Inertia/Backend

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Chapter 1

inertia / Backend

This is the directory for the backend project component of the ${\tt inertia}$ software.

This directory contains the the project structure of this component.

2 inertia / Backend

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Account
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AuthorizationHandler
AccountIdentityHandler
DefaultAuthorizationHandler
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Controller
HireOptionsController
MyControllerBase
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DeposController
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3.1 Class List

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Chapter 4

Class Documentation

4.1 Account Class Reference

Properties

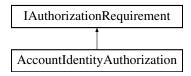
- string AccountId = null! [get, set]
 string Name = null! [get, set]
 string Email = null! [get, set]
 string Password = null! [get, set]
 string Salt = null! [get, set]
 AccountRole Role [get, set]
 AccountState State [get, set]
- UserType UserType [get, set]

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

· Models/Account.cs

4.2 AccountIdentityAuthorization Class Reference

Inheritance diagram for AccountIdentityAuthorization:



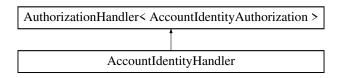
The documentation for this class was generated from the following file:

· Authorization/AccountIdentityAuthorization.cs

4.3 AccountIdentityHandler Class Reference

Handles the MatchAccountId policy - if the access token id matches the one in the request.

Inheritance diagram for AccountIdentityHandler:



Public Member Functions

• AccountIdentityHandler (IHttpContextAccessor httpContextAccessor)

Protected Member Functions

override Task HandleRequirementAsync (AuthorizationHandlerContext context, AccountIdentityAuthorization requirement)

4.3.1 Detailed Description

Handles the MatchAccountId policy - if the access token id matches the one in the request.

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

Authorization/AccountIdentityHandler.cs

4.4 AuthenticationTokenService Class Reference

Generates Authentication tokens, to safely and securely authenticate and authorize users.

Public Member Functions

- AuthenticationTokenService (IConfiguration configuration)
- string? GenerateAccessToken (Account account)

Generates an access token for an account

• ClaimsPrincipal? ValidateAccessToken (string token)

Checks whether a token is valid.

4.4.1 Detailed Description

Generates Authentication tokens, to safely and securely authenticate and authorize users.

4.4.2 Member Function Documentation

4.4.2.1 GenerateAccessToken()

Generates an access token for an account

D _o			- 4		
Pа	ra	m	eı	e	rs

account

Returns

4.4.2.2 ValidateAccessToken()

```
ClaimsPrincipal? AuthenticationTokenService.ValidateAccessToken ( string \ token \ ) \ \ [inline]
```

Checks whether a token is valid.

Parameters

token

Returns

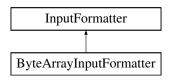
The documentation for this class was generated from the following file:

• Services/AuthenticationTokenService.cs

4.5 ByteArrayInputFormatter Class Reference

Utility class to format application/octet-stream request body into a byte[].

Inheritance diagram for ByteArrayInputFormatter:



Public Member Functions

• override async Task< InputFormatterResult > ReadRequestBodyAsync (InputFormatterContext context)

Protected Member Functions

• override bool **CanReadType** (Type type)

4.5.1 Detailed Description

Utility class to format application/octet-stream request body into a byte[].

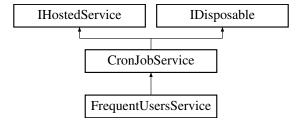
The documentation for this class was generated from the following file:

Util/ByteArrayInputFormatter.cs

4.6 CronJobService Class Reference

Utility Service to run recurring tasks after a cron expression.

Inheritance diagram for CronJobService:



Public Member Functions

- virtual async Task **StartAsync** (CancellationToken cancellationToken)
- virtual async Task **DoWork** (CancellationToken cancellationToken)
- virtual async Task StopAsync (CancellationToken cancellationToken)
- virtual void **Dispose** ()

Protected Member Functions

- CronJobService (string cronExpression, TimeZoneInfo timeZoneInfo)
- virtual async Task ScheduleJob (CancellationToken cancellationToken)

4.6.1 Detailed Description

Utility Service to run recurring tasks after a cron expression.

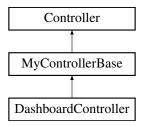
The documentation for this class was generated from the following file:

• Services/CronJobService.cs

4.7 DashboardController Class Reference

The controller for the admin dashboard functionality

Inheritance diagram for DashboardController:



Public Member Functions

- DashboardController (InertiaContext db, InertiaService inertia)
- async Task< ActionResult< DashboardResponse >> Get ()
 Fetches all the dashboard data and sends it in the http response.

Additional Inherited Members

4.7.1 Detailed Description

The controller for the admin dashboard functionality

4.7.2 Member Function Documentation

4.7.2.1 Get()

 $\verb|async Task<| Action Result<| Dashboard Response| > | Dashboard Controller. Get () [in line]|$

Fetches all the dashboard data and sends it in the http response.

Returns

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

· Controllers/Admin/DashboardController.cs

4.8 DbInitializer Class Reference

Initializes database with the required depos and scooters, as well as the test accounts and orders.

Static Public Member Functions

static void Initialize (InertiaContext context, UsersService users, IWebHostEnvironment env)

4.8.1 Detailed Description

Initializes database with the required depos and scooters, as well as the test accounts and orders.

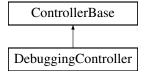
The documentation for this class was generated from the following file:

· DbInitializer.cs

4.9 DebuggingController Class Reference

Debugging controller, only available in development mode. Used for the unit tests.

Inheritance diagram for DebuggingController:



Public Member Functions

- DebuggingController (InertiaContext db, IWebHostEnvironment env)
- async Task< ActionResult > RemoveAccount (string email)
- async Task< ActionResult > RemoveOrder (string orderId)

4.9.1 Detailed Description

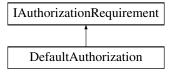
Debugging controller, only available in development mode. Used for the unit tests.

