Type, string\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync\(object, Type, string, IValueProvider, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryValidateModel\(object\)](#)  ,  
 [ControllerBase.TryValidateModel\(object, string\)](#)  ,  [ControllerBase.HttpContext](#)  ,  
 [ControllerBase.Request](#)  ,  [ControllerBase.Response](#)  ,  [ControllerBase.RouteData](#)  ,  
 [ControllerBase.ModelState](#)  ,  [ControllerBase.ControllerContext](#)  ,

[ControllerBase.MetadataProvider](#) ,  [ControllerBase.ModelBinderFactory](#) ,  
 [ControllerBase.Url](#) ,  [ControllerBase.ObjectValidator](#) ,  
 [ControllerBase.ProblemDetailsFactory](#) ,  [ControllerBase.User](#) ,  [ControllerBase.Empty](#) ,  
 [object.Equals\(object\)](#) ,  [object.Equals\(object, object\)](#) ,  [object.GetHashCode\(\)](#) ,  
 [object.GetType\(\)](#) ,  [object.MemberwiseClone\(\)](#) ,  [object.ReferenceEquals\(object, object\)](#) ,  
 [object.ToString\(\)](#)

## Constructors

### MappingsController(ILogger<MappingsController>, IMappingsService)

Controller responsible for managing URL mappings for authenticated users. Allows users to create, retrieve, delete, and view statistics for their shortened URLs.

```
public MappingsController(ILogger<MappingsController> Logger,  
IMappingsService MappingsService)
```

## Parameters

Logger  [ILogger](#)< [MappingsController](#)>

MappingsService  [IMappingsService](#)

## Methods

### CreateMapping(CreateMappingRequestDto)

Creates a new URL mapping (shortens a URL).

```
[HttpPost("create")]  
public Task<IActionResult> CreateMapping(CreateMappingRequestDto  
createMappingRequest)
```

## Parameters

createMappingRequest  [CreateMappingRequestDto](#)

Request containing the long URL and a name for the mapping.

Returns

[Task](#)<[IActionResult](#)>

[OkObjectResult](#) with a [CreateMappingResponseDto](#) containing the shortened URL, or [BadRequestObjectResult](#) if the input is invalid or creation fails.

## DeleteMapping(int)

Deletes a specific URL mapping by ID.

```
[HttpDelete("{mappingId}")]
public Task<IActionResult> DeleteMapping(int mappingId)
```

Parameters

`mappingId` [int](#)

The ID of the mapping to delete.

Returns

[Task](#)<[IActionResult](#)>

[OkObjectResult](#) if the deletion is successful, or [BadRequestObjectResult](#) if deletion fails.

## GetMappings()

Retrieves all URL mappings for the authenticated user.

```
[HttpGet("all")]
public Task<IActionResult> GetMappings()
```

Returns

[Task](#)<[IActionResult](#)>

[OkObjectResult](#) with a list of mappings, or [NotFoundObjectResult](#) if no mappings exist.

## GetStats()

Retrieves statistics for the authenticated user, such as total number of mappings and total clicks.

```
[HttpGet("stats")]
public Task<IActionResult> GetStats()
```

Returns

[Task](#)<[IActionResult](#)>

[OkObjectResult](#) containing a [UserStatsDto](#) with the user's statistics.

# Class RedirectController

Namespace: [UrlShortener.App.Backend.Controllers](#)

Assembly: UrlShortener.App.Backend.dll

Controller responsible for handling redirection from short URLs to their corresponding long URLs.

```
[ApiController]
[Route("")]
[AllowAnonymous]
public class RedirectController : ControllerBase
```

## Inheritance

[object](#) ← [ControllerBase](#) ← RedirectController

## Inherited Members

[ControllerBase.StatusCode\(int\)](#) , [ControllerBase.StatusCode\(int, object\)](#) ,  
[ControllerBase.Content\(string\)](#) , [ControllerBase.Content\(string, string\)](#) ,  
[ControllerBase.Content\(string, string, Encoding\)](#) ,  
[ControllerBase.Content\(string, MediaTypeHeaderValue\)](#) , [ControllerBase.NoContent\(\)](#) ,  
[ControllerBase.Ok\(\)](#) , [ControllerBase.Ok\(object\)](#) , [ControllerBase.Redirect\(string\)](#) ,  
[ControllerBase.RedirectPermanent\(string\)](#) ,  
[ControllerBase.RedirectPreserveMethod\(string\)](#) ,  
[ControllerBase.RedirectPermanentPreserveMethod\(string\)](#) ,  
[ControllerBase.LocalRedirect\(string\)](#) , [ControllerBase.LocalRedirectPermanent\(string\)](#) ,  
[ControllerBase.LocalRedirectPreserveMethod\(string\)](#) ,  
[ControllerBase.LocalRedirectPermanentPreserveMethod\(string\)](#) ,  
[ControllerBase.RedirectToAction\(\)](#) , [ControllerBase.RedirectToAction\(string\)](#) ,  
[ControllerBase.RedirectToAction\(string, object\)](#) ,  
[ControllerBase.RedirectToAction\(string, string\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, object\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, string\)](#) ,  
[ControllerBase.RedirectToAction\(string, string, object, string\)](#) ,  
[ControllerBase.RedirectToActionPreserveMethod\(string, string, object, string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, object\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, string\)](#) ,  
[ControllerBase.RedirectToActionPermanent\(string, string, string\)](#) ,

[ControllerBase.RedirectToActionPermanent\(string, string, object\)](#)  ,  
 [ControllerBase.RedirectToActionPermanent\(string, string, object, string\)](#)  ,  
 [ControllerBase.RedirectToActionPermanentPreserveMethod\(string, string, object, string\)](#)  ,  
 [ControllerBase.RedirectToRoute\(string\)](#)  ,  [ControllerBase.RedirectToRoute\(object\)](#)  ,  
 [ControllerBase.RedirectToRoute\(string, object\)](#)  ,  
 [ControllerBase.RedirectToRoute\(string, string\)](#)  ,  
 [ControllerBase.RedirectToRoute\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToRoutePreserveMethod\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(string\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(object\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(string, object\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(string, string\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanent\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToRoutePermanentPreserveMethod\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToPage\(string\)](#)  ,  [ControllerBase.RedirectToPage\(string, object\)](#)  ,  
 [ControllerBase.RedirectToPage\(string, string\)](#)  ,  
 [ControllerBase.RedirectToPage\(string, string, object\)](#)  ,  
 [ControllerBase.RedirectToPage\(string, string, string\)](#)  ,  
 [ControllerBase.RedirectToPage\(string, object, string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string, object\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string, string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string, string, string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanent\(string, string, object, string\)](#)  ,  
 [ControllerBase.RedirectToPagePreserveMethod\(string, string, object, string\)](#)  ,  
 [ControllerBase.RedirectToPagePermanentPreserveMethod\(string, string, object, string\)](#)  ,  
 [ControllerBase.File\(byte\[\], string\)](#)  ,  [ControllerBase.File\(byte\[\], string, bool\)](#)  ,  
 [ControllerBase.File\(byte\[\], string, string\)](#)  ,  
 [ControllerBase.File\(byte\[\], string, string, bool\)](#)  ,  
 [ControllerBase.File\(byte\[\], string, DateTimeOffset?, EntityTagHeaderValue\)](#)  ,  
 [ControllerBase.File\(byte\[\], string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#)  ,  
 [ControllerBase.File\(byte\[\], string, string, DateTimeOffset?, EntityTagHeaderValue\)](#)  ,  
 [ControllerBase.File\(byte\[\], string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#)  ,  
 [ControllerBase.File\(Stream, string\)](#)  ,  [ControllerBase.File\(Stream, string, bool\)](#)  ,  
 [ControllerBase.File\(Stream, string, string\)](#)  ,  
 [ControllerBase.File\(Stream, string, string, bool\)](#)  ,  
 [ControllerBase.File\(Stream, string, DateTimeOffset?, EntityTagHeaderValue\)](#)  ,  
 [ControllerBase.File\(Stream, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#)  ,  
 [ControllerBase.File\(Stream, string, string, DateTimeOffset?, EntityTagHeaderValue\)](#)  ,  
 [ControllerBase.File\(Stream, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#)  ,

