InterSystems
DACH SYMPOSIUM 2023

TECHNOLOGY LAB

Moderne Webanwendungen mit InterSystems IRIS

Back to the future: Journeying Through Backend Technologies

1. Swagger Editor und Backend

Philipp Bonin | InterSystems

Schritte

Spezifizieren

Tool: Swagger Editor

Swagger Editor
Supported by SMARTBEAR

File ▾ Edit ▾ Generate Server ▾ Generate Client ▾ About ▾ Try our new Edito

```yaml
swagger: '2.0'
info:
  description: An API for Library Management using InterSystems IRIS
  version: 1.0.0
  title: Library Book
  license:
    name: Apache 2.0
    url: http://www.apache.org/licenses/LICENSE-2.0.html
schemes:
  - https
paths:
  /findabook/{bookid}:
    get:
      description: Find a book
      operationId: FindingBook
      produces:
        - application/json
      parameters:
        - name: bookid
          in: path
          type: string
          required: true
      responses:
        '200':
          description: Success
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  /addfriend:
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  /addbook:
    post:
      description: Add a new book
      operationId: AddingBook
      produces:
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      parameters:
        - name: title
          in: query
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```

Library Book 1.0.0 OAS 2.0

An API for Library Management using InterSystems IRIS

Apache 2.0

Schemes

HTTPS

default

GET /findabook/{bookid}

POST /addfriend

Add a new friend

Parameters Try it out

No parameters

Responses Response content type application/json

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An API for Lib

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Library Book 1.0.0 OAS 2.0

An API for Library Management using InterSystems IRIS

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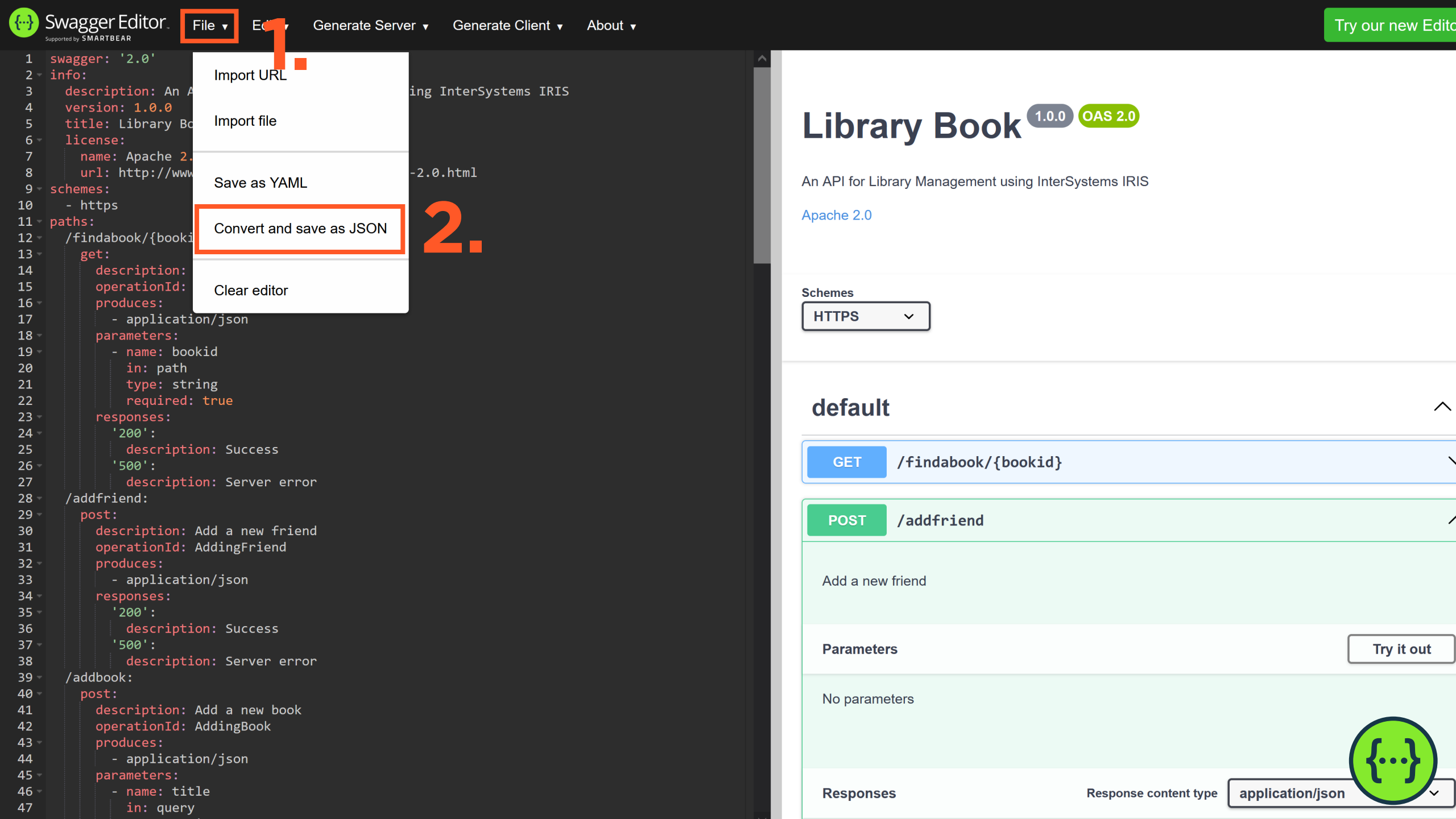
Swagger Editor
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File
Edit
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About
Try our new Edito
1.
Import URL
Import file
Save as YAML
Convert and save as JSON
2.
Clear editor
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Schemes
HTTPS
default
GET
/findabook/{bookid}
POST
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Add a new friend
Parameters
Try it out
No parameters
Responses
Response content type
application/json

http://localhost:52773/api/mgmnt/v2/TRAINING/LibraryApi

POST http://localhost:52773/api/mgmnt/v2/TRAINING/LibraryApi

POST Request

Body • Pre-request Script Tests Settings

GraphQL JSON

```
{
    "swagger": "2.0",
    "info": {
        "description": "An API for Library Management using InterSystems IRIS",
        "version": "1.0.0",
        "title": "Library Book",
        "license": {
            "name": "Apache 2.0",
            "url": "http://www.apache.org/licenses/LICENSE-2.0.html"
        }
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    "paths": {
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                    {
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                        "type": "string"
```

Body Cookies Headers (9) Test Results

Status: 201 Created Time: 175 ms Size: 320 B

Pretty Raw Preview Visualize JSON