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

· Controllers/DebuggingController.cs

4.10 DefaultAuthorization Class Reference

Inheritance diagram for DefaultAuthorization:



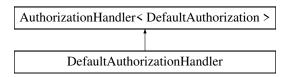
The documentation for this class was generated from the following file:

· Authorization/DefaultAuthorization.cs

4.11 DefaultAuthorizationHandler Class Reference

Handles whether the user is logged in with a valid access token

Inheritance diagram for DefaultAuthorizationHandler:



Public Member Functions

DefaultAuthorizationHandler (InertiaContext db, IHttpContextAccessor)

Protected Member Functions

override async Task HandleRequirementAsync (AuthorizationHandlerContext context, DefaultAuthorization requirement)

4.11.1 Detailed Description

Handles whether the user is logged in with a valid access token

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

· Authorization/DefaultAuthorizationHandler.cs

4.12 Depo Class Reference

Inheritance diagram for Depo:



Properties

- int Depoid [get, set]
- string Name = null! [get, set]
- float Latitude [get, set]
- float Longitude [get, set]
- string Address = null! [get, set]
- bool SoftDeleted [get, set]

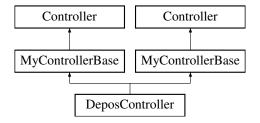
The documentation for this class was generated from the following file:

· Models/Depo.cs

4.13 DeposController Class Reference

Admin controller for modifying, adding and removing depos.

Inheritance diagram for DeposController:



Public Member Functions

- DeposController (InertiaContext db)
- async Task< Depo > AddItem ([FromBody] Dtos.CreateDepoRequest depo)

Endpoint that creates a new Depo

async Task< ActionResult > RemoveItem (int id)

Endpoint that removes a depo.

async Task< ActionResult > UpdateItem (int id, [FromBody] PatchDepoRequest depoRequest)

Endpoint that modifies a depo

- DeposController (InertiaContext db)
- async Task< IEnumerable< Depo >> List ()

Lists all the depos

async Task< ActionResult > GetItem (int id)

Returns all the details of a depo, by id.

Additional Inherited Members

4.13.1 Detailed Description

Admin controller for modifying, adding and removing depos.

Depos controller, to list and search through depos.

4.13.2 Member Function Documentation

4.13.2.1 AddItem()

Endpoint that creates a new Depo

Parameters

depo

Returns

4.13.2.2 GetItem()

```
async Task<ActionResult> DeposController.GetItem ( int \ id \ ) \quad [inline]
```

Returns all the details of a depo, by id.

Parameters

id

Returns

4.13.2.3 List()

```
async \ Task < IEnumerable < Depo> > DeposController.List \ (\ ) \quad [inline]
```

Lists all the depos

Returns

4.13.2.4 RemoveItem()

Endpoint that removes a depo.

Parameters



Returns

4.13.2.5 UpdateItem()

```
async Task<ActionResult> DeposController.UpdateItem ( int \ id, \\ [FromBody] \ PatchDepoRequest \ depoRequest \ ) \ [inline]
```

Endpoint that modifies a depo

Parameters



Returns

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

• Controllers/Admin/DeposController.cs

4.14 DiscountApplication Class Reference

Properties

```
    int DiscountApplicationId [get, set]
    string AccountId = null! [get, set]
    virtual Account Account = null! [get, set]
    UserType DiscountType [get, set]
    DiscountApplicationState State [get, set]
    byte?[] Image [get, set]
```

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

· Models/DiscountApplication.cs

4.15 DiscountApplicationModel Class Reference

Properties

```
string Name = null! [get, set]string DiscountType = null! [get, set]
```

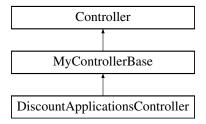
The documentation for this class was generated from the following file:

· Views/DiscountApplicationModel.cs

4.16 DiscountApplicationsController Class Reference

Admin controller that implements approving and denying discount applications

Inheritance diagram for DiscountApplicationsController:



Public Member Functions

- DiscountApplicationsController (InertiaContext db, EmailService email)
- async Task< ActionResult > List ()

Fetches a list of the current discount applications

async Task< ActionResult > GetImage (int applicationId)

Fetches the image of a discount application, by id.

async Task< ActionResult > Approve (int applicationId)

Approved a discount application, by id.

async Task< ActionResult > Deny (int applicationId)

Rejects a discount application by id.

Additional Inherited Members

4.16.1 Detailed Description

Admin controller that implements approving and denying discount applications

4.16.2 Member Function Documentation

4.16.2.1 Approve()

```
\label{lem:async} \verb| Task < ActionResult > \verb| DiscountApplicationsController.Approve ( | int | applicationId ) [inline] |
```

Approved a discount application, by id.

Parameters

```
application⇔
Id
```

Returns

4.16.2.2 Deny()

Rejects a discount application by id.

Parameters

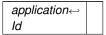
application*←* Id

Returns

4.16.2.3 GetImage()

Fetches the image of a discount application, by id.

Parameters



Returns

4.16.2.4 List()

```
async Task<ActionResult> DiscountApplicationsController.List ( ) [inline]
```

Fetches a list of the current discount applications

Returns

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

· Controllers/Admin/DiscountApplicationsController.cs

4.17 EmailAlreadyExistsException Class Reference

Thrown when an account cannot be created due to the email address being already taken.

Inheritance diagram for EmailAlreadyExistsException:



4.17.1 Detailed Description

Thrown when an account cannot be created due to the email address being already taken.

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

Exceptions/Exceptions.cs

4.18 EmailService Class Reference

The service that handles templating the email content and sending the emails

Public Member Functions

- **EmailService** (IRazorViewEngine razorViewEngine, ITempDataProvider tempDataProvider, IService ← Provider serviceProvider, IConfiguration configuration, InertiaContext db, ILogger < EmailService > logger)
- async Task SendOrderConfirmation (string email, Order order)

Renders the render confirmation email and sends to the user.

async Task SendOrderApproval (string email, Order order)

Renders the render order approval email and sends to the user.

async Task SendOrderDenied (string email, Order order)

Renders the order denied email and sends to the user.

• async Task SendOrderCancellation (string email, Order order)

Renders the order cancellation email and sends to the user.

async Task SendOrderExtension (string email, Order order)

Renders the order was extended email and sends to the user.

async Task SendDiscountApplication (string email, Account account)

Renders the successful discount application email and sends to the user.

async Task SendSignup (string email, Account account)

Renders the signup confirmation email and sends to the user.