[ControllerBase.File\(string, string\) ↗](#) ,  [ControllerBase.File\(string, string, bool\) ↗](#) ,  
 [ControllerBase.File\(string, string, string\) ↗](#) ,  [ControllerBase.File\(string, string, string, bool\) ↗](#) ,  
 [ControllerBase.File\(string, string, DateTimeOffset?, EntityTagHeaderValue\) ↗](#) ,  
 [ControllerBase.File\(string, string, DateTimeOffset?, EntityTagHeaderValue, bool\) ↗](#) ,  
 [ControllerBase.File\(string, string, string, DateTimeOffset?, EntityTagHeaderValue\) ↗](#) ,  
 [ControllerBase.File\(string, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\) ↗](#) ,  
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 [ControllerBase.PhysicalFile\(string, string, bool\) ↗](#) ,  
 [ControllerBase.PhysicalFile\(string, string, string\) ↗](#) ,  
 [ControllerBase.PhysicalFile\(string, string, string, bool\) ↗](#) ,  
 [ControllerBase.PhysicalFile\(string, string, DateTimeOffset?, EntityTagHeaderValue\) ↗](#) ,  
 [ControllerBase.PhysicalFile\(string, string, DateTimeOffset?, EntityTagHeaderValue, bool\) ↗](#) ,  
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 [ControllerBase.BadRequest\(\) ↗](#) ,  [ControllerBase.BadRequest\(object\) ↗](#) ,  
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 [ControllerBase.UnprocessableEntity\(ModelStateDictionary\) ↗](#) ,  [ControllerBase.Conflict\(\) ↗](#) ,  
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 [ControllerBase.ValidationProblem\(ModelStateDictionary\) ↗](#) ,  
 [ControllerBase.ValidationProblem\(\) ↗](#) ,  
 [ControllerBase.ValidationProblem\(string, string, int?, string, string, ModelStateDictionary\) ↗](#) ,  
  
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 [ControllerBase.CreatedAtAction\(string, object, object\) ↗](#) ,  
 [ControllerBase.CreatedAtAction\(string, string, object, object\) ↗](#) ,  
 [ControllerBase.CreatedAtRoute\(string, object\) ↗](#) ,  
 [ControllerBase.CreatedAtRoute\(object, object\) ↗](#) ,  
 [ControllerBase.CreatedAtRoute\(string, object, object\) ↗](#) ,  [ControllerBase.Accepted\(\) ↗](#) ,  
 [ControllerBase.Accepted\(object\) ↗](#) ,  [ControllerBase.Accepted\(Uri\) ↗](#) ,  
 [ControllerBase.Accepted\(string\) ↗](#) ,  [ControllerBase.Accepted\(string, object\) ↗](#) ,

[ControllerBase.Accepted\(Uri, object\)](#)  ,  [ControllerBase.AcceptedAtAction\(string\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, string\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, object\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, string, object\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, object, object\)](#)  ,  
 [ControllerBase.AcceptedAtAction\(string, string, object, object\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(object\)](#)  ,  [ControllerBase.AcceptedAtRoute\(string\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(string, object\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(object, object\)](#)  ,  
 [ControllerBase.AcceptedAtRoute\(string, object, object\)](#)  ,  [ControllerBase.Challenge\(\)](#)  ,  
 [ControllerBase.Challenge\(params string\[\]\)](#)  ,  
 [ControllerBase.Challenge\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.Challenge\(AuthenticationProperties, params string\[\]\)](#)  ,  
 [ControllerBase.Forbid\(\)](#)  ,  [ControllerBase.Forbid\(params string\[\]\)](#)  ,  
 [ControllerBase.Forbid\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.Forbid\(AuthenticationProperties, params string\[\]\)](#)  ,  
 [ControllerBase.SignIn\(ClaimsPrincipal\)](#)  ,  [ControllerBase.SignIn\(ClaimsPrincipal, string\)](#)  ,  
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties\)](#)  ,  
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties, string\)](#)  ,  
 [ControllerBase.SignOut\(\)](#)  ,  [ControllerBase.SignOut\(AuthenticationProperties\)](#)  ,  
 [ControllerBase.SignOut\(params string\[\]\)](#)  ,  
 [ControllerBase.SignOut\(AuthenticationProperties, params string\[\]\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, params Expression<Func<TModel, object>>\[\] \)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, params Expression<Func<TModel, object>>\[\] \)](#)  ,  
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync\(object, Type, string\)](#)  ,  
 [ControllerBase.TryUpdateModelAsync\(object, Type, string, IValueProvider, Func<ModelMetadata, bool>\)](#)  ,  
 [ControllerBase.TryValidateModel\(object\)](#)  ,  
 [ControllerBase.TryValidateModel\(object, string\)](#)  ,  [ControllerBase.HttpContext](#)  ,  
 [ControllerBase.Request](#)  ,  [ControllerBase.Response](#)  ,  [ControllerBase.RouteData](#)  ,  
 [ControllerBase.ModelState](#)  ,  [ControllerBase.ControllerContext](#)  ,

[ControllerBase.MetadataProvider](#) ,  [ControllerBase.ModelBinderFactory](#) ,  
 [ControllerBase.Url](#) ,  [ControllerBase.ObjectValidator](#) ,  
 [ControllerBase.ProblemDetailsFactory](#) ,  [ControllerBase.User](#) ,  [ControllerBase.Empty](#) ,  
 [object.Equals\(object\)](#) ,  [object.Equals\(object, object\)](#) ,  [object.GetHashCode\(\)](#) ,  
 [object.GetType\(\)](#) ,  [object.MemberwiseClone\(\)](#) ,  [object.ReferenceEquals\(object, object\)](#) ,  
 [object.ToString\(\)](#)

## Remarks

This controller is publicly accessible and does not require authentication. It also logs redirect metadata including IP address and user agent details.

## Constructors

**RedirectController(ILogger<RedirectController>,  
IMappingsService, IRedirectLogService,  
IUserService)**

Controller responsible for handling redirection from short URLs to their corresponding long URLs.

```
public RedirectController(ILogger<RedirectController> Logger,  
IMappingsService MappingsService, IRedirectLogService RedirectLogService,  
IUserService UserAgentService)
```

## Parameters

Logger  [ILogger](#)< [RedirectController](#)>

MappingsService  [IMappingsService](#)

RedirectLogService  [IRedirectLogService](#)

UserAgentService  [IUserAgentService](#)

## Remarks

This controller is publicly accessible and does not require authentication. It also logs redirect metadata including IP address and user agent details.

# Methods

## RedirectToLongUrl(string)

Redirects a short URL path to its original long URL.

```
[HttpGet("{path}")]
public Task<IActionResult> RedirectToLongUrl(string path)
```

### Parameters

path [string](#)

The short URL path to resolve and redirect.

### Returns

[Task](#)<[IActionResult](#)>

[RedirectResult](#) to the original URL if found; otherwise, [NotFoundResult](#).

# Namespace UrlShortener.App.Backend. Middleware

## Classes

### [DelayMiddleware](#)

Middleware that introduces an artificial delay for authentication-related requests to mitigate brute-force or timing attacks.

# Class DelayMiddleware

Namespace: [UrlShortener.App.Backend.Middleware](#)

Assembly: UrlShortener.App.Backend.dll

Middleware that introduces an artificial delay for authentication-related requests to mitigate brute-force or timing attacks.

```
public class DelayMiddleware : IMiddleware
```

## Inheritance

[object](#) ← DelayMiddleware

## Implements

[IMiddleware](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Remarks

Applies a base delay of 500ms with up to 200ms of jitter to all requests targeting the /api/auth path.

## Constructors

### DelayMiddleware(ILogger<DelayMiddleware>)

Middleware that introduces an artificial delay for authentication-related requests to mitigate brute-force or timing attacks.

```
public DelayMiddleware(ILogger<DelayMiddleware> logger)
```

## Parameters

logger [ILogger](#)<[DelayMiddleware](#)>

## Remarks

Applies a base delay of 500ms with up to 200ms of jitter to all requests targeting the [/api/auth](#) path.

## Methods

### InvokeAsync(HttpContext, RequestDelegate)

Executes the middleware logic, adding a delay to requests under the [/api/auth](#) path.

```
public Task InvokeAsync(HttpContext context, RequestDelegate next)
```

#### Parameters

`context` [HttpContext](#)

The current HTTP context.

`next` [RequestDelegate](#)

The delegate representing the next middleware in the pipeline.

#### Returns

[Task](#)

A task that represents the asynchronous operation.

# Namespace UrlShortener.App.Backend. Migrations

## Classes

### [InitialMigration](#)

A base class inherited by each EF Core migration.

# Class InitialMigration

Namespace: [UrlShortener.App.Backend.Migrations](#)

Assembly: UrlShortener.App.Backend.dll

A base class inherited by each EF Core migration.

```
[DbContext(typeof(AppDbContext))]
[Migration("20250409151853_InitialMigration")]
public class InitialMigration : Migration
```

## Inheritance

[object](#) ← [Migration](#) ← InitialMigration

## Inherited Members

[Migration.InitialDatabase](#) , [Migration.TargetModel](#) , [Migration.UpOperations](#) ,  
[Migration.DownOperations](#) , [Migration.ActiveProvider](#) , [object.Equals\(object\)](#) ,  
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Remarks

See [Database migrations](#) for more information and examples.