```
{
    "msg": "New application LibraryApi created"
}
```

http://localhost:52773/api/mgmnt/v2/TRAINING/LibraryApi

POST http://localhost:52773/api/mgmnt/v2/TRAINING/LibraryApi

Params Authorization Headers (10) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary GraphQL JSON

IRIS Verbindung

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Authentifizieren

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            "name": "Apache 2.0",
            "url": "http://www.apache.org/licenses/LICENSE-2.0.html"
        }
    },
    "schemes": ["https"],
    "paths": {
        "/addbook": {
            "post": {
                "description": "Add a new book",
                "operationId": "AddingBook",
                "produces": ["application/json"],
                "parameters": [
                    {
                        "name": "title",
                        "in": "query",
                        "type": "string"
                    }
```

Body Cookies Headers (9) Test Results

Status: 201 Created Time: 175 ms Size: 320 B

Pretty Raw Preview Visualize JSON

```
{
    "msg": "New application LibraryApi created"
}
```

http://localhost:52773/api/mgmnt/v2/TRAINING/LibraryApi

POST http://localhost:52773/api/mgmnt/v2/TRAINING/LibraryApi

Params Authorization Headers (10) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
{
    "swagger": "2.0",
    "info": {
        "description": "An API for Library Management using InterSystems IRIS",
        "version": "1.0.0",
        "title": "Library Book",
        "license": {
            "name": "Apache 2.0",
            "url": "http://www.apache.org/licenses/LICENSE-2.0.html"
        }
    },
    "schemes": ["https"],
    "paths": {
        "/addbook": {
            "post": {
                "description": "Add a new book",
                "operationId": "AddingBook",
                "produces": ["application/json"],
                "parameters": [
                    {
                        "name": "title",
                        "in": "query",
                        "type": "string"
```

Spezifikation

Body Cookies Headers (9) Test Results

Status: 201 Created Time: 175 ms Size: 320 B

Pretty Raw Preview Visualize JSON

```
{
    "msg": "New application LibraryApi created"
}
```

http://localhost:52773/api/mgmnt/v2/TRAINING/LibraryApi

POST http://localhost:52773/api/mgmnt/v2/TRAINING/LibraryApi

Params Authorization Headers (10) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
{
    "swagger": "2.0",
    "info": {
        "description": "An API for Library Management using InterSystems IRIS",
        "version": "1.0.0",
        "title": "Library Book",
        "license": {
            "name": "Apache 2.0",
            "url": "http://www.apache.org/licenses/LICENSE-2.0.html"
        }
    },
    "schemes": ["https"],
    "paths": {
        "/addbook": {
            "post": {
                "description": "Add a new book",
                "operationId": "AddingBook",
                "produces": ["application/json"],
                "parameters": [
                    {
                        "name": "title",
                        "in": "query",
                        "type": "string"
```

Body Cookies Header esults Status: 201 Created Time: 175 ms Size: 320 B

Pretty Raw Preview Visualize JSON

```
{
    "msg": "New application LibraryApi created"
}
```

Webanwendung erstellen

Willkommen, _SYSTEM

Ansicht:

- Startseite
- Analytics
- Interoperability
- Systembetrieb
- System-Explorer
- Systemadministration

Konfiguration	Benutzer	Webanwendungen
Sicherheit	Rollen	Doc DB-Anwendungen
Lizenzierung	Ressourcen	Privilegierte Routinen-Applikationen
ENCRYPTION	Dienste	Client-Applikationen
	Applikationen	
	SSL/TLS-Konfigurationen	
	X.509-Informationen	
	OAuth 2.0	
	Verwaltete Dateiübertragungsverbindun	
	Systemsicherheit	
	Auditdurchführung	
	Sicherheitsberater	
	Mobiltelefon	
	Public-Key-Infrastruktur	

WEBANWENDUNGEN

Web-Anwendungsdefinitionen anzeigen, hinzufügen oder bearbeiten.

Los

Zu Favoriten hinzufügen

Systemressource(n)
%Admin_Secure

Benutzerdefinierte Ressource
-

Zuweisen

Webanwendung erstellen

System > Sicherheitsmanagement > Webanwendungen > Webanwendung bearbeiten - (Sicherheitseinstellungen)

Webanwendung bearbeiten

Speichern | Abbrechen

Definition für Webanwendung /LibraryApi bearbeiten:

Allgemein | Applikationsrollen | Partnerrollen

Name /LibraryApi
Erforderlich. (z. B. /csp/appname)

Beschreibung

NameSpace TRAINING **Standardanwendung für TRAINING:** /csp/training Namespace-Standardanwendung

Anwendung aktivieren

Aktivieren
- **REST**
  - **Verteilerklasse** LibraryApi.disp
    Erforderlich.
  - **Leeren Pfad umleiten**
  - **Use JWT Authentication**
- **CSP/ZEN**
  - Analyse | Eingehende Webdienste | Login-CSRF-Angriff verhindern

Sicherheitseinstellungen
- **Erforderliche Ressource** **Nach ID gruppieren**
- **Zulässige Authentifizierungsmethoden** Nicht authentifiziert | Kennwort | Anmelde-Cookie

Sitzungseinstellungen
- **Sitzungs-Timeout** 900 Sekunden **Ereignisklasse** .cls
- **Cookie für Sitzung verwenden** Immer **Pfad zu Sitzungs-Cookie** /LibraryApi/ **Sitzungs-Cookie-Umfang** Strikt **Benutzer-Cookie-Geltungsbereich** Strikt

Webanwendung erstellen

System > Sicherheitsmanagement > Webanwendungen > Webanwendung bearbeiten - (Sicherheitseinstellungen)

Webanwendung bearbeiten

Speichern | Abbrechen

Definition für Webanwendung /LibraryApi bearbeiten:

Allgemein | Applikationsrollen | Partnerrollen

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Erforderlich. (z. B. /csp/appname)

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NameSpace TRAINING — **Standardanwendung für TRAINING:** /csp/training — Namespace-Standardanwendung

Anwendung aktivieren

Aktivieren

- **REST**
  - **Verteilerklasse** LibraryApi.disp
    Erforderlich.
  - **Leeren Pfad umleiten**
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Sicherheitseinstellungen

Erforderliche Ressource — **Nach ID gruppieren**

Zulässige Authentifizierungsmethoden Nicht authentifiziert — Kennwort — Anmelde-Cookie

Sitzungseinstellungen

Sitzungs-Timeout 900 Sekunden — **Ereignisklasse** .cls

Cookie für Sitzung verwenden Immer — **Pfad zu Sitzungs-Cookie** /LibraryApi/ — **Sitzungs-Cookie-Umfang** Strikt — **Benutzer-Cookie-Geltungsbereich** Strikt

Webanwendung erstellen

System > Sicherheitsmanagement > Webanwendungen > Webanwendung bearbeiten - (Sicherheitseinstellungen)

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Beschreibung

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Anwendung aktivieren

Aktivieren **REST**

Verteilerklasse LibraryApi.disp
Erforderlich.