4.18.1 Detailed Description

The service that handles templating the email content and sending the emails

4.18.2 Member Function Documentation

4.18.2.1 SendDiscountApplication()

Renders the successful discount application email and sends to the user.

Parameters

email	
account	

4.18.2.2 SendOrderApproval()

Renders the render order approval email and sends to the user.

Parameters

email	
order	

4.18.2.3 SendOrderCancellation()

Renders the order cancellation email and sends to the user.

Parameters

email	
order	

4.18.2.4 SendOrderConfirmation()

Renders the render confirmation email and sends to the user.

Parameters

```
email
order
```

4.18.2.5 SendOrderDenied()

Renders the order denied email and sends to the user.

Parameters

email	
order	

4.18.2.6 SendOrderExtension()

Renders the order was extended email and sends to the user.

Parameters

email	
order	

4.18.2.7 SendSignup()

Renders the signup confirmation email and sends to the user.

Parameters

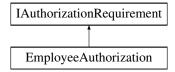


The documentation for this class was generated from the following file:

• Services/EmailService.cs

4.19 EmployeeAuthorization Class Reference

Inheritance diagram for EmployeeAuthorization:



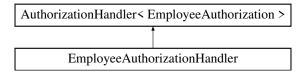
The documentation for this class was generated from the following file:

· Authorization/EmployeeAuthorization.cs

4.20 EmployeeAuthorizationHandler Class Reference

Handles Authorization requirement that checks for employee role.

Inheritance diagram for EmployeeAuthorizationHandler:



Public Member Functions

EmployeeAuthorizationHandler (IHttpContextAccessor httpContextAccessor)

Protected Member Functions

override Task HandleRequirementAsync (AuthorizationHandlerContext context, EmployeeAuthorization requirement)

4.20.1 Detailed Description

Handles Authorization requirement that checks for employee role.

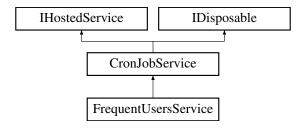
The documentation for this class was generated from the following file:

· Authorization/EmployeeAuthorizationHandler.cs

4.21 FrequentUsersService Class Reference

Recurring task that calculates the Frequent Users every week.

Inheritance diagram for FrequentUsersService:



Public Member Functions

- FrequentUsersService (IScheduleConfig< FrequentUsersService > config, ILogger< FrequentUsersService > logger, IServiceScopeFactory factory)
- override Task **StartAsync** (CancellationToken token)
- override async Task **DoWork** (CancellationToken token)
- override Task **StopAsync** (CancellationToken token)

Additional Inherited Members

4.21.1 Detailed Description

Recurring task that calculates the Frequent Users every week.

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

· Services/FrequentUsersService.cs

4.22 HireOption Class Reference

Inheritance diagram for HireOption:



Properties

```
int HireOptionId [get, set]
int DurationInHours [get, set]
string Name = null! [get, set]
float Cost [get, set]
bool SoftDeleted [get, set]
```

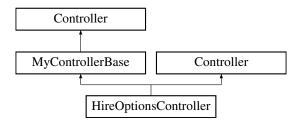
The documentation for this class was generated from the following file:

Models/HireOption.cs

4.23 HireOptionsController Class Reference

Admin Controller that creates, modifies and removes hire options.

Inheritance diagram for HireOptionsController:



Public Member Functions

- HireOptionsController (InertiaContext db)
- async Task< ActionResult > List ()
 - lists all hire options
- async Task< ActionResult > Get (int hireOptionId)
- $searches \ for \ a \ hire \ option, \ by \ id$ $\bullet \ async \ Task < ActionResult > Create \ ([FromBody] \ CreateHireOptionRequest \ request)$
- creates a hire option
 async Task< ActionResult > Edit (int hireOptionId, [FromBody] PatchHireOptionRequest request)
 modifies a hire option, by id
- async Task < ActionResult > Remove (int hireOptionId)
 removes a hire option, by id.
- HireOptionsController (InertiaContext db)
- async Task< ActionResult > List ()

Returns a list of all hire options, available for usage.

Additional Inherited Members

4.23.1 Detailed Description

Admin Controller that creates, modifies and removes hire options.

Controller to check all the currently available hire options

4.23.2 Member Function Documentation

4.23.2.1 Create()

creates a hire option

Parameters

request

Returns

4.23.2.2 Edit()

modifies a hire option, by id

Parameters

hire← OptionId request

Returns

4.23.2.3 Get()

searches for a hire option, by id

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hire*←* OptionId

Returns

4.23.2.4 List() [1/2]

async Task<ActionResult> HireOptionsController.List () [inline]

lists all hire options

Returns

4.23.2.5 List() [2/2]

async Task<ActionResult> HireOptionsController.List () [inline]

Returns a list of all hire options, available for usage.

Returns

4.23.2.6 Remove()

removes a hire option, by id.

Parameters

hire*←* OptionId Returns

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

• Controllers/Admin/HireOptionsController.cs

4.24 InertiaContext Class Reference

Database context of the application. All tables are generated from this class by Entity Framework

Inheritance diagram for InertiaContext:



Public Member Functions

• InertiaContext (DbContextOptions options)

Protected Member Functions

- override void **OnConfiguring** (DbContextOptionsBuilder optionsBuilder)
- override void OnModelCreating (ModelBuilder modelBuilder)

Properties

```
    DbSet   Depo > Depos = null! [get, set]
        Table for Depos
    DbSet   Scooter > Scooters = null! [get, set]
        Table for Scooters
    DbSet   Account > Accounts = null! [get, set]
        Table for Accounts
    DbSet   LoginInstance > LoginInstances = null! [get, set]
        Table for LoginInstances
    DbSet   Order > Orders = null! [get, set]
        Table for Orders
    DbSet   HireOption > HireOptions = null! [get, set]
        Table for HireOptions
    DbSet   Issue > Issues = null! [get, set]
        Table for Issues
    DbSet   DiscountApplication > DiscountApplications = null! [get, set]
```