## Methods

### BuildTargetModel(ModelBuilder)

Implemented to build the [TargetModel](#).

```
protected override void BuildTargetModel(ModelBuilder modelBuilder)
```

## Parameters

`modelBuilder` [ModelBuilder](#)

The [ModelBuilder](#) to use to build the model.

## Remarks

See [Database migrations](#) for more information and examples.

## Down(MigrationBuilder)

Builds the operations that will migrate the database 'down'.

```
protected override void Down(MigrationBuilder migrationBuilder)
```

### Parameters

`migrationBuilder` [MigrationBuilder](#)

The [MigrationBuilder](#) that will build the operations.

### Remarks

That is, builds the operations that will take the database from the state left in by this migration so that it returns to the state that it was in before this migration was applied.

This method must be overridden in each class that inherits from [Migration](#) if both 'up' and 'down' migrations are to be supported. If it is not overridden, then calling it will throw and it will not be possible to migrate in the 'down' direction.

See [Database migrations](#) for more information and examples.

## Up(MigrationBuilder)

Builds the operations that will migrate the database 'up'.

```
protected override void Up(MigrationBuilder migrationBuilder)
```

### Parameters

`migrationBuilder` [MigrationBuilder](#)

The [MigrationBuilder](#) that will build the operations.

### Remarks

That is, builds the operations that will take the database from the state left in by the previous migration so that it is up-to-date with regard to this migration.

This method must be overridden in each class that inherits from [Migration](#).

See [Database migrations](#) for more information and examples.

# Namespace UrlShortener.App.Backend. Models

## Classes

### [UserAgentApiResponse](#)

Represents parsed user agent information returned by an external user agent API.

### [UserAgentClient](#)

Represents detailed information about the client software making the request, such as a browser or app, extracted from the user agent string.

### [UserAgentDevice](#)

Represents information about the physical device extracted from the user agent string.

### [UserAgentOs](#)

Represents information about the operating system extracted from the user agent string.

# Class UserAgentApiResponse

Namespace: [UrlShortener.App.Backend.Models](#)

Assembly: UrlShortener.App.Backend.dll

Represents parsed user agent information returned by an external user agent API.

```
public class UserAgentApiResponse
```

## Inheritance

[object](#) ← UserAgentApiResponse

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### BrowserFamily

Gets or sets the browser family (e.g., Chrome, Firefox, Safari).

```
[JsonPropertyName("browser_family")]
public string BrowserFamily { get; set; }
```

### Property Value

[string](#)

### Client

Gets or sets detailed client information such as name, type, and engine.

```
[JsonPropertyName("client")]
public UserAgentClient? Client { get; set; }
```

## Property Value

[UserAgentClient](#)

## Device

Gets or sets the device information such as brand, model, and type.

```
[JsonPropertyName("device")]
public UserAgentDevice? Device { get; set; }
```

## Property Value

[UserAgentDevice](#)

## Os

Gets or sets the operating system information including name and version.

```
[JsonPropertyName("os")]
public UserAgentOs? Os { get; set; }
```

## Property Value

[UserAgentOs](#)

## OsFamily

Gets or sets the operating system family (e.g., Windows, macOS, Linux).

```
[JsonPropertyName("os_family")]
public string OsFamily { get; set; }
```

## Property Value

[string](#) ↗

# Class UserAgentClient

Namespace: [UrlShortener.App.Backend.Models](#)

Assembly: UrlShortener.App.Backend.dll

Represents detailed information about the client software making the request, such as a browser or app, extracted from the user agent string.

```
public class UserAgentClient
```

## Inheritance

[object](#) ← UserAgentClient

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

# Properties

## Engine

Gets or sets the name of the rendering engine used by the client (e.g., Blink, Gecko).

```
[JsonPropertyName("engine")]
public string Engine { get; set; }
```

## Property Value

[string](#)

## EngineVersion

Gets or sets the version of the rendering engine.

```
[JsonPropertyName("engine_version")]
```

```
public string EngineVersion { get; set; }
```

## Property Value

[string](#)

## Name

Gets or sets the name of the client (e.g., Chrome, Firefox, Safari).

```
[JsonPropertyName("name")]
public string Name { get; set; }
```

## Property Value

[string](#)

## Type

Gets or sets the type of client (e.g., browser, mobile app, feed reader).

```
[JsonPropertyName("type")]
public string Type { get; set; }
```

## Property Value

[string](#)

## Version

Gets or sets the version of the client software.

```
[JsonPropertyName("version")]
public string Version { get; set; }
```

## Property Value

[string](#) ↗

# Class UserAgentDevice

Namespace: [UrlShortener.App.Backend.Models](#)

Assembly: UrlShortener.App.Backend.dll

Represents information about the physical device extracted from the user agent string.

```
public class UserAgentDevice
```

## Inheritance

[object](#) ← UserAgentDevice

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Brand

Gets or sets the brand of the device (e.g., Apple, Samsung, Google).

```
[JsonPropertyName("brand")]
public string Brand { get; set; }
```

### Property Value

[string](#)

### Model

Gets or sets the model of the device (e.g., iPhone 13, Galaxy S22).

```
[JsonPropertyName("model")]
public string Model { get; set; }
```

## Property Value

[string ↗](#)

## Type

Gets or sets the type of device (e.g., smartphone, tablet, desktop).

```
[JsonPropertyName("type")]
public string Type { get; set; }
```

## Property Value

[string ↗](#)

# Class UserAgentOs

Namespace: [UrlShortener.App.Backend.Models](#)

Assembly: UrlShortener.App.Backend.dll

Represents information about the operating system extracted from the user agent string.

```
public class UserAgentOs
```

## Inheritance

[object](#) ← UserAgentOs

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Name

Gets or sets the name of the operating system (e.g., Windows, macOS, Android).

```
[JsonPropertyName("name")]
public string Name { get; set; }
```

### Property Value

[string](#)

### Platform

Gets or sets the platform or architecture of the operating system (e.g., x86\_64, ARM).

```
[JsonPropertyName("platform")]
public string Platform { get; set; }
```

## Property Value

[string ↗](#)

## Version

Gets or sets the version of the operating system.

```
[JsonPropertyName("version")]
public string Version { get; set; }
```

## Property Value

[string ↗](#)

# Class AppDbContext

Namespace: [UrlShortener.App.Backend](#)

Assembly: UrlShortener.App.Backend.dll

Database context for the application.

```
public class AppDbContext : DbContext, IInfrastructure<IServiceProvider>,  
 IDbContextDependencies, IDbSetCache, IDbContextPoolable, IResettableService,  
 IDisposable, IAsyncDisposable
```

## Inheritance

[object](#) ← [DbContext](#) ← AppDbContext

## Implements

[IInfrastructure](#)<[IServiceProvider](#)>, [IDbContextDependencies](#), [IDbSetCache](#),  
[IDbContextPoolable](#), [IResettableService](#), [IDisposable](#), [IAsyncDisposable](#)

## Inherited Members

[DbContext.Set< TEntity >\(\)](#) , [DbContext.Set< TEntity >\(string\)](#) ,  
[DbContext.OnConfiguring\(DbContextOptionsBuilder\)](#) ,  
[DbContext.ConfigureConventions\(ModelConfigurationBuilder\)](#) ,  
[DbContext.SaveChanges\(\)](#) , [DbContext.SaveChanges\(bool\)](#) ,  
[DbContext.SaveChangesAsync\(CancellationToken\)](#) ,  
[DbContext.SaveChangesAsync\(bool, CancellationToken\)](#) , [DbContext.Dispose\(\)](#) ,  
[DbContext.DisposeAsync\(\)](#) , [DbContext.Entry< TEntity >\(TEntity\)](#) ,  
[DbContext.Entry\(object\)](#) , [DbContext.Add< TEntity >\(TEntity\)](#) ,  
[DbContext.AddAsync< TEntity >\(TEntity, CancellationToken\)](#) ,  
[DbContext.Attach< TEntity >\(TEntity\)](#) , [DbContext.Update< TEntity >\(TEntity\)](#) ,  
[DbContext.Remove< TEntity >\(TEntity\)](#) , [DbContext.Add\(object\)](#) ,  
[DbContext.AddAsync\(object, CancellationToken\)](#) , [DbContext.Attach\(object\)](#) ,  
[DbContext.Update\(object\)](#) , [DbContext.Remove\(object\)](#) ,  
[DbContext.AddRange\(params object\[\]\)](#) , [DbContext.AddRangeAsync\(params object\[\]\)](#) ,  
[DbContext.AttachRange\(params object\[\]\)](#) , [DbContext.UpdateRange\(params object\[\]\)](#) ,  
[DbContext.RemoveRange\(params object\[\]\)](#) ,  
[DbContext.AddRange\(IEnumerable< object >\)](#) ,  
[DbContext.AddRangeAsync\(IEnumerable< object >, CancellationToken\)](#) ,  
[DbContext.AttachRange\(IEnumerable< object >\)](#) ,  
[DbContext.UpdateRange\(IEnumerable< object >\)](#) ,  
[DbContext.RemoveRange\(IEnumerable< object >\)](#) ,