Leeren Pfad umleiten

Use JWT Authentication

CSP/ZEN

Analyse Eingehende Webdienste Login-CSRF-Angriff verhindern

Sicherheitseinstellungen

Erforderliche Ressource **Nach ID gruppieren**

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Sitzungseinstellungen

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Webanwendung erstellen

System > Sicherheitsmanagement > Webanwendungen > Webanwendung bearbeiten - (Sicherheitseinstellungen)

Webanwendung bearbeiten

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Webanwendung erstellen

System > Sicherheitsmanagement > Webanwendungen > Webanwendung bearbeiten - (Sicherheitseinstellungen)

Webanwendung bearbeiten

Speichern | Abbrechen

Definition für Webanwendung /LibraryApi bearbeiten:

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- **Sitzungs-Timeout** 900 Sekunden **Ereignisklasse** .cls
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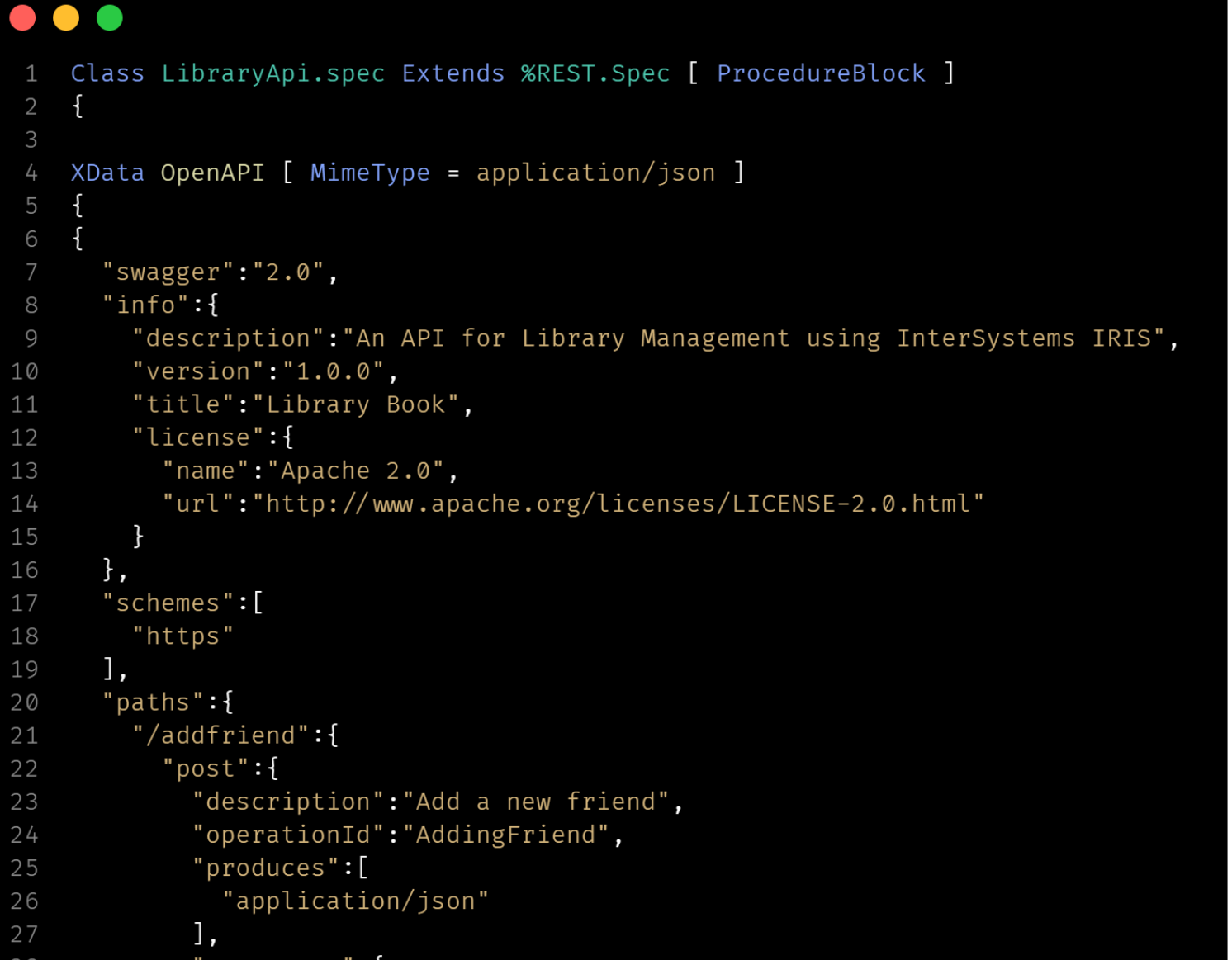
Bonus: Swagger Editor for InterSystems

InterSystems®
DACH SYMPOSIUM 2023

Implementieren

Tool: Visual Studio Code

LibraryApi.spec



```
Class LibraryApi.spec Extends %REST.Spec [ ProcedureBlock ]
{

XData OpenAPI [ MimeType = application/json ]
{
{
  "swagger":"2.0",
  "info":{
    "description":"An API for Library Management using InterSystems IRIS",
    "version":"1.0.0",
    "title":"Library Book",
    "license":{
      "name":"Apache 2.0",
      "url":"http://www.apache.org/licenses/LICENSE-2.0.html"
    }
  },
  "schemes":[
    "https"
  ],
  "paths":{
    "/addfriend":{
      "post":{
        "description":"Add a new friend",
        "operationId":"AddingFriend",
        "produces":[
          "application/json"
        ],
```