Table for DiscountApplications

4.24.1 Detailed Description

Database context of the application. All tables are generated from this class by Entity Framework

4.24.2 Property Documentation

4.24.2.1 Accounts

```
DbSet<Account> InertiaContext.Accounts = null! [get], [set]
```

Table for Accounts

4.24.2.2 Depos

```
DbSet<Depo> InertiaContext.Depos = null! [get], [set]
```

Table for Depos

4.24.2.3 DiscountApplications

```
DbSet<DiscountApplication> InertiaContext.DiscountApplications = null! [get], [set]
```

Table for DiscountApplications

4.24.2.4 HireOptions

```
DbSet<HireOption> InertiaContext.HireOptions = null! [get], [set]
```

Table for HireOptions

4.24.2.5 Issues

```
DbSet<Issue> InertiaContext.Issues = null! [get], [set]
```

Table for Issues

4.24.2.6 LoginInstances

```
DbSet<LoginInstance> InertiaContext.LoginInstances = null! [get], [set]
```

Table for LoginInstances

4.24.2.7 Orders

```
DbSet<Order> InertiaContext.Orders = null! [get], [set]
```

Table for Orders

4.24.2.8 Scooters

```
DbSet<Scooter> InertiaContext.Scooters = null! [get], [set]
```

Table for Scooters

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

· InertiaContext.cs

4.25 InertiaService Class Reference

Service that takes care of keeping Scooter states up to date according with the current ongoing bookings.

Public Member Functions

- InertiaService (InertiaContext db)
- async Task< | Enumerable< Scooter > > GetAllScootersCurrentStatus (Depo? depo=null)
 Computes the current status of all scooters
- async Task< | Enumerable < Scooter > > GetAvailableScooters (DateTime startTime, DateTime endTime)

 Checks all the scooters that are not booked by another order, from startTime to endTime
- async Task< IEnumerable< Scooter > > GetAvailableScooters (Depo depo, DateTime startTime, Date
 — Time? endTime=null)

Checks all the scooters that are not booked by another order, from startTime to endTime, and that are in the depot depo.

- async Task< bool > IsScooterAvailable (Scooter scooter, DateTime startTime, DateTime? endTime=null)

 Checks whether a scooter is available (not booked) between startTime and endTime.
- async Task< bool > IsScooterAvailableForExtension (Order toExtend, Scooter scooter, DateTime startTime, DateTime? endTime=null)

Checks whether an order can be extended.

async Task ReturnScooter (Scooter scooter)

Marks a scooter as returned, by marking the booking that was using the scooter that it returned the scooter.

async Task UpdateOrderStatus ()

Updates all the order status, promoting them from Upcoming, to Ongoing, to PendingReturn depending on the current time

 async Task< Order > CreateOrder (Account account, Scooter scooter, HireOption hireOption, DateTime startTime)

Creates an order

async Task< Order > ExtendOrder (Order order, HireOption hireOption)

Extends an order

async Task CancelOrder (Order order)

Cancels an order

• async Task UpdateFrequentCustomers ()

Computes a list of users that are frequent and promotes them to frequent users for that week. Used from FrequentUsersService.

4.25.1 Detailed Description

Service that takes care of keeping Scooter states up to date according with the current ongoing bookings.

4.25.2 Member Function Documentation

4.25.2.1 CancelOrder()

Cancels an order

Parameters

order

Exceptions

OrderApprovedOrOngoingException

4.25.2.2 CreateOrder()

Creates an order

Parameters

account	
scooter	
hireOption	
startTime	

Returns

Exceptions

UnavailableScooterException

4.25.2.3 ExtendOrder()

```
async Task<Order> InertiaService.ExtendOrder (
          Order order,
          HireOption hireOption ) [inline]
```

Extends an order

Parameters

order hireOption

Returns

Exceptions

OrderCannotBeExtendException
UnavailableScooterException

4.25.2.4 GetAllScootersCurrentStatus()

```
\label{eq:conter} {\tt async Task<IEnumerable<Scooter>> InertiaService.GetAllScootersCurrentStatus \ (} \\ {\tt Depo?} \ \ depo = null \ ) \ \ [inline]
```

Computes the current status of all scooters

Parameters

depo filters the scooters that a	re in depo
----------------------------------	------------

Returns

List of scooters with the up to date status

4.25.2.5 GetAvailableScooters() [1/2]

Checks all the scooters that are not booked by another order, from startTime to endTime

Parameters

startTime	
endTime	

Returns

4.25.2.6 GetAvailableScooters() [2/2]

Checks all the scooters that are not booked by another order, from startTime to endTime, and that are in the depot depo.

Parameters

depo	
startTime	
endTime	

Returns

4.25.2.7 IsScooterAvailable()

Checks whether a scooter is available (not booked) between startTime and endTime.

Parameters

scooter	
startTime	
endTime	

Returns

4.25.2.8 IsScooterAvailableForExtension()

```
async Task<bool> InertiaService.IsScooterAvailableForExtension (
    Order toExtend,
    Scooter scooter,
    DateTime startTime,
    DateTime? endTime = null ) [inline]
```

Checks whether an order can be extended.

Parameters

toExtend	
scooter	
startTime	
endTime	

Returns

4.25.2.9 ReturnScooter()

Marks a scooter as returned, by marking the booking that was using the scooter that it returned the scooter.

Parameters

scooter

4.25.2.10 UpdateFrequentCustomers()

```
async Task InertiaService.UpdateFrequentCustomers ( ) [inline]
```

Computes a list of users that are frequent and promotes them to frequent users for that week. Used from FrequentUsersService.

4.25.2.11 UpdateOrderStatus()

```
async Task InertiaService.UpdateOrderStatus ( ) [inline]
```

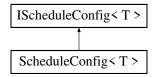
Updates all the order status, promoting them from Upcoming, to Ongoing, to PendingReturn depending on the current time.