[DbContext.Find\(Type, params object\[\]\)](#) , [DbContext.FindAsync\(Type, params object\[\]\)](#) ,  
[DbContext.FindAsync\(Type, object\[\], CancellationToken\)](#) ,  
[DbContext.Find< TEntity >\(params object\[\]\)](#) ,  
[DbContext.FindAsync< TEntity >\(params object\[\]\)](#) ,  
[DbContext.FindAsync< TEntity >\(object\[\], CancellationToken\)](#) ,  
[DbContext.FromExpression< TResult >\(Expression< Func< IQueryables< TResult >> \)](#) ,  
[DbContext.Database](#) , [DbContext.ChangeTracker](#) , [DbContext.Model](#) ,  
[DbContext.ContextId](#) , [DbContext.SavingChanges](#) , [DbContext.SavedChanges](#) ,  
[DbContext.SaveChangesFailed](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,  
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,  
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### AppDbContext(DbContextOptions<AppDbContext>)

Database context for the application.

```
public AppDbContext(DbContextOptions<AppDbContext> options)
```

#### Parameters

**options** [DbContextOptions](#)<AppDbContext>

The options for the database context.

## Properties

### RedirectLogs

Gets or sets the database table of redirect logs. Each [RedirectLog](#) records information about a redirection event, including timestamp and IP address.

```
public virtual DbSet<RedirectLog> RedirectLogs { get; set; }
```

#### Property Value

[DbSet](#)<RedirectLog>

# UrlMappings

Gets or sets the database table of URL mappings. Each [UrlMapping](#) represents a shortened URL and its corresponding original URL with additional properties.

```
public virtual DbSet<UrlMapping> UrlMappings { get; set; }
```

Property Value

[DbSet](#)<[UrlMapping](#)>

# Users

Gets or sets the database table of users. Each [User](#) represents an individual user of the URL shortener system.

```
public virtual DbSet<User> Users { get; set; }
```

Property Value

[DbSet](#)<[User](#)>

# Methods

## OnModelCreating(ModelBuilder)

Configures the entity relationships and constraints using the model builder. This method is called when the model for a derived context has been initialized, but before the model has been locked down and used to initialize the context.

```
protected override void OnModelCreating(ModelBuilder modelBuilder)
```

Parameters

modelBuilder [ModelBuilder](#)

The builder being used to construct the model for the context.

# Class Program

Namespace: [UrlShortener.App.Backend](#)

Assembly: UrlShortener.App.Backend.dll

Entry point of the URL shortener web application. Configures services, middleware, authentication, and database migrations.

```
public class Program
```

## Inheritance

[object](#) ← Program

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Constructors

### Program()

Protected constructor to prevent instantiation.

```
protected Program()
```

## Methods

### Main(string[])

The main entry point of the application.

```
public static void Main(string[] args)
```

## Parameters

args [string](#)[]

Command-line arguments.

# Namespace UrlShortener.App.Blazor

## Namespaces

[UrlShortener.App.Blazor.Client](#)

## Classes

[Program](#)

Entry point for the Blazor Server application. Configures services, HTTP clients, authentication, and UI frameworks, and starts the web host.

# Namespace UrlShortener.App.Blazor.Client

## Namespaces

[UrlShortener.App.Blazor.Client.Api](#)

[UrlShortener.App.Blazor.Client.Business](#)

## Classes

[Program](#)

Entry point for the Blazor WebAssembly client application. Sets up the host and launches the app in the browser.

# Namespace UrlShortener.App.Blazor.Client.Api

## Classes

### [AuthApi](#)

Implementation of [IAuthApi](#) that communicates with the backend authentication API using [HttpClient](#).

## Interfaces

### [IAuthApi](#)

Defines methods for communicating with the authentication API, such as logging in and registering users.

# Class AuthApi

Namespace: [UrlShortener.App.Blazor.Client.Api](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Implementation of [IAuthApi](#) that communicates with the backend authentication API using [HttpClient](#).

```
public class AuthApi : IAuthApi
```

## Inheritance

[object](#) ← AuthApi

## Implements

[IAuthApi](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

# Constructors

## AuthApi(HttpClient)

Implementation of [IAuthApi](#) that communicates with the backend authentication API using [HttpClient](#).

```
public AuthApi(HttpClient HttpClient)
```

## Parameters

HttpClient [HttpClient](#)

# Methods

## Login(string, string)

Sends a login request to the API with the specified email and password.

```
public Task<string?> Login(string email, string password)
```

### Parameters

`email` [string](#)

The user's email address.

`password` [string](#)

The user's password.

### Returns

[Task](#)<[string](#)>

A task representing the asynchronous operation. The result contains a JWT token string if the login is successful; otherwise, `null`.

## Register(string, string)

Sends a registration request to the API with the specified email and password.

```
public Task<RegisterResponseDto?> Register(string email, string password)
```

### Parameters

`email` [string](#)

The email address for the new user.

`password` [string](#)

The password for the new user.

### Returns

## [Task](#) <[RegisterResponseDto](#)>

A task representing the asynchronous operation. The result contains a [RegisterResponseDto](#) with the outcome of the registration, or `null` if parsing fails.

# Interface IAuthApi

Namespace: [UrlShortener.App.Blazor.Client.Api](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Defines methods for communicating with the authentication API, such as logging in and registering users.

```
public interface IAuthApi
```

## Methods

### Login(string, string)

Sends a login request with the provided credentials and retrieves a JWT token if successful.

```
Task<string?> Login(string email, string password)
```

#### Parameters

`email` [string](#)

The user's email address.

`password` [string](#)

The user's password.

#### Returns

[Task](#)<[string](#)>

A task representing the asynchronous operation. The result contains the JWT token string if successful, or `null` if authentication fails.

### Register(string, string)

Sends a registration request to create a new user account.

```
Task<RegisterResponseDto?> Register(string email, string password)
```

## Parameters

**email** [string](#)

The email address for the new account.

**password** [string](#)

The password for the new account.

## Returns

[Task](#)<[RegisterResponseDto](#)>

A task representing the asynchronous operation. The result contains the registration response, or **null** if the request fails.

# Namespace UrlShortener.App.Blazor.Client.Business

## Classes

### [AppAuthenticationStateProvider](#)

Provides the authentication state for the Blazor application using JWT stored in sessionStorage. Inherits from [AuthenticationStateProvider](#).

### [AuthService](#)

Implementation of [IAuthService](#) that handles authentication and registration logic. Coordinates API calls, authentication state updates, navigation, and user notifications.

### [BrowserTimeProvider](#)

Provides time zone information based on the user's browser settings. Inherits from [Time Provider](#) and overrides the local time zone with the one provided by the browser.

### [MappingsService](#)

Implementation of [IMappingsService](#) that communicates with the backend to manage URL mappings. Handles creation, retrieval, deletion, and statistics via authenticated HTTP requests.

## Interfaces

### [IAuthService](#)

Defines authentication operations, such as logging in and registering users.

### [IMappingsService](#)

Defines operations related to URL mappings, such as creation, retrieval, deletion, and statistics.

# Class AppAuthenticationStateProvider

Namespace: [UrlShortener.App.Blazor.Client.Business](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Provides the authentication state for the Blazor application using JWT stored in sessionStorage. Inherits from [AuthenticationStateProvider](#).

```
public class AppAuthenticationStateProvider : AuthenticationStateProvider
```

## Inheritance

[object](#) ← [AuthenticationStateProvider](#) ← AppAuthenticationStateProvider

## Inherited Members

[AuthenticationStateProvider.NotifyAuthenticationStateChanged\(Task<AuthenticationState>\)](#) ,  
[AuthenticationStateProvider.AuthenticationStateChanged](#) , [object.Equals\(object\)](#) ,  
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Constructors

### AppAuthenticationStateProvider(IJSRuntime)

Provides the authentication state for the Blazor application using JWT stored in sessionStorage. Inherits from [AuthenticationStateProvider](#).

```
public AppAuthenticationStateProvider(IJSRuntime JsRuntime)
```

## Parameters

[JsRuntime](#) [IJSRuntime](#)

## Methods

### GetAuthenticationStateAsync()

Gets the current authentication state, including user claims if a valid JWT token is present.

```
public override Task<AuthenticationState> GetAuthenticationStateAsync()
```

Returns

[Task](#)<[AuthenticationState](#)>

A task that represents the asynchronous operation. The result contains the current [AuthenticationState](#).