LibraryApi.disp

```
/// An API for Library Management using InterSystems IRIS
/// Dispatch class defined by RESTSpec in LibraryApi.spec
Class LibraryApi.disp Extends %CSP.REST [ GeneratedBy = LibraryApi.spec.cls, ProcedureBlock ]
{

/// The class containing the RESTSpec which generated this class
Parameter SpecificationClass = "LibraryApi.spec";

/// Ignore any writes done directly by the REST method.
Parameter IgnoreWrites = 1;

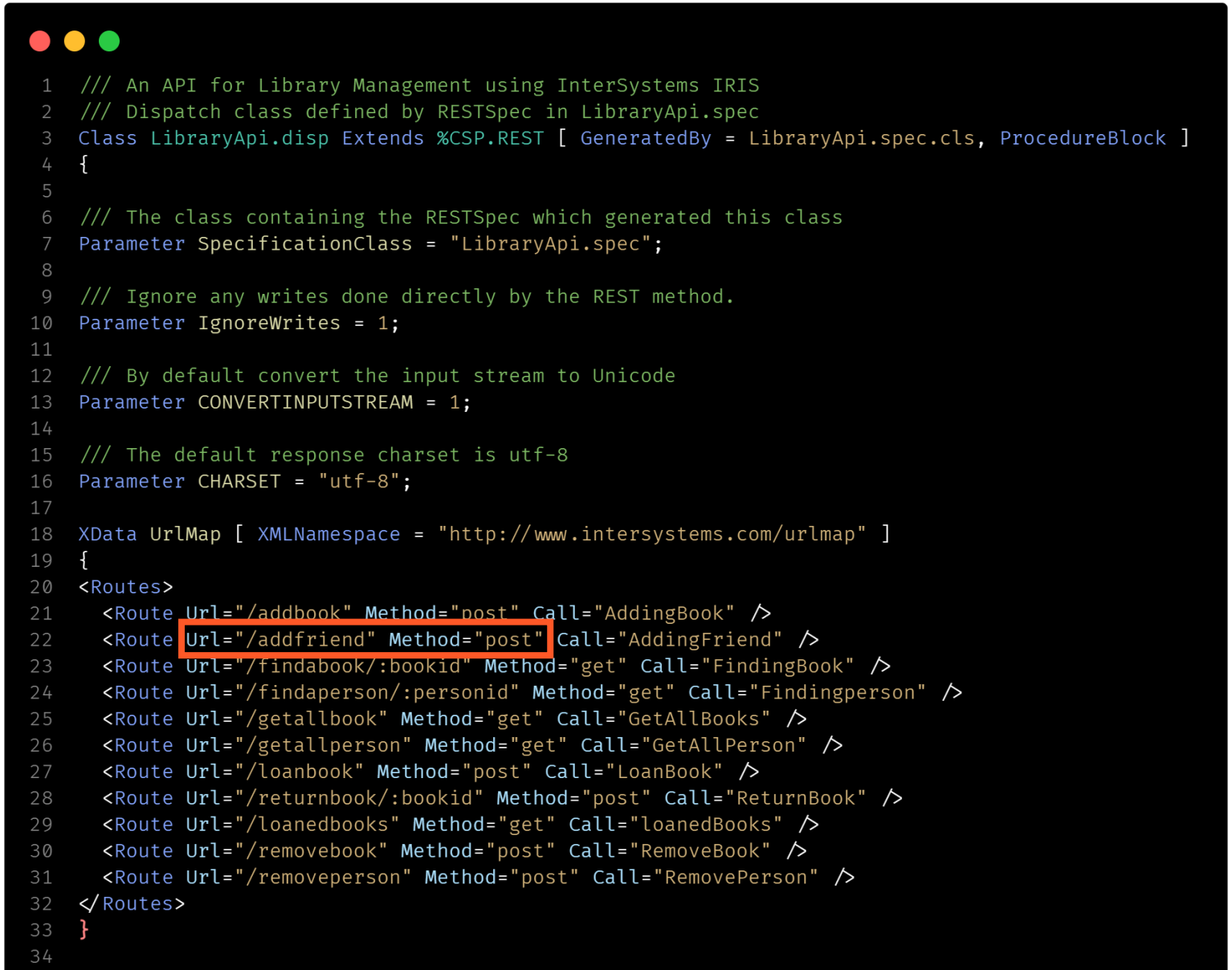
/// By default convert the input stream to Unicode
Parameter CONVERTINPUTSTREAM = 1;

/// The default response charset is utf-8
Parameter CHARSET = "utf-8";

XData UrlMap [ XMLNamespace = "http://www.intersystems.com/urlmap" ]
{
<Routes>
  <Route Url="/addbook" Method="post" Call="AddingBook" />
  <Route Url="/addfriend" Method="post" Call="AddingFriend" />
  <Route Url="/findabook/:bookid" Method="get" Call="FindingBook" />
  <Route Url="/findaperson/:personid" Method="get" Call="Findingperson" />
  <Route Url="/getallbook" Method="get" Call="GetAllBooks" />
  <Route Url="/getallperson" Method="get" Call="GetAllPerson" />
  <Route Url="/loanbook" Method="post" Call="LoanBook" />
  <Route Url="/returnbook/:bookid" Method="post" Call="ReturnBook" />
  <Route Url="/loanedbooks" Method="get" Call="loanedBooks" />
  <Route Url="/removebook" Method="post" Call="RemoveBook" />
  <Route Url="/removeperson" Method="post" Call="RemovePerson" />
</Routes>
}

```

LibraryApi.disp



```
/// An API for Library Management using InterSystems IRIS
/// Dispatch class defined by RESTSpec in LibraryApi.spec
Class LibraryApi.disp Extends %CSP.REST [ GeneratedBy = LibraryApi.spec.cls, ProcedureBlock ]
{

/// The class containing the RESTSpec which generated this class
Parameter SpecificationClass = "LibraryApi.spec";

/// Ignore any writes done directly by the REST method.
Parameter IgnoreWrites = 1;

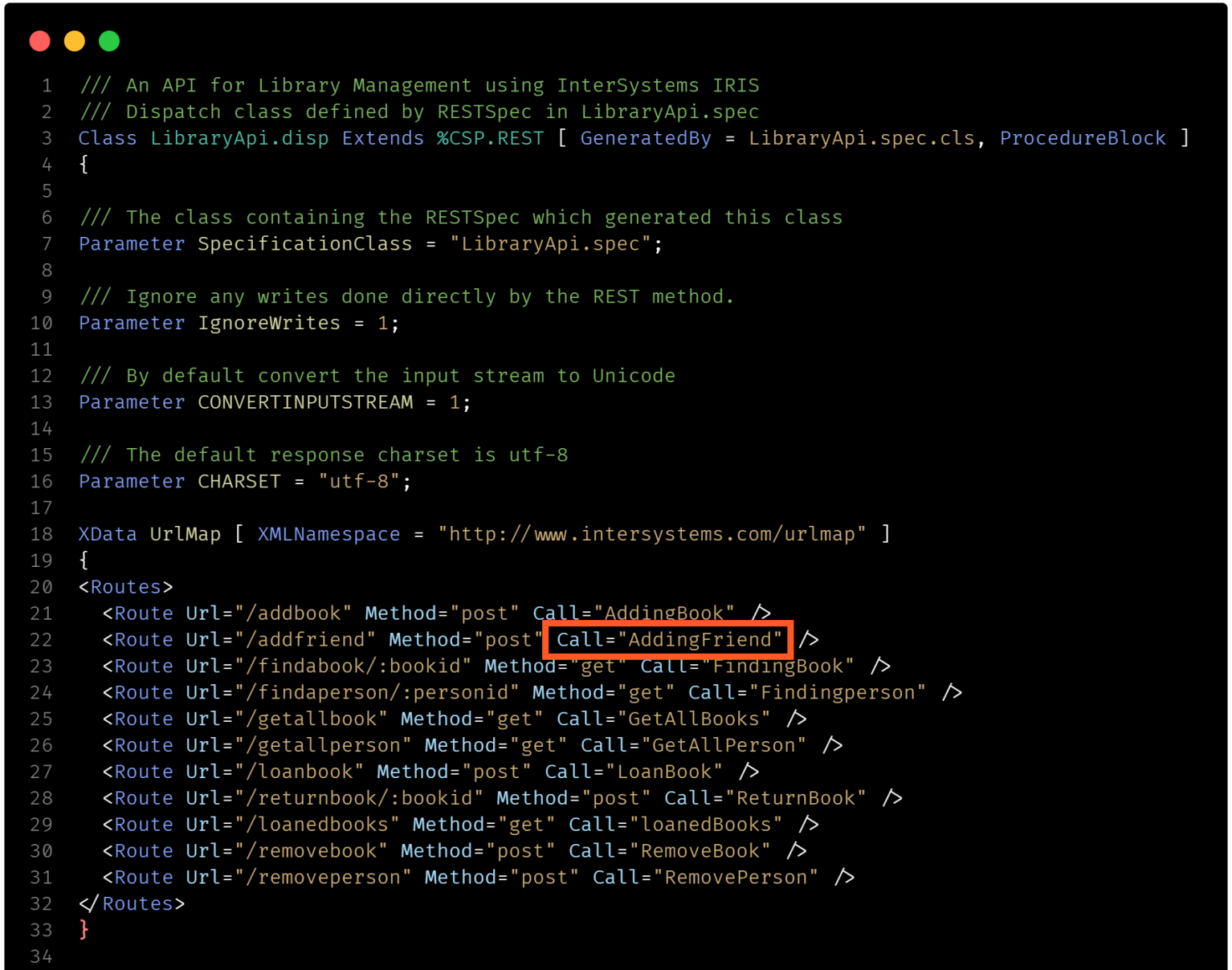
/// By default convert the input stream to Unicode
Parameter CONVERTINPUTSTREAM = 1;

/// The default response charset is utf-8
Parameter CHARSET = "utf-8";

XData UrlMap [ XMLNamespace = "http://www.intersystems.com/urlmap" ]
{
<Routes>
  <Route Url="/addbook" Method="post" Call="AddingBook" />
  <Route Url="/addfriend" Method="post" Call="AddingFriend" />
  <Route Url="/findabook/:bookid" Method="get" Call="FindingBook" />
  <Route Url="/findaperson/:personid" Method="get" Call="Findingperson" />
  <Route Url="/getallbook" Method="get" Call="GetAllBooks" />
  <Route Url="/getallperson" Method="get" Call="GetAllPerson" />
  <Route Url="/loanbook" Method="post" Call="LoanBook" />
  <Route Url="/returnbook/:bookid" Method="post" Call="ReturnBook" />
  <Route Url="/loanedbooks" Method="get" Call="loanedBooks" />
  <Route Url="/removebook" Method="post" Call="RemoveBook" />
  <Route Url="/removeperson" Method="post" Call="RemovePerson" />
</Routes>
}