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

· Services/InertiaService.cs

4.26 IScheduleConfig< T > Interface Template Reference

Inheritance diagram for IScheduleConfig < T >:



Properties

- string CronExpression [get, set]
- TimeZoneInfo TimeZoneInfo [get, set]

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

• Services/CronJobService.cs

4.27 ISoftDelete Interface Reference

Inheritance diagram for ISoftDelete:



Properties

bool SoftDeleted [get, set]

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

• Models/ISoftDelete.cs

4.28 Issue Class Reference

Properties

- int **Issueld** [get, set]
- IssuePriority Priority [get, set]
- string Title = null! [get, set]
- string Content = null! [get, set]
- string AccountId = null! [get, set]
- virtual Account Account = null! [get, set]
- DateTime DateOpened [get, set]
- string? Resolution [get, set]

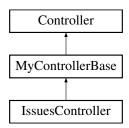
The documentation for this class was generated from the following file:

· Models/Issue.cs

4.29 IssuesController Class Reference

admin controller that implements the issue system.

Inheritance diagram for IssuesController:



Public Member Functions

- IssuesController (InertiaContext db)

Lists issues, filtering through them; by default all issues are returned

- $\bullet \ \ \text{async Task} < \text{ActionResult} > \text{GetIssue} \ (\text{int issueId}) \\$
 - gets all details of an issue, by id.
- async Task< ActionResult > PatchIssue (int issueId, [FromBody] PatchIssueRequest request)

Modifies an issue, by id. Used to escalate, deescalate and close issues.

Additional Inherited Members

4.29.1 Detailed Description

admin controller that implements the issue system.

4.29.2 Member Function Documentation

4.29.2.1 GetIssue()

gets all details of an issue, by id.

Parameters



Returns

4.29.2.2 ListIssues()

Lists issues, filtering through them; by default all issues are returned

Parameters

closed	filters by closed issues
priority	filters by priority

Returns

4.29.2.3 PatchIssue()

```
async Task<ActionResult> IssuesController.PatchIssue ( int \ issueId, \\ [FromBody] \ PatchIssueRequest \ request \ ) \ [inline]
```

Modifies an issue, by id. Used to escalate, deescalate and close issues.

Parameters

issueld	
request	

Returns

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

• Controllers/Admin/IssuesController.cs

4.30 StripeApiController.Item Class Reference

Properties

• string **Id** = null! [get, set]

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

• Controllers/StripeApiController.cs

4.31 LoginInstance Class Reference

Properties

```
    int LoginInstanceId [get, set]
    string AccessToken = null! [get, set]
    DateTime CreatedAt [get, set]
    string AccountId = null! [get, set]
    Account Account = null! [get, set]
```

• LoginInstanceState LoginState [get, set]

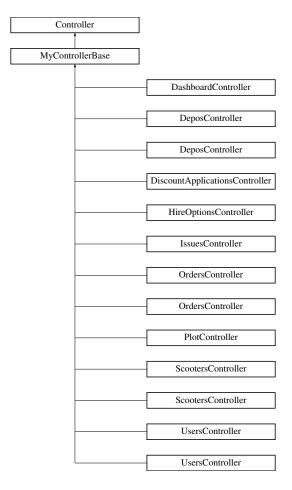
The documentation for this class was generated from the following file:

· Models/LoginInstance.cs

4.32 MyControllerBase Class Reference

Customer Controller base to make returning ApplicationError easier.

Inheritance diagram for MyControllerBase:



4.33 Order Class Reference 41

Protected Member Functions

· ActionResult ApplicationError (ApplicationErrorCode errorCode, string message, string? detail=null)

4.32.1 Detailed Description

Customer Controller base to make returning ApplicationError easier.

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

· Controllers/MyControllerBase.cs

4.33 Order Class Reference

Properties

```
• string Orderld = null! [get, set]
• int ScooterId [get, set]
• virtual Scooter Scooter = null! [get, set]
• DateTime CreatedAt [get, set]
• DateTime StartTime [get, set]
• DateTime EndTime [get, set]
• double BookTime [get, set]
• long WeekNumber [get, set]
• DayOfWeek WeekDay [get, set]
• float Cost [get, set]

    float PreDiscountCost [get, set]

• float Discount [get, set]

    int HireOptionId [get, set]

    virtual HireOption HireOption = null! [get, set]

• OrderState OrderState [get, set]
• string? ExtendsId = null! [get, set]
• virtual ? Order Extends = null [get, set]
• ICollection < Order >? Extensions = null [get, set]
• string AccountId = null! [get, set]

    virtual Account Account = null! [get, set]
```

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

· Models/Order.cs

4.34 OrderApprovalModel Class Reference

Properties

```
string Name = null! [get, set]string OrderId = null! [get, set]
```

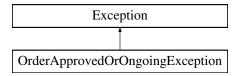
The documentation for this class was generated from the following file:

Views/OrderApprovalModel.cs

OrderApprovedOrOngoingException Class Reference 4.35

Thrown when an order cannot be cancelled

Inheritance diagram for OrderApprovedOrOngoingException:



4.35.1 Detailed Description

Thrown when an order cannot be cancelled

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

• Exceptions/Exceptions.cs

OrderCancellationModel Class Reference 4.36

Properties

- string Name = null! [get, set] • int **ScooterId** [get, set] • string Depo = null! [get, set] • string Orderld = null! [get, set] float PreDiscountCost [get, set]
- float Discount [get, set]
- float Cost [get, set]
- string **HireOptionName** = null! [get, set]

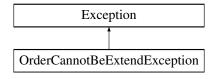
The documentation for this class was generated from the following file:

· Views/OrderCancellationModel.cs

OrderCannotBeExtendException Class Reference

Thrown when an order cannot be extended

Inheritance diagram for OrderCannotBeExtendException:



4.37.1 Detailed Description

Thrown when an order cannot be extended

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

• Exceptions/Exceptions.cs

4.38 OrderConfirmationModel Class Reference

Properties

```
string Name = null! [get, set]
int ScooterId [get, set]
string Depo = null! [get, set]
string OrderId = null! [get, set]
float PreDiscountCost [get, set]
float Discount [get, set]
float Cost [get, set]
string HireOptionName = null! [get, set]
```

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

Views/OrderConfirmationModel.cs

4.39 OrderDeniedModel Class Reference

Properties

```
string Name = null! [get, set]string OrderId = null! [get, set]
```

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

• Views/OrderDeniedModel.cs

4.40 OrderExtensionModel Class Reference

Properties

```
string Name = null! [get, set]
int ScooterId [get, set]
string Depo = null! [get, set]
string OrderId = null! [get, set]
float PreDiscountCost [get, set]
float Discount [get, set]
float Cost [get, set]
List< Tuple< string, DateTime > > Extensions = null! [get, set]
```

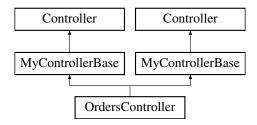
The documentation for this class was generated from the following file:

Views/OrderExtensionModel.cs

4.41 OrdersController Class Reference

Admin controller for operating on orders.