## GetToken()

Returns the current JWT token.

```
public string? GetToken()
```

Returns

[string](#)

The JWT token as a string, or `null` if not set.

## MarkUserAsLoggedOut()

Clears the current authentication token, removes it from sessionStorage, and notifies the application of the logout.

```
public Task MarkUserAsLoggedOut()
```

Returns

[Task](#)

## TryMarkUserAsAuthenticated(string?)

Sets the authentication token, persists it to sessionStorage, and notifies the application of the updated auth state.

```
public Task TryMarkUserAsAuthenticated(string? token)
```

## Parameters

**token** [string](#)

The JWT token to set.

## Returns

[Task](#)

# Class AuthService

Namespace: [UrlShortener.App.Blazor.Client.Business](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Implementation of [IAuthService](#) that handles authentication and registration logic. Coordinates API calls, authentication state updates, navigation, and user notifications.

```
public class AuthService : IAuthService
```

## Inheritance

[object](#) ← AuthService

## Implements

[IAuthService](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Remarks

Depends on [IAuthApi](#) for backend communication, Blazorise.INotificationService for user feedback, [AuthenticationStateProvider](#) for authentication state management, and [NavigationManager](#) for routing.

## Constructors

### AuthService(IAuthApi, INotificationService, AuthenticationStateProvider, NavigationManager)

Implementation of [IAuthService](#) that handles authentication and registration logic. Coordinates API calls, authentication state updates, navigation, and user notifications.

```
public AuthService(IAuthApi AuthApi, INotificationService  
NotificationService, AuthenticationStateProvider AuthenticationStateProvider,  
NavigationManager NavigationManager)
```

## Parameters

`AuthApi` [IAuthApi](#)

`NotificationService` [INotificationService](#)

`AuthenticationStateProvider` [AuthenticationStateProvider](#)

`NavigationManager` [NavigationManager](#)

## Remarks

Depends on [IAuthApi](#) for backend communication, Blazorise.INotificationService for user feedback, [AuthenticationStateProvider](#) for authentication state management, and [NavigationManager](#) for routing.

## Methods

### `LoginAsync(string, string)`

Attempts to log in the user with the provided credentials. If successful, updates the authentication state and navigates to the home page. Otherwise, shows an error notification.

```
public Task LoginAsync(string username, string password)
```

## Parameters

`username` [string](#)

The user's email or username.

`password` [string](#)

The user's password.

## Returns

[Task](#)

# RegisterAsync(string, string)

Attempts to register a new user with the provided credentials. On success, redirects to the home page. On failure, displays an appropriate error message.

```
public Task RegisterAsync(string username, string password)
```

## Parameters

**username** [string](#)

The user's email or username.

**password** [string](#)

The user's password.

## Returns

[Task](#)

# Class BrowserTimeProvider

Namespace: [UrlShortener.App.Blazor.Client.Business](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Provides time zone information based on the user's browser settings. Inherits from [Time Provider](#) and overrides the local time zone with the one provided by the browser.

```
public class BrowserTimeProvider : TimeProvider
```

## Inheritance

[object](#) ← [TimeProvider](#) ← BrowserTimeProvider

## Inherited Members

[TimeProvider.CreateTimer\(TimerCallback, object, TimeSpan, TimeSpan\)](#) ,  
[TimeProvider.GetElapsedTime\(long\)](#) , [TimeProvider.GetElapsedTime\(long, long\)](#) ,  
[TimeProvider.GetLocalNow\(\)](#) , [TimeProvider.GetTimestamp\(\)](#) ,  
[TimeProvider.GetUtcNow\(\)](#) , [TimeProvider.System](#) ,  
[TimeProvider.TimestampFrequency](#) , [object.Equals\(object\)](#) ,  
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,  
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

## Properties

### LocalTimeZone

Gets the browser-provided local time zone if set; otherwise falls back to the base implementation.

```
public override TimeZoneInfo LocalTimeZone { get; }
```

## Property Value

[TimeZoneInfo](#)

## Methods

## SetBrowserTimeZone(string)

Sets the local time zone based on the provided time zone ID (from the browser). If the time zone changes, the [LocalTimeZoneChanged](#) event is raised.

```
public virtual void SetBrowserTimeZone(string timeZone)
```

### Parameters

`timeZone` [string](#)

## Events

### LocalTimeZoneChanged

Occurs when the local time zone is changed via [SetBrowserTimeZone\(string\)](#).

```
public event EventHandler? LocalTimeZoneChanged
```

### Event Type

[EventHandler](#)

# Interface IAuthService

Namespace: [UrlShortener.App.Blazor.Client.Business](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Defines authentication operations, such as logging in and registering users.

```
public interface IAuthService
```

## Methods

### LoginAsync(string, string)

Attempts to log in a user with the provided credentials.

```
Task LoginAsync(string username, string password)
```

#### Parameters

`username` [string](#)

The user's email or username.

`password` [string](#)

The user's password.

#### Returns

[Task](#)

A task representing the asynchronous operation.

### RegisterAsync(string, string)

Attempts to register a new user with the provided credentials.

```
Task RegisterAsync(string username, string password)
```

## Parameters

username [string](#)

The user's email or username.

password [string](#)

The user's password.

## Returns

[Task](#)

A task representing the asynchronous operation.

# Interface IMappingsService

Namespace: [UrlShortener.App.Blazor.Client.Business](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Defines operations related to URL mappings, such as creation, retrieval, deletion, and statistics.

```
public interface IMappingsService
```

## Methods

### CreateMapping(string, string?)

Creates a new shortened URL mapping.

```
Task<CreateMappingResponseDto?> CreateMapping(string longUrl, string? name = null)
```

#### Parameters

`longUrl` [string](#)

The original long URL to shorten.

`name` [string](#)

An optional name to identify the mapping.

#### Returns

[Task](#)<[CreateMappingResponseDto](#)>

A task representing the asynchronous operation. The result contains a [CreateMappingResponseDto](#) if creation is successful, or `null` otherwise.

### DeleteMapping(UrlMappingDto)

Deletes the specified URL mapping.

```
Task<bool> DeleteMapping(UrlMappingDto mapping)
```

## Parameters

### `mapping` [UrlMappingDto](#)

The mapping to delete.

## Returns

### [Task](#)<bool>

A task representing the asynchronous operation. The result is `true` if deletion succeeds; otherwise, `false`.

## GetMappings()

Retrieves all URL mappings for the currently authenticated user.

```
Task<List<UrlMappingDto>?> GetMappings()
```

## Returns

### [Task](#)<[List](#)<UrlMappingDto>>

A task representing the asynchronous operation. The result contains a list of [UrlMapping Dtos](#), or `null` if retrieval fails.

## GetStats()

Retrieves user statistics, including total mappings and total redirect clicks.

```
Task<UserStatsDto?> GetStats()
```

## Returns

### [Task](#)<UserStatsDto>

A task representing the asynchronous operation. The result contains a [UserStatsDto](#), or `null` if unavailable.

# Class MappingsService

Namespace: [UrlShortener.App.Blazor.Client.Business](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Implementation of [IMappingsService](#) that communicates with the backend to manage URL mappings. Handles creation, retrieval, deletion, and statistics via authenticated HTTP requests.

```
public class MappingsService : IMappingsService
```

## Inheritance

[object](#) ← MappingsService

## Implements

[IMappingsService](#)

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Remarks

Uses [HttpClient](#) for API calls, [AuthenticationStateProvider](#) for JWT access, and [NavigationManager](#) for redirecting unauthorized users.

## Constructors

### MappingsService(HttpClient, AuthenticationStateProvider, NavigationManager)

Implementation of [IMappingsService](#) that communicates with the backend to manage URL mappings. Handles creation, retrieval, deletion, and statistics via authenticated HTTP requests.

```
public MappingsService(HttpClient HttpClient, AuthenticationStateProvider  
AuthenticationStateProvider, NavigationManager NavigationManager)
```

## Parameters

`HttpClient` [HttpClient](#)

`AuthenticationStateProvider` [AuthenticationStateProvider](#)

`NavigationManager` [NavigationManager](#)

## Remarks

Uses [HttpClient](#) for API calls, [AuthenticationStateProvider](#) for JWT access, and [Navigation Manager](#) for redirecting unauthorized users.

## Methods

### CreateMapping(string, string?)

Creates a new shortened URL mapping.

```
public Task<CreateMappingResponseDto?> CreateMapping(string longUrl, string? name  
= null)
```

## Parameters

`longUrl` [string](#)

The original long URL to shorten.

`name` [string](#)

An optional name to identify the mapping.