```

LibraryApi.disp



```
/// An API for Library Management using InterSystems IRIS
/// Dispatch class defined by RESTSpec in LibraryApi.spec
Class LibraryApi.disp Extends %CSP.REST [ GeneratedBy = LibraryApi.spec.cls, ProcedureBlock ]
{

/// The class containing the RESTSpec which generated this class
Parameter SpecificationClass = "LibraryApi.spec";

/// Ignore any writes done directly by the REST method.
Parameter IgnoreWrites = 1;

/// By default convert the input stream to Unicode
Parameter CONVERTINPUTSTREAM = 1;

/// The default response charset is utf-8
Parameter CHARSET = "utf-8";

XData UrlMap [ XMLNamespace = "http://www.intersystems.com/urlmap" ]
{
<Routes>
  <Route Url="/addbook" Method="post" Call="AddingBook" />
  <Route Url="/addfriend" Method="post" Call="AddingFriend" />
  <Route Url="/findabook/:bookid" Method="get" Call="FindingBook" />
  <Route Url="/findaperson/:personid" Method="get" Call="Findingperson" />
  <Route Url="/getallbook" Method="get" Call="GetAllBooks" />
  <Route Url="/getallperson" Method="get" Call="GetAllPerson" />
  <Route Url="/loanbook" Method="post" Call="LoanBook" />
  <Route Url="/returnbook/:bookid" Method="post" Call="ReturnBook" />
  <Route Url="/loanedbooks" Method="get" Call="loanedBooks" />
  <Route Url="/removebook" Method="post" Call="RemoveBook" />
  <Route Url="/removeperson" Method="post" Call="RemovePerson" />
</Routes>
}

```

LibraryApi.impl

```
1  /// An API for Library Management using InterSystems IRIS<br/>
2  /// Business logic class defined by OpenAPI in LibraryApi.spec<br/>
3  /// Created Nov 22, 2023 11:07:06
4  Class LibraryApi.impl Extends %REST.Impl [ ProcedureBlock ]
5  {
6
7  /// If ExposeServerExceptions is true, then details of internal errors will be exposed.
8  Parameter ExposeServerExceptions = 0;
9
10  ...
11
12  }
```

Tipp: Debugging made easy

```
1  /// An API for Library Management using InterS
2  /// Business logic class defined by OpenAPI in
3  /// Created Nov 22, 2023 11:07:06
4  Class LibraryApi.impl Extends %REST.Impl [ Pro
5  {
6
7  /// If ExposeServerExceptions is true, then de
8  Parameter ExposeServerExceptions = 1;
9
10  ...
11
12  }
```


NICHT IN PRODUKTION!!!!

GET /findabook/{bookid}

```
1  /// Find a book<br/>
2  /// The method arguments hold values for:<br/>
3  ///     bookid<br/>
4  ClassMethod FindingBook(bookid As %String) As %DynamicObject
5  {
6
7
8
9
10
11
12
13
14
15
16 }
```

```
    name: Apache 2.0
    url: http://www.apache.org/licenses/LICENSE-2.0.html
schemes:
  - https
paths:
  /findabook/{bookid}:
    get:
      description: Find a book
      operationId: FindingBook
      produces:
        - application/json
      parameters:
        - name: bookid
          in: path
          type: string
          required: true
      responses:
        '200':
          description: Success
        '500':
          description: Server error
  /addfriend:
    post:
      description: Add a new friend
      operationId: AddingFriend
      produces:
        - application/json
      responses:
        '200':
          description: Success
```

An API for Lib

Apache 2.0

Schemes

HTTPS

defaul

GET

POST

Add a new

GET /findabook/{bookid}

```
1  /// Find a book<br/>
2  /// The method arguments hold values for:<br/>
3  ///     bookid<br/>
4  ClassMethod FindingBook(bookid As %String) As %DynamicObject
5  {
6
7      Set result = ##class(Library.LibraryUtils).GetBook(bookid, .foundBook)
8
9
10
11
12
13
14
15
16 }
```

GET /findabook/{bookid}

```
1  /// Find a book<br/>
2  /// The method arguments hold values for:<br/>
3  ///     bookid<br/>
4  ClassMethod FindingBook(bookid As %String) As %DynamicObject
5  {
6
7      Set result = ##class(Library.LibraryUtils).GetBook(bookid, .foundBook)
8      If result = 0{
9           Do ..%SetStatusCode(500)
10          Return "something is wrong"
11     }
12
13
14
15
16 }
```