Inheritance diagram for OrdersController:



Public Member Functions

- · OrdersController (InertiaContext db, InertiaService inertia, EmailService email, UsersService users)
- async Task< ActionResult< List< Order >> > ListOrders ()

Returns a list of all the orders, by all users.

- async Task< ActionResult > ListOrders (string orderld)
 - gets all the details of an order, by id.
- async Task< ActionResult > CreateGuestOrder ([FromBody] CreateGuestOrderRequest createOrder)
 - Creates a guest order, used for employees creating guest orders
- async Task< ActionResult > CancelOrder (string orderId)

Cancels an order

- async Task< ActionResult > ExtendOrder (string orderId, [FromBody] ExtendOrderRequest extendOrder)
 Extends an order
- async Task< ActionResult > ApproveOrder (string orderId)

Approves an order

async Task< ActionResult > DenyOrder (string orderld)

Rejects an order

- OrdersController (InertiaContext db, InertiaService inertia, EmailService email)
- async Task< ActionResult > GetOrder (string orderId)

Returns all the details of an order, by id.

- async Task < ActionResult > CreateOrder ([FromBody] CreateOrderRequest createOrder)
 endpoint for creating an order.
- async Task< ActionResult > CancelOrder (string orderId)

endpoint for cancelling an order.

async Task< ActionResult > ExtendOrder (string orderId, [FromBody] ExtendOrderRequest extendOrder)
 endpoint for extending an order

Additional Inherited Members

4.41.1 Detailed Description

Admin controller for operating on orders.

Controller for Creating, Querying, Extending and Cancelling orders.

4.41.2 Member Function Documentation

4.41.2.1 ApproveOrder()

Approves an order

Parameters



Returns

4.41.2.2 CancelOrder() [1/2]

Cancels an order

Parameters



Returns

4.41.2.3 CancelOrder() [2/2]

endpoint for cancelling an order.

Parameters

```
order←
Id
```

Returns

4.41.2.4 CreateGuestOrder()

```
\label{lem:async} \verb| async Task < ActionResult > Orders Controller. Create Guest Order ( \\ [From Body] Create Guest Order Request | create Order ) [in line] \\
```

Creates a guest order, used for employees creating guest orders

Parameters

createOrder

Returns

4.41.2.5 CreateOrder()

endpoint for creating an order.

Parameters

createOrder

Returns

4.41.2.6 DenyOrder()

```
async Task<ActionResult> OrdersController.DenyOrder ( string \ orderId \ ) \quad [inline]
```

Rejects an order

Parameters

```
order←
Id
```

Returns

4.41.2.7 ExtendOrder() [1/2]

Extends an order

Parameters

orderId extendOrder

Returns

4.41.2.8 ExtendOrder() [2/2]

endpoint for extending an order

Parameters

orderld extendOrder

Returns

4.41.2.9 GetOrder()

Returns all the details of an order, by id.

Parameters



Returns

4.41.2.10 ListOrders() [1/2]

```
async \ Task < ActionResult < List < Order > > \ Orders Controller. List Orders \ ( ) \quad [inline]
```

Returns a list of all the orders, by all users.

Returns

4.41.2.11 ListOrders() [2/2]

gets all the details of an order, by id.

Parameters



Returns

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

• Controllers/Admin/OrdersController.cs

4.42 StripeApiController.PaymentIntentCreateRequest Class Reference

Properties

• ltem[] Items = null! [get, set]

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

· Controllers/StripeApiController.cs

4.43 Plot Class Reference

Properties

```
    List< int > XAxis = null! [get, set]
    List< PlotLine > YAxis = null! [get, set]
```

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

· Models/Plot.cs

4.44 PlotBarChart Class Reference

Properties

```
    List< String > Tags = null! [get, set]
    List< String > BarNames = null! [get, set]
    List< List< float > > BarData = null! [get, set]
```

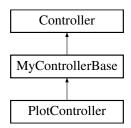
The documentation for this class was generated from the following file:

• Models/PlotBarChart.cs

4.45 PlotController Class Reference

Endpoint for computing the plot values.

Inheritance diagram for PlotController:



Public Member Functions

- PlotController (InertiaContext db)
- async Task< ActionResult > PlotWeeklyIncome ([FromQuery] bool separateHireOptions)
 plots weekly income, can separate weekly income by hire options.
- async Task< ActionResult > PlotCombinedDaily ()

Computes the combined daily plot

Additional Inherited Members

4.45.1 Detailed Description

Endpoint for computing the plot values.

4.45.2 Member Function Documentation

4.45.2.1 PlotCombinedDaily()

```
async Task<ActionResult> PlotController.PlotCombinedDaily ( ) [inline]
```

Computes the combined daily plot

Returns

4.45.2.2 PlotWeeklyIncome()

plots weekly income, can separate weekly income by hire options.