## Returns

[Task](#)<[CreateMappingResponseDto](#)>

A task representing the asynchronous operation. The result contains a [CreateMapping ResponseDto](#) if creation is successful, or `null` otherwise.

### DeleteMapping(UrlMappingDto)

Deletes the specified URL mapping.

```
public Task<bool> DeleteMapping(UrlMappingDto mapping)
```

Parameters

**mapping** [UrlMappingDto](#)

The mapping to delete.

Returns

[Task](#)<bool>

A task representing the asynchronous operation. The result is `true` if deletion succeeds; otherwise, `false`.

## GetMappings()

Retrieves all URL mappings for the currently authenticated user.

```
public Task<List<UrlMappingDto>?> GetMappings()
```

Returns

[Task](#)<[List](#)<UrlMappingDto>>

A task representing the asynchronous operation. The result contains a list of [UrlMapping](#) [Dtos](#), or `null` if retrieval fails.

## GetStats()

Retrieves user statistics, including total mappings and total redirect clicks.

```
public Task<UserStatsDto?> GetStats()
```

Returns

## [Task](#) <[UserStatsDto](#)>

A task representing the asynchronous operation. The result contains a [UserStatsDto](#), or [null](#) if unavailable.

# Class Program

Namespace: [UrlShortener.App.Blazor.Client](#)

Assembly: UrlShortener.App.Blazor.Client.dll

Entry point for the Blazor WebAssembly client application. Sets up the host and launches the app in the browser.

```
public static class Program
```

## Inheritance

[object](#) ← Program

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

# Class Program

Namespace: [UrlShortener.App.Blazor](#)

Assembly: UrlShortener.App.Blazor.dll

Entry point for the Blazor Server application. Configures services, HTTP clients, authentication, and UI frameworks, and starts the web host.

```
public class Program
```

## Inheritance

[object](#) ← Program

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Constructors

### Program()

Protected constructor to prevent instantiation.

```
protected Program()
```

## Methods

### Main(string[])

Configures and launches the Blazor Server application.

```
public static void Main(string[] args)
```

## Parameters

args [string](#)[]

Command-line arguments passed to the application.

# Namespace UrlShortener.App.Shared

## Namespaces

[UrlShortener.App.Shared.Dto](#)

[UrlShortener.App.Shared.Extensions](#)

[UrlShortener.App.Shared.Models](#)

# Namespace UrlShortener.App.Shared.Dto Classes

## [ClickDataPointDto](#)

Represents a data point for click statistics, including the timestamp and number of clicks.

## [CreateMappingRequestDto](#)

Represents the request payload for creating a new shortened URL mapping.

## [CreateMappingResponseDto](#)

Represents the response returned after successfully creating a shortened URL mapping.

## [DeviceTypeDataPointDto](#)

Represents a data transfer object for device type statistics of URL mappings.

## [LoginRequestDto](#)

Represents the request payload for logging in a user.

## [LoginResponseDto](#)

Represents the response returned after a successful login request.

## [RedirectLogDto](#)

Represents a log entry for a URL redirection, including access metadata and client details.

## [RegisterRequestDto](#)

Represents the request payload for registering a new user.

## [RegisterResponseDto](#)

Represents the response returned after a user registration attempt. Indicates whether registration was successful and, if not, the type of error encountered.

## [TimeSeriesStatsDto](#)

Represents the data transfer object for time series statistics of URL mappings.

## [UrlMappingDto](#)

Represents a shortened URL mapping along with its metadata and redirect logs.

## [UserAgentClientDto](#)

Represents details about the client software (e.g., browser or app) extracted from a user agent string.

## [UserAgentDeviceDto](#)

Represents information about the user's physical device, extracted from the user agent string.

## [UserAgentInfoDto](#)

Represents structured information about a user's environment, parsed from a user agent string.

## [UserAgentOsDto](#)

Represents information about the operating system extracted from the user agent string.

## [UserStatsDto](#)

Represents aggregated statistics for a user, including total clicks and total URL mappings.

# Enums

## [RegisterErrorType](#)

Represents the possible error types that can occur during user registration.

# Class ClickDataPointDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents a data point for click statistics, including the timestamp and number of clicks.

```
public class ClickDataPointDto
```

## Inheritance

[object](#) ← ClickDataPointDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Clicks

Number of clicks at this timestamp

```
public int Clicks { get; set; }
```

Property Value

[int](#)

### DateTime

Timestamp of click

```
public DateTime DateTime { get; set; }
```

Property Value



# Class CreateMappingRequestDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents the request payload for creating a new shortened URL mapping.

```
public class CreateMappingRequestDto
```

## Inheritance

[object](#) ← CreateMappingRequestDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### LongUrl

Gets or sets the original long URL to be shortened.

```
[JsonPropertyName("long_url")]
public string LongUrl { get; set; }
```

### Property Value

[string](#)

### Name

Gets or sets an custom name or label for the URL mapping.

```
[JsonPropertyName("name")]
public string? Name { get; set; }
```

## Property Value

[string](#) ↗

# Class CreateMappingResponseDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents the response returned after successfully creating a shortened URL mapping.

```
public class CreateMappingResponseDto
```

## Inheritance

[object](#) ← CreateMappingResponseDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### ShortUrl

Gets or sets the generated short URL.

```
[JsonPropertyName("short_url")]
public string ShortUrl { get; set; }
```

### Property Value

[string](#)

# Class DeviceTypeDataPointDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents a data transfer object for device type statistics of URL mappings.

```
public class DeviceTypeDataPointDto
```

## Inheritance

[object](#) ← DeviceTypeDataPointDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Clicks

Number of clicks

```
[JsonPropertyName("clicks")]
public int Clicks { get; set; }
```

Property Value

[int](#)

### DeviceType

Device type (e.g., "Desktop", "Mobile", "Tablet")

```
[JsonPropertyName("deviceType")]
public required string DeviceType { get; set; }
```

## Property Value

[string](#) ↗

# Class LoginRequestDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents the request payload for logging in a user.

```
public class LoginRequestDto
```

## Inheritance

[object](#) ← LoginRequestDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Email

Gets the user's email address used for login.

```
[JsonPropertyName("email")]
public string Email { get; init; }
```

### Property Value

[string](#)

### Password

Gets the user's password used for login.

```
[JsonPropertyName("password")]
public string Password { get; init; }
```

## Property Value

[string](#) ↗

# Class LoginResponseDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents the response returned after a successful login request.

```
public class LoginResponseDto
```

## Inheritance

[object](#) ← LoginResponseDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Token

Gets or sets the JWT token issued to the authenticated user.

```
[JsonPropertyName("token")]
public string Token { get; set; }
```

### Property Value

[string](#)

# Class RedirectLogDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents a log entry for a URL redirection, including access metadata and client details.

```
public class RedirectLogDto
```

## Inheritance

[object](#) ← RedirectLogDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### AccessedAt

Gets or sets the UTC timestamp when the redirect occurred.

```
[JsonPropertyName("accessed_at")]
public DateTime AccessedAt { get; set; }
```

### Property Value

[DateTime](#)

### BrowserFamily

Gets or sets the browser family name (e.g., Chrome, Firefox).

```
[JsonPropertyName("browser_family")]
public string? BrowserFamily { get; set; }
```

Property Value

[string](#)

## ClientEngine

Gets or sets the engine used by the client (e.g., Blink, Gecko).

```
[JsonPropertyName("client_engine")]
public string? ClientEngine { get; set; }
```

Property Value

[string](#)

## ClientName

Gets or sets the name of the client (e.g., Chrome, Safari).

```
[JsonPropertyName("client_name")]
public string? ClientName { get; set; }
```

Property Value

[string](#)

## ClientType

Gets or sets the type of client (e.g., browser, app).

```
[JsonPropertyName("client_type")]
public string? ClientType { get; set; }
```

Property Value

[string](#)

## DeviceBrand

Gets or sets the brand of the device (e.g., Apple, Samsung).

```
[JsonPropertyName("device_brand")]
public string? DeviceBrand { get; set; }
```

### Property Value

[string](#)

## DeviceModel

Gets or sets the model of the device (e.g., iPhone 13, Galaxy S21).

```
[JsonPropertyName("device_model")]
public string? DeviceModel { get; set; }
```

### Property Value

[string](#)

## DeviceType

Gets or sets the type of device (e.g., smartphone, tablet, desktop).

```
[JsonPropertyName("device_type")]
public string? DeviceType { get; set; }
```

### Property Value

[string](#)

## Id

Gets or sets the unique identifier of the redirect log entry.

```
[JsonPropertyName("id")]
public int Id { get; set; }
```

Property Value

[int](#)

## IpAddress

Gets or sets the IP address of the user who triggered the redirect.

```
[JsonPropertyName("ip_address")]
public string? IpAddress { get; set; }
```

Property Value

[string](#)

## OsFamily

Gets or sets the operating system family (e.g., Windows, macOS, Linux).

```
[JsonPropertyName("os_family")]
public string? OsFamily { get; set; }
```

Property Value

[string](#)

## OsName

Gets or sets the name of the operating system (e.g., Windows, iOS).

```
[JsonPropertyName("os_name")]
public string? OsName { get; set; }
```

## Property Value

[string](#)

## OsVersion

Gets or sets the version of the operating system.

```
[JsonPropertyName("os_version")]
public string? OsVersion { get; set; }
```

## Property Value

[string](#)

## UserAgent

Gets or sets the raw user agent string from the user's browser.

```
[JsonPropertyName("user_agent")]
public string? UserAgent { get; set; }
```

## Property Value

[string](#)

# Enum RegisterErrorType

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents the possible error types that can occur during user registration.

```
public enum RegisterErrorType
```

## Fields

EmailAlreadyExists = 2

The provided email address is already associated with an existing user.