GET /findabook/{bookid}

```
1  /// Find a book<br/>
2  /// The method arguments hold values for:<br/>
3  ///     bookid<br/>
4  ClassMethod FindingBook(bookid As %String) As %DynamicObject
5  {
6
7      Set result = ##class(Library.LibraryUtils).GetBook(bookid, .foundBook)
8      If result = 0{
9           Do ..%SetStatusCode(500)
10          Return "something is wrong"
11     }
12     Do ..%SetStatusCode(200)
13
14
15
16 }
```

GET /findabook/{bookid}

```
1  /// Find a book<br/>
2  /// The method arguments hold values for:<br/>
3  ///     bookid<br/>
4  ClassMethod FindingBook(bookid As %String) As %DynamicObject
5  {
6
7      Set result = ##class(Library.LibraryUtils).GetBook(bookid, .foundBook)
8      If result = 0{
9           Do ..%SetStatusCode(500)
10          Return "something is wrong"
11     }
12     Do ..%SetStatusCode(200)
13
14     Set sc = foundBook.%JSONExportToString(.s)
15     Return s
16 }
```

POST /addfriend

```
1  /// Add a new friend
2  ClassMethod AddingFriend() As %DynamicObject
3  {
4
5
6
7
8
9
10
11
12
13
14
15
16
17 }
```

```
24          '200':
25            description: Success
26          '500':
27            description: Server error
28    /addfriend:
29      post:
30        description: Add a new friend
31        operationId: AddingFriend
32        produces:
33          - application/json
34        responses:
35          '200':
36            description: Success
37          '500':
38            description: Server error
39    /addbook:
40      post:
41        description: Add a new book
42        operationId: AddingBook
43        produces:
44          - application/json
45        parameters:
46          - name: title
47            in: query
48            type: string
```

POST /addfriend

```
/// Add a new friend
ClassMethod AddingFriend() As %DynamicObject
{
    Set body = ##class(%DynamicObject).%FromJSON(%request.Content)



}
```

POST /addfriend

```
/// Add a new friend
ClassMethod AddingFriend() As %DynamicObject
{
    Set body = ##class(%DynamicObject).%FromJSON(%request.Content)
    Set friendName = body.%Get("friendName")
    Set friendNumber = body.%Get("friendNumber")
    Set status =##class(Library.LibraryUtils).AddFriend(friendName,friendNumber)


}
```

POST /addfriend

```
/// Add a new friend
ClassMethod AddingFriend() As %DynamicObject
{
    Set body = ##class(%DynamicObject).%FromJSON(%request.Content)
    Set friendName = body.%Get("friendName")
    Set friendNumber = body.%Get("friendNumber")
    Set status =##class(Library.LibraryUtils).AddFriend(friendName,friendNumber)

    Set jsonresponse = ##class(%DynamicObject).%New()
    Do ..%SetStatusCode(200)



}
```

POST /addfriend

```
/// Add a new friend
ClassMethod AddingFriend() As %DynamicObject
{
    Set body = ##class(%DynamicObject).%FromJSON(%request.Content)
    Set friendName = body.%Get("friendName")
    Set friendNumber = body.%Get("friendNumber")
    Set status =##class(Library.LibraryUtils).AddFriend(friendName,friendNumber)

    Set jsonresponse = ##class(%DynamicObject).%New()
    Do ..%SetStatusCode(200)
    If status = 0{
        Do ..%SetStatusCode(500)
        Set status = 0
    }


}
```

POST /addfriend

```
/// Add a new friend
ClassMethod AddingFriend() As %DynamicObject
{
    Set body = ##class(%DynamicObject).%FromJSON(%request.Content)
    Set friendName = body.%Get("friendName")
    Set friendNumber = body.%Get("friendNumber")
    Set status =##class(Library.LibraryUtils).AddFriend(friendName,friendNumber)

    Set jsonresponse = ##class(%DynamicObject).%New()
    Do ..%SetStatusCode(200)
    If status = 0{
        Do ..%SetStatusCode(500)
        Set status = 0
    }
    Do jsonresponse.%Set("status",status)
    Return jsonresponse
}
```

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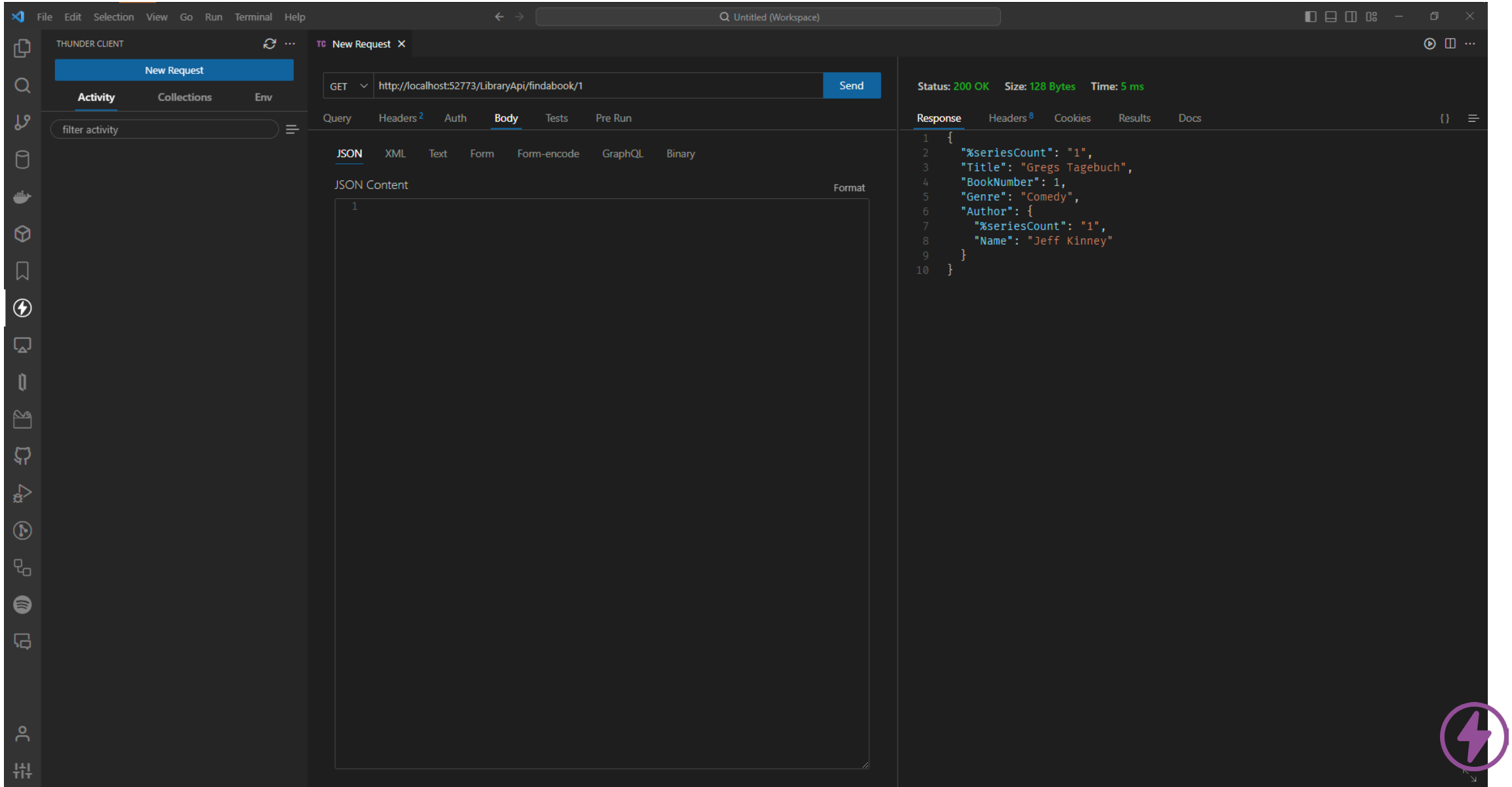
DACH SYMPOSIUM 2023