Parameters

separateHireOptions

Returns

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

· Controllers/Admin/PlotController.cs

4.46 PlotLine Class Reference

Properties

```
    string Name = null! [get, set]
    List< float > Values = null! [get, set]
```

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

· Models/Plot.cs

4.47 Policies Class Reference

List of policies that can be used an the Authorize attribute

Static Public Attributes

- const string Authenticated = "Authenticated"
- const string MatchAccountId = "MatchAccountId"
- const string **Employee** = "Employee"

4.47.1 Detailed Description

List of policies that can be used an the Authorize attribute

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

· Authorization/Policies.cs

4.48 Roles Class Reference

List of roles

Static Public Attributes

- const string **User** = nameof(AccountRole.User)
- const string **Employee** = nameof(AccountRole.Employee)

4.48.1 Detailed Description

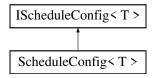
List of roles

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

· Authorization/Roles.cs

4.49 ScheduleConfig< T > Class Template Reference

Inheritance diagram for ScheduleConfig< T >:



Properties

- string CronExpression = null! [get, set]
- TimeZoneInfo TimeZoneInfo = null! [get, set]

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

· Services/CronJobService.cs

4.50 Scooter Class Reference

Inheritance diagram for Scooter:



Properties

```
int ScooterId [get, set]int SoftScooterId [get, set]
```

- int **Depoid** [get, set]
- virtual Depo Depo = null! [get, set]
- bool Available [get, set]
- ScooterStatus ScooterStatus [get, set]
- bool **SoftDeleted** [get, set]

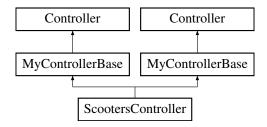
The documentation for this class was generated from the following file:

· Models/Scooter.cs

4.51 ScootersController Class Reference

Admin Controller for handling scooters.

Inheritance diagram for ScootersController:



Public Member Functions

- ScootersController (InertiaContext db, InertiaService inertia)
- async Task< ActionResult > List ([FromQuery] int? depold, [FromQuery] ScooterStatus? status)

Get a list of all scooters, with their updated status.

async Task< ActionResult > ReturnScooter (int scooterId)

Returns a scooter that is in the PendingReturn state.

async Task< ActionResult > AddItem ([FromBody] CreateScooterRequest request)

Creates a new scooter

async Task< ActionResult > RemoveItem (int scooterId)

removes a scooter

async Task< ActionResult< Scooter > > UpdateItem (int scooterId, [FromBody] PatchScooterRequest scooterRequest)

updates the details of a scooter

- ScootersController (InertiaContext db, InertiaService service)
- async Task< ActionResult > GetAvailableScooters ([FromQuery(Name="depold")] int? depold, [From
 Query(Name="startTime")] DateTime? startTime, [FromQuery(Name="endTime")] DateTime? endTime)

Computes and returns a list of the available scooters. Can filter by depold, and time frame.

async Task< ActionResult > CountAvailableScooters ([FromQuery(Name="depold")] int? depold, [From
 Query(Name="startTime")] DateTime? startTime, [FromQuery(Name="endTime")] DateTime? endTime)

Counts the currently available scooters.

async Task< ActionResult< Scooter > > GetItem (int id)

Returns the details of a scooter, by id.

Additional Inherited Members

4.51.1 Detailed Description

Admin Controller for handling scooters.

Controller for querying the availability of scooters.

4.51.2 Member Function Documentation

4.51.2.1 AddItem()

Creates a new scooter

Parameters

request

Returns

4.51.2.2 CountAvailableScooters()

Counts the currently available scooters.

Parameters

depold	
startTime	
endTime	

Returns

4.51.2.3 GetAvailableScooters()

Computes and returns a list of the available scooters. Can filter by depold, and time frame.

Parameters

depold	if left empty, queries all depos
startTime	if left empty, queries for the current time
endTime	if left empty, it is set to startTime

Returns

4.51.2.4 GetItem()

Returns the details of a scooter, by id.

Parameters



Returns

4.51.2.5 List()

Get a list of all scooters, with their updated status.

Parameters



Returns

4.51.2.6 RemoveItem()

```
async Task<ActionResult> ScootersController.RemoveItem ( int \ scooterId \ ) \quad [inline]
```

removes a scooter

Parameters



Returns

4.51.2.7 ReturnScooter()

Returns a scooter that is in the PendingReturn state.

Parameters

```
scooter⇔
Id
```

Returns

4.51.2.8 UpdateItem()

updates the details of a scooter

Parameters

```
scooterId
scooterRequest
```

Returns

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

• Controllers/Admin/ScootersController.cs

4.52 SignupModel Class Reference

Properties

- string Name = null! [get, set]
- string AccountId = null! [get, set]

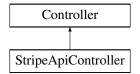
The documentation for this class was generated from the following file:

• Views/SignupModel.cs

4.53 StripeApiController Class Reference

Boiler plate code for integrating with Stripe.

Inheritance diagram for StripeApiController:



Classes

- · class Item
- · class PaymentIntentCreateRequest

Public Member Functions

- StripeApiController (InertiaContext db)
- async Task< ActionResult > Create (PaymentIntentCreateRequest request)

4.53.1 Detailed Description

Boiler plate code for integrating with Stripe.

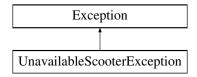
The documentation for this class was generated from the following file:

· Controllers/StripeApiController.cs

4.54 UnavailableScooterException Class Reference

Thrown when a scooter is not available

Inheritance diagram for UnavailableScooterException:



4.54.1 Detailed Description

Thrown when a scooter is not available

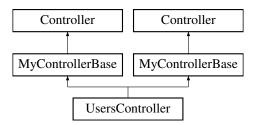
The documentation for this class was generated from the following file:

Exceptions/Exceptions.cs

4.55 UsersController Class Reference

Admin Controller for operating on users

Inheritance diagram for UsersController:



Public Member Functions

- UsersController (InertiaContext db, UsersService users)
- async Task< ActionResult > GetUsers ()

Gets a list of users.

- async Task< ActionResult > GetUser (string accountId)
 - get all the details of a user, by id.