MissingEmailOrPassword = 1

The registration request was missing an email address or password.

None = 0

No error occurred. Registration was successful.

PasswordPolicyViolation = 3

The provided password does not meet the required security policy, such as length or complexity.

# Class RegisterRequestDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents the request payload for registering a new user.

```
public class RegisterRequestDto
```

## Inheritance

[object](#) ← RegisterRequestDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Email

Gets the user's email address to register with.

```
[JsonPropertyName("email")]
public string Email { get; init; }
```

### Property Value

[string](#)

### Password

Gets the user's chosen password.

```
[JsonPropertyName("password")]
public string Password { get; init; }
```

## Property Value

[string](#) ↗

# Class RegisterResponseDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents the response returned after a user registration attempt. Indicates whether registration was successful and, if not, the type of error encountered.

```
public class RegisterResponseDto
```

## Inheritance

[object](#) ← RegisterResponseDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

# Properties

## ErrorType

Gets or sets the type of error that occurred during registration, if any.

```
[JsonPropertyName("error_type")]
public RegisterErrorType ErrorType { get; set; }
```

## Property Value

[RegisterErrorType](#)

## Success

Gets or sets a value indicating whether the registration was successful.

```
[JsonPropertyName("success")]
```

```
public bool Success { get; set; }
```

Property Value

[bool](#) ↗

# Class TimeSeriesStatsDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents the data transfer object for time series statistics of URL mappings.

```
public class TimeSeriesStatsDto
```

## Inheritance

[object](#) ← TimeSeriesStatsDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### ClicksPerDay

Represents the total number of clicks for the URL mapping per day.

```
[JsonPropertyName("clicksPerDay")]
public IEnumerable<ClickDataPointDto> ClicksPerDay { get; set; }
```

### Property Value

[IEnumerable](#)<[ClickDataPointDto](#)>

### MappingId

Represents the unique identifier for the URL mapping.

```
[JsonPropertyName("id")]
public int MappingId { get; set; }
```

Property Value

[int ↗](#)

## MappingName

Represents the name of the URL mapping.

```
[JsonPropertyName("name")]
public required string MappingName { get; set; }
```

Property Value

[string ↗](#)

# Class UrlMappingDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents a shortened URL mapping along with its metadata and redirect logs.

```
public class UrlMappingDto
```

## Inheritance

[object](#) ← UrlMappingDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### CreatedAt

Gets or sets the timestamp when the mapping was created (in UTC).

```
[JsonPropertyName("created_at")]
public DateTime CreatedAt { get; set; }
```

### Property Value

[DateTime](#)

### Id

Gets or sets the unique identifier for the URL mapping.

```
[JsonPropertyName("id")]
public int Id { get; set; }
```

Property Value

[int](#)

## LongUrl

Gets or sets the original long URL.

```
[JsonPropertyName("long_url")]
public string LongUrl { get; set; }
```

Property Value

[string](#)

## Name

Gets or sets the optional name or label associated with this URL mapping.

```
[JsonPropertyName("name")]
public string? Name { get; set; }
```

Property Value

[string](#)

## RedirectLogs

Gets or sets the collection of redirect logs associated with this mapping.

```
[JsonPropertyName("redirect_logs")]
public List<RedirectLogDto> RedirectLogs { get; set; }
```

Property Value

[List](#)<[RedirectLogDto](#)>

## ShortUrl

Gets or sets the generated short URL.

```
[JsonPropertyName("short_url")]
public string ShortUrl { get; set; }
```

Property Value

[string](#)

## User

Gets or sets the email address or identifier of the user who created the mapping.

```
[JsonPropertyName("user")]
public string? User { get; set; }
```

Property Value

[string](#)

# Class UserAgentClientDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents details about the client software (e.g., browser or app) extracted from a user agent string.

```
public class UserAgentClientDto
```

## Inheritance

[object](#) ← UserAgentClientDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

# Properties

## Engine

Gets or sets the rendering engine used by the client (e.g., Blink, Gecko).

```
[JsonPropertyName("engine")]
public string Engine { get; set; }
```

## Property Value

[string](#)

## EngineVersion

Gets or sets the version of the rendering engine.

```
[JsonPropertyName("engine_version")]
```

```
public string EngineVersion { get; set; }
```

## Property Value

[string](#)

## Name

Gets or sets the name of the client software (e.g., Chrome, Safari).

```
[JsonPropertyName("name")]
public string Name { get; set; }
```

## Property Value

[string](#)

## Type

Gets or sets the type of client (e.g., browser, mobile app).

```
[JsonPropertyName("type")]
public string Type { get; set; }
```

## Property Value

[string](#)

## Version

Gets or sets the version of the client software.

```
[JsonPropertyName("version")]
public string Version { get; set; }
```

## Property Value

[string](#) ↗

# Class UserAgentDeviceDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents information about the user's physical device, extracted from the user agent string.

```
public class UserAgentDeviceDto
```

## Inheritance

[object](#) ← UserAgentDeviceDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

# Properties

## Brand

Gets or sets the brand of the device (e.g., Apple, Samsung).

```
[JsonPropertyName("brand")]
public string Brand { get; set; }
```

## Property Value

[string](#)

## Model

Gets or sets the model of the device (e.g., iPhone 14, Galaxy S23).

```
[JsonPropertyName("model")]
```

```
public string Model { get; set; }
```

Property Value

[string](#)

Type

Gets or sets the type of the device (e.g., smartphone, tablet, desktop).

```
[JsonPropertyName("type")]
public string Type { get; set; }
```

Property Value

[string](#)

# Class UserAgentInfoDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents structured information about a user's environment, parsed from a user agent string.

```
public class UserAgentInfoDto
```

## Inheritance

[object](#) ← UserAgentInfoDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

# Properties

## BrowserFamily

Gets or sets the browser family name (e.g., Chrome, Firefox, Safari).

```
[JsonPropertyName("browser_family")]
public string BrowserFamily { get; set; }
```

## Property Value

[string](#)

## Client

Gets or sets detailed client information such as browser name, type, and engine.

```
[JsonPropertyName("client")]
```

```
public UserAgentClientDto? Client { get; set; }
```

## Property Value

[UserAgentClientDto](#)

## Device

Gets or sets information about the user's device, including brand, model, and type.

```
[JsonPropertyName("device")]
public UserAgentDeviceDto? Device { get; set; }
```

## Property Value

[UserAgentDeviceDto](#)

## Os

Gets or sets the operating system information such as name and version.

```
[JsonPropertyName("os")]
public UserAgentOsDto? Os { get; set; }
```

## Property Value

[UserAgentOsDto](#)

## OsFamily

Gets or sets the operating system family (e.g., Windows, macOS, Android).

```
[JsonPropertyName("os_family")]
public string OsFamily { get; set; }
```

## Property Value

[string ↗](#)

# Class UserAgentOsDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents information about the operating system extracted from the user agent string.

```
public class UserAgentOsDto
```

## Inheritance

[object](#) ← UserAgentOsDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Name

Gets or sets the name of the operating system (e.g., Windows, macOS, Android).

```
[JsonPropertyName("name")]
public string Name { get; set; }
```

### Property Value

[string](#)

### Platform

Gets or sets the platform or architecture of the OS (e.g., x86\_64, ARM).

```
[JsonPropertyName("platform")]
public string Platform { get; set; }
```

## Property Value

[string ↗](#)

## Version

Gets or sets the version of the operating system.

```
[JsonPropertyName("version")]
public string Version { get; set; }
```

## Property Value

[string ↗](#)

# Class UserStatsDto

Namespace: [UrlShortener.App.Shared.Dto](#)

Assembly: UrlShortener.App.Shared.dll

Represents aggregated statistics for a user, including total clicks and total URL mappings.

```
public class UserStatsDto
```