Verifizieren

Tool: Thunder Client

Tool: SQLTools

Test /findabook



```
    name: Apache 2.0
    url: http://www.apache.org/licenses/LICENSE-2.0.html
schemes:
  - https
paths:
  /findabook/{bookid}:
    get:
      description: Find a book
      operationId: FindingBook
      produces:
        - application/json
      parameters:
        - name: bookid
          in: path
          type: string
          required: true
      responses:
        '200':
          description: Success
        '500':
          description: Server error
  /addfriend:
    post:
      description: Add a new friend
      operationId: AddingFriend
      produces:
        - application/json
      responses:
        '200':
          description: Success
```

An API for Lib

Apache 2.0

Schemes

HTTPS

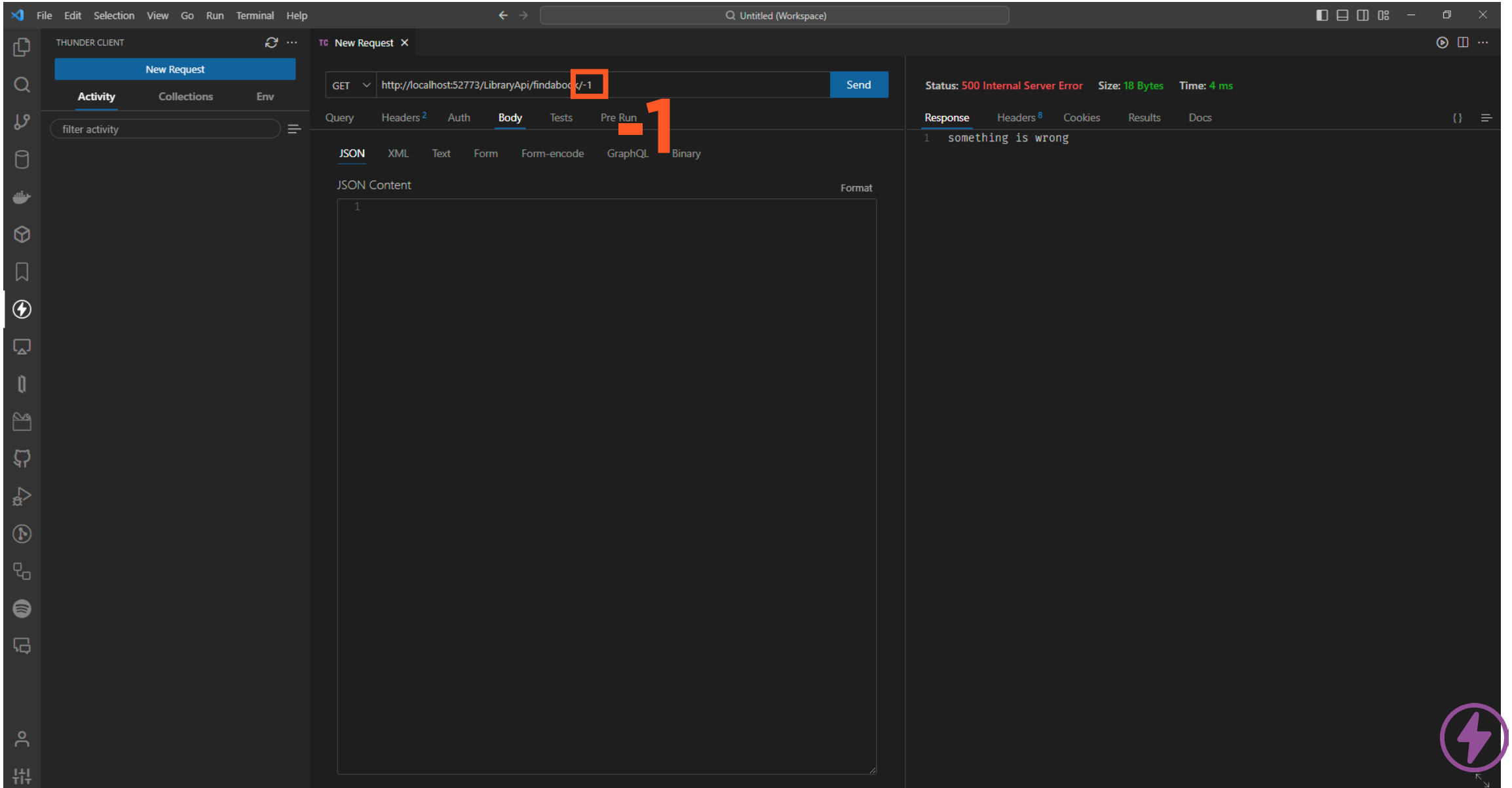
defaul

GET

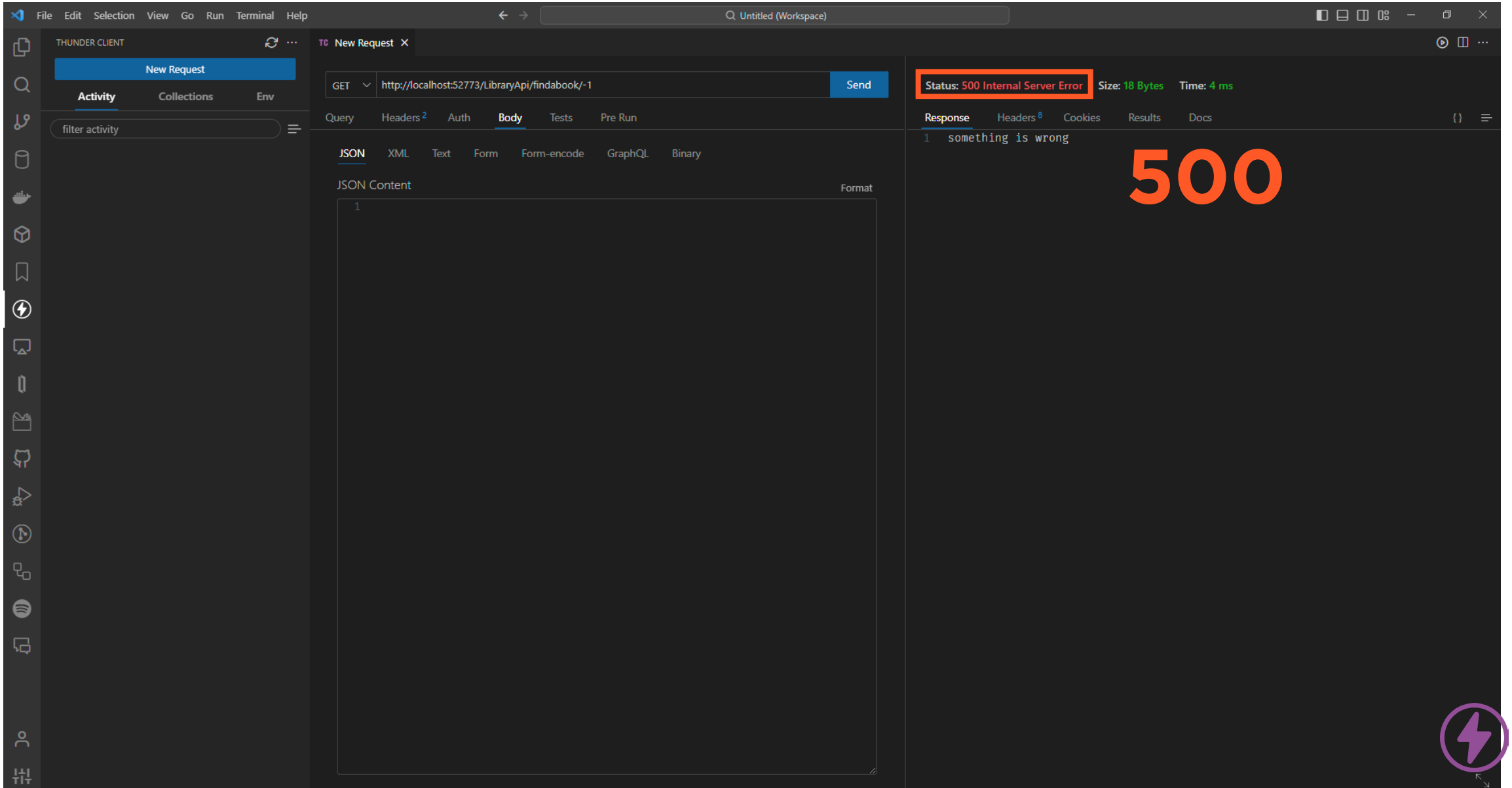
POST

Add a new

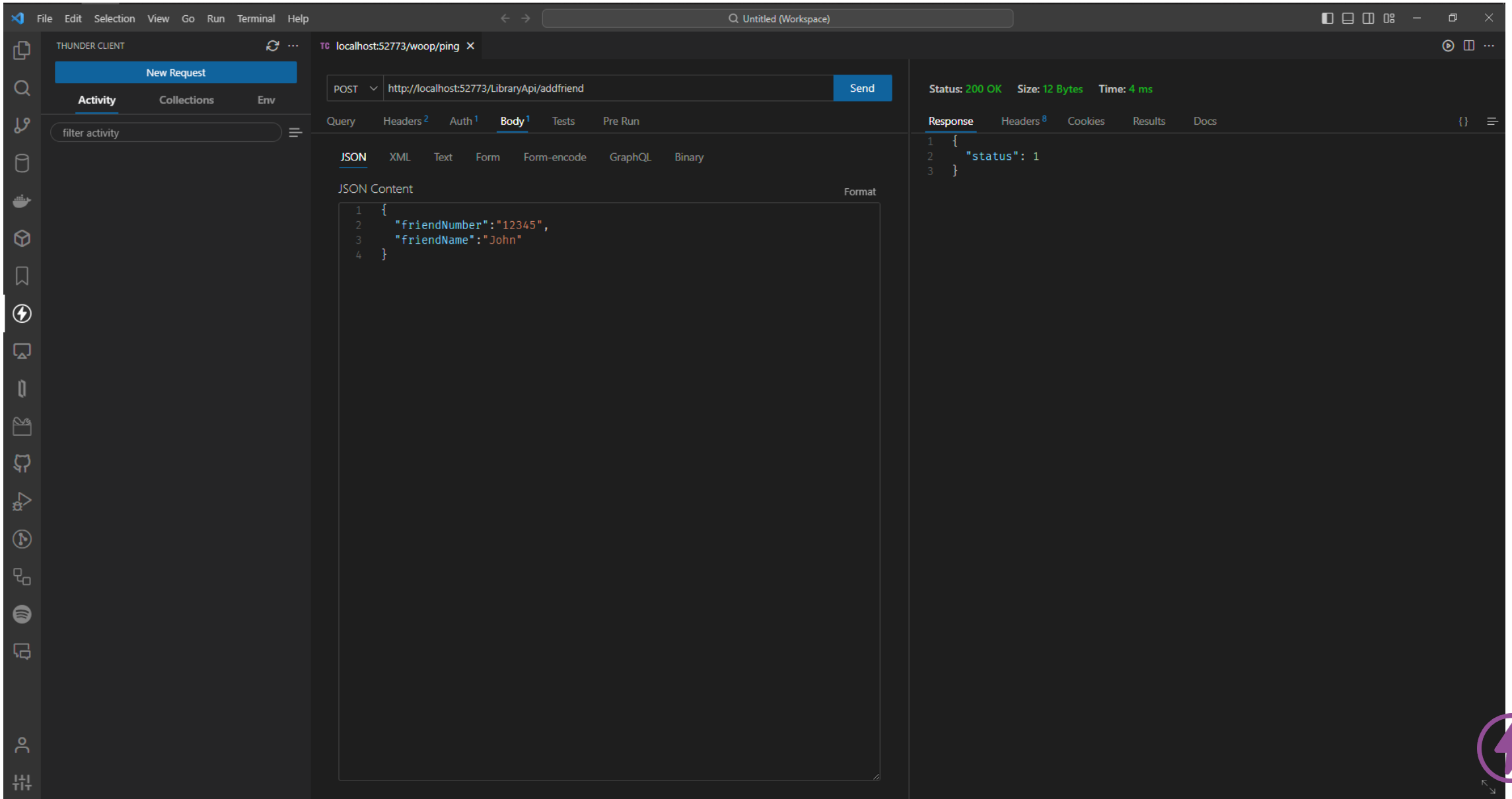
Test /findabook ungültige bookID