Modifies the details of an user account

async Task< ActionResult< CreateUserResponse > > CreateUser ([FromBody] CreateUserRequest request)

Creates a new user

- $\bullet \ \ async \ Task < ActionResult > {\color{red} PatchUser} \ (string \ accountld, [FromBody] \ PatchUserRequest \ request) \\$
- UsersController (InertiaContext db, AuthenticationTokenService tokenService, InertiaService inertia, UsersService users, EmailService email)

- async Task< ActionResult > Signup ([FromBody] SignupRequest request)
 Allows user to sign up.
- async Task< ActionResult< LoginResponse > > Login ([FromBody] LoginRequest loginRequest)
 Allows user to log in in their account.
- async Task< ActionResult > Logout ([FromBody] LogoutRequest request)

Allows users to logout (and as such invalidate the access token) from their account.

async Task< ActionResult > GetProfile (string accountId)

Returns all the details of the logged in user account.

async Task< ActionResult > GetOrders (string accountId)

Returns a list of orders made by the currently logged in user account.

async Task< ActionResult > GetIssues (string accountId)

Returns a list of issues made by the currently logged in user account.

async Task< ActionResult > CreateIssue (string accountId, [FromBody] CreateIssueRequest request)
 Create an issues

async Task< ActionResult > GetIssue (string accountId, int issueId)

Get all the details of an issue submitted by the currently logged in user account

• async Task< ActionResult > CloseIssue (string accountId, int issueId)

Remove an issue submitted by the currently logged in user account

- async Task< ActionResult > ApplyDiscount (string accountId, [FromBody]ApplyDiscountRequest request)
 Apply for discount
- async Task< ActionResult > ApplyDiscountUploadImage (string accountId, [FromBody] byte[] image)
 Helper endpoints that allows for uploading images
- async Task< ActionResult > ChangePassword (string accountld, [FromBody] ChangePasswordRequest request)

Change password for the currently logged in user

Additional Inherited Members

4.55.1 Detailed Description

Admin Controller for operating on users

Controller for providing all account related functionality (applying for discounts, login, signup, modify account)

4.55.2 Member Function Documentation

4.55.2.1 ApplyDiscount()

Apply for discount

Parameters

account←	
ld	
request	

Returns

4.55.2.2 ApplyDiscountUploadImage()

```
async Task<ActionResult> UsersController.ApplyDiscountUploadImage ( string \ accountId, \\ [FromBody] \ byte[] \ image ) \ [inline]
```

Helper endpoints that allows for uploading images

Parameters

account <i>⊷</i> Id	
image	

Returns

4.55.2.3 ChangePassword()

```
async Task<ActionResult> UsersController.ChangePassword ( string \ account Id, \\ [FromBody] \ ChangePasswordRequest \ request \ ) \ [inline]
```

Change password for the currently logged in user

Parameters

account⇔	
ld	
request	

Returns

4.55.2.4 Closelssue()

Remove an issue submitted by the currently logged in user account

Parameters

account⇔	
ld	
issueld	

Returns

4.55.2.5 CreateIssue()

Create an issues

Parameters

```
account←
Id
request
```

Returns

4.55.2.6 CreateUser()

```
\label{lem:async} \verb| Task < ActionResult < CreateUserResponse > > UsersController.CreateUser ( \\ [FromBody] CreateUserRequest | request ) [inline] \\
```

Creates a new user

Parameters

request

Returns

4.55.2.7 GetIssue()

Get all the details of an issue submitted by the currently logged in user account

Parameters



Returns

4.55.2.8 GetIssues()

Returns a list of issues made by the currently logged in user account.

Parameters

account⇔ Id

Returns

4.55.2.9 GetOrders()

```
async Task<ActionResult> UsersController.GetOrders ( string \ accountId \ ) \quad [inline]
```

Returns a list of orders made by the currently logged in user account.

Parameters

```
account⇔
Id
```

Returns

4.55.2.10 GetProfile()

```
async Task<ActionResult> UsersController.GetProfile ( string \ account Id \ ) \quad [inline]
```

Returns all the details of the logged in user account.

Parameters

```
account⇔
Id
```

Returns

4.55.2.11 GetUser()

get all the details of a user, by id.

Parameters

account*⇔* Id

Returns

```
4.55.2.12 GetUsers()
```

```
async Task<ActionResult> UsersController.GetUsers ( ) [inline]
```

Gets a list of users.

Returns

4.55.2.13 Login()

```
\label{loginResponse} {\tt async Task<ActionResult<LoginResponse>> UsersController.Login (} $$ [FromBody] LoginRequest $loginRequest ) [inline]
```

Allows user to log in in their account.

Parameters

loginRequest

Returns

4.55.2.14 Logout()

Allows users to logout (and as such invalidate the access token) from their account.

Parameters

request

Returns

4.55.2.15 PatchUser()

```
async Task<ActionResult> UsersController.PatchUser ( string \ account Id, \\ [FromBody] \ PatchUserRequest \ request ) \ [inline]
```

Modifies the details of an user account

Parameters



Returns

4.55.2.16 Signup()

Allows user to sign up.

Parameters

request

Returns

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

• Controllers/Admin/UsersController.cs

4.56 UsersService Class Reference

Service for creating user accounts and logging in users

Public Member Functions

- UsersService (InertiaContext db)
- async Task< Account > CreateAccount (string email, string password, string name, UserType userType, AccountRole role)

Creates user account.

 async Task< Account > ModifyAccount (Account account, string? name, string? email, string? password, AccountRole? accountRole)

Changes details of a user account, updating all the appropriate data in the database.

async Task< Account?> MatchAccount (string email, string password)

Checks whether the email password login information is correct.

Static Public Member Functions

• static string GeneratePassword ()

4.56.1 Detailed Description

Service for creating user accounts and logging in users

4.56.2 Member Function Documentation

4.56.2.1 CreateAccount()

```
async Task<Account> UsersService.CreateAccount (
    string email,
    string password,
    string name,
    UserType userType,
    AccountRole role ) [inline]
```

Creates user account.

Parameters

email	
password	
name	
userType	
role	

Returns

Exceptions

EmailAlreadyExistsException

4.56.2.2 MatchAccount()

```
async Task<account?> UsersService.MatchAccount ( string email, string password ) [inline]
```

Checks whether the email password login information is correct.

Parameters

email	
password	

Returns

4.56.2.3 ModifyAccount()

Changes details of a user account, updating all the appropriate data in the database.

Parameters

account	
name	
email	
password	
accountRole	

Returns

Exceptions

EmailAlreadyExistsException

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

• Services/UsersService.cs

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