## Inheritance

[object](#) ← UserStatsDto

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Clicks

Gets or sets the total number of redirect clicks across all of the user's URL mappings.

```
[JsonPropertyName("clicks")]
public int Clicks { get; set; }
```

### Property Value

[int](#)

### DeviceTypeStats

Gets or sets the statistics related to the device types used for accessing the user's URL mappings.

```
[JsonPropertyName("deviceTypeStats")]
public DeviceTypeStats DeviceTypeStats { get; set; }
```

```
public IEnumerable<DeviceTypeDataPointDto> DeviceTypeStats { get; set; }
```

Property Value

[IEnumerable](#)<[DeviceTypeDataPointDto](#)>

## Mappings

Gets or sets the total number of URL mappings created by the user.

```
[JsonPropertyName("mappings")]
public int Mappings { get; set; }
```

Property Value

[int](#)

## TimeSeriesStats

Gets or sets the statistics related to the time series of clicks on the user's URL mappings.

```
[JsonPropertyName("timeSeriesStats")]
public IEnumerable<TimeSeriesStatsDto> TimeSeriesStats { get; set; }
```

Property Value

[IEnumerable](#)<[TimeSeriesStatsDto](#)>

# Namespace UrlShortener.App.Shared.Extensions

## Classes

### [DtoExtensions](#)

Provides extension methods for converting entity models to their corresponding DTO representations.

# Class DtoExtensions

Namespace: [UrlShortener.App.Shared.Extensions](#)

Assembly: UrlShortener.App.Shared.dll

Provides extension methods for converting entity models to their corresponding DTO representations.

```
public static class DtoExtensions
```

## Inheritance

[object](#) ← DtoExtensions

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Methods

### GetStats(IEnumerable<UrlMapping>)

Converts a collection of [UrlMapping](#) entities to a [UserStatsDto](#) containing aggregated statistics.

```
public static UserStatsDto GetStats(this IEnumerable<UrlMapping> userMappings)
```

#### Parameters

userMappings [IEnumerable](#)<[UrlMapping](#)>

List of mappings

#### Returns

[UserStatsDto](#)

A [UserStatsDto](#) containing statistics about the user's URL mappings.

## ToDto(RedirectLog)

Converts a [RedirectLog](#) entity to a [RedirectLogDto](#) for use in API responses.

```
public static RedirectLogDto ToDto(this RedirectLog redirectLog)
```

### Parameters

`redirectLog` [RedirectLog](#)

The redirect log entity to convert.

### Returns

[RedirectLogDto](#)

A [RedirectLogDto](#) representing the redirect log.

## ToDto(UrlMapping, HttpRequest)

Converts a [UrlMapping](#) entity to a [UrlMappingDto](#) for use in API responses.

```
public static UrlMappingDto ToDto(this UrlMapping urlMapping,  
HttpRequest httpRequest)
```

### Parameters

`urlMapping` [UrlMapping](#)

The URL mapping entity to convert.

`httpRequest` [HttpRequest](#)

The current HTTP request, used to build the full short URL.

### Returns

[UrlMappingDto](#)

A [UrlMappingDto](#) representing the URL mapping.



# Namespace UrlShortener.App.Shared. Models

## Classes

### [RedirectLog](#)

Represents a log entry for a redirection event, including metadata about the request and client environment.

### [UrlMapping](#)

Represents a shortened URL mapping, including the original URL, its short path, metadata, and related redirect logs.

### [User](#)

Represents a registered user in the system, including authentication credentials.

# Class RedirectLog

Namespace: [UrlShortener.App.Shared.Models](#)

Assembly: UrlShortener.App.Shared.dll

Represents a log entry for a redirection event, including metadata about the request and client environment.

```
public class RedirectLog
```

## Inheritance

[object](#) ← RedirectLog

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Extension Methods

[DtoExtensions.Todo\(RedirectLog\)](#)

# Properties

## AccessedAt

Gets or sets the timestamp when the redirect occurred (in UTC).

```
public DateTime AccessedAt { get; set; }
```

## Property Value

[DateTime](#)

## BrowserFamily

Gets or sets the browser family (e.g., Chrome, Firefox).

```
public string? BrowserFamily { get; set; }
```

Property Value

[string](#)

## ClientEngine

Gets or sets the name of the rendering engine used by the client (e.g., Blink, Gecko).

```
public string? ClientEngine { get; set; }
```

Property Value

[string](#)

## ClientName

Gets or sets the name of the client software (e.g., Chrome, Safari).

```
public string? ClientName { get; set; }
```

Property Value

[string](#)

## ClientType

Gets or sets the type of the client (e.g., browser, app).

```
public string? ClientType { get; set; }
```

Property Value

[string](#)

## DeviceBrand

Gets or sets the brand of the user's device (e.g., Apple, Samsung).

```
public string? DeviceBrand { get; set; }
```

Property Value

[string](#)

## DeviceModel

Gets or sets the model of the user's device (e.g., iPhone 14, Galaxy S23).

```
public string? DeviceModel { get; set; }
```

Property Value

[string](#)

## DeviceType

Gets or sets the type of the user's device (e.g., smartphone, tablet, desktop).

```
public string? DeviceType { get; set; }
```

Property Value

[string](#)

## Id

Gets or sets the unique identifier of the redirect log entry.

```
public int Id { get; set; }
```

Property Value

[int ↗](#)

## IpAddress

Gets or sets the IP address of the user who triggered the redirect.

```
public string? IpAddress { get; set; }
```

Property Value

[string ↗](#)

## OsFamily

Gets or sets the operating system family (e.g., Windows, Linux, macOS).

```
public string? OsFamily { get; set; }
```

Property Value

[string ↗](#)

## OsName

Gets or sets the name of the operating system (e.g., Windows, iOS).

```
public string? OsName { get; set; }
```

Property Value

[string ↗](#)

## OsVersion

Gets or sets the version of the operating system.

```
public string? OsVersion { get; set; }
```

Property Value

[string](#)

## UrlMapping

Gets or sets the navigation property to the associated [UrlMapping](#).

```
public UrlMapping UrlMapping { get; set; }
```

Property Value

[UrlMapping](#)

## UrlMappingId

Gets or sets the foreign key reference to the associated [UrlMapping](#).

```
public int UrlMappingId { get; set; }
```

Property Value

[int](#)

## UserAgent

Gets or sets the raw user agent string from the user's browser.

```
public string? UserAgent { get; set; }
```

Property Value

[string](#) ↗

# Class UrlMapping

Namespace: [UrlShortener.App.Shared.Models](#)

Assembly: UrlShortener.App.Shared.dll

Represents a shortened URL mapping, including the original URL, its short path, metadata, and related redirect logs.

```
public class UrlMapping
```

## Inheritance

[object](#) ← UrlMapping

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Extension Methods

[DtoExtensions.Dto\(UrlMapping, HttpRequest\)](#)

# Properties

## CreatedAt

Gets or sets the UTC timestamp when the mapping was created.

```
public DateTime CreatedAt { get; set; }
```

## Property Value

[DateTime](#)

## Id

Gets or sets the unique identifier of the URL mapping.

```
public int Id { get; set; }
```

Property Value

[int](#)

## LongUrl

Gets or sets the original long URL that was shortened.

```
public string LongUrl { get; set; }
```

Property Value

[string](#)

## Name

Gets or sets an optional name or label for the mapping.

```
public string? Name { get; set; }
```

Property Value

[string](#)

## Path

Gets or sets the unique short path used for redirection.

```
public string Path { get; set; }
```

Property Value

[string](#)

## RedirectLogs

Gets or sets the collection of redirect logs associated with this URL mapping.

```
public List<RedirectLog> RedirectLogs { get; set; }
```

Property Value

[List](#)<[RedirectLog](#)>

## User

Gets or sets the identifier of the user who created the mapping (e.g., email address).

```
public string? User { get; set; }
```

Property Value

[string](#)

# Class User

Namespace: [UrlShortener.App.Shared.Models](#)

Assembly: UrlShortener.App.Shared.dll

Represents a registered user in the system, including authentication credentials.

```
public class User
```

## Inheritance

[object](#) ← User

## Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,  
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,  
[object.ToString\(\)](#)

## Properties

### Email

Gets or sets the email address of the user. Used as the login identifier.

```
public string Email { get; set; }
```

### Property Value

[string](#)

### Id

Gets or sets the unique identifier of the user.

```
public int Id { get; set; }
```

### Property Value

[int](#)

## PasswordHash

Gets or sets the hashed password of the user.

```
public string PasswordHash { get; set; }
```

Property Value

[string](#)

## Salt

Gets or sets the cryptographic salt used to hash the user's password.

```
public string Salt { get; set; }
```

Property Value

[string](#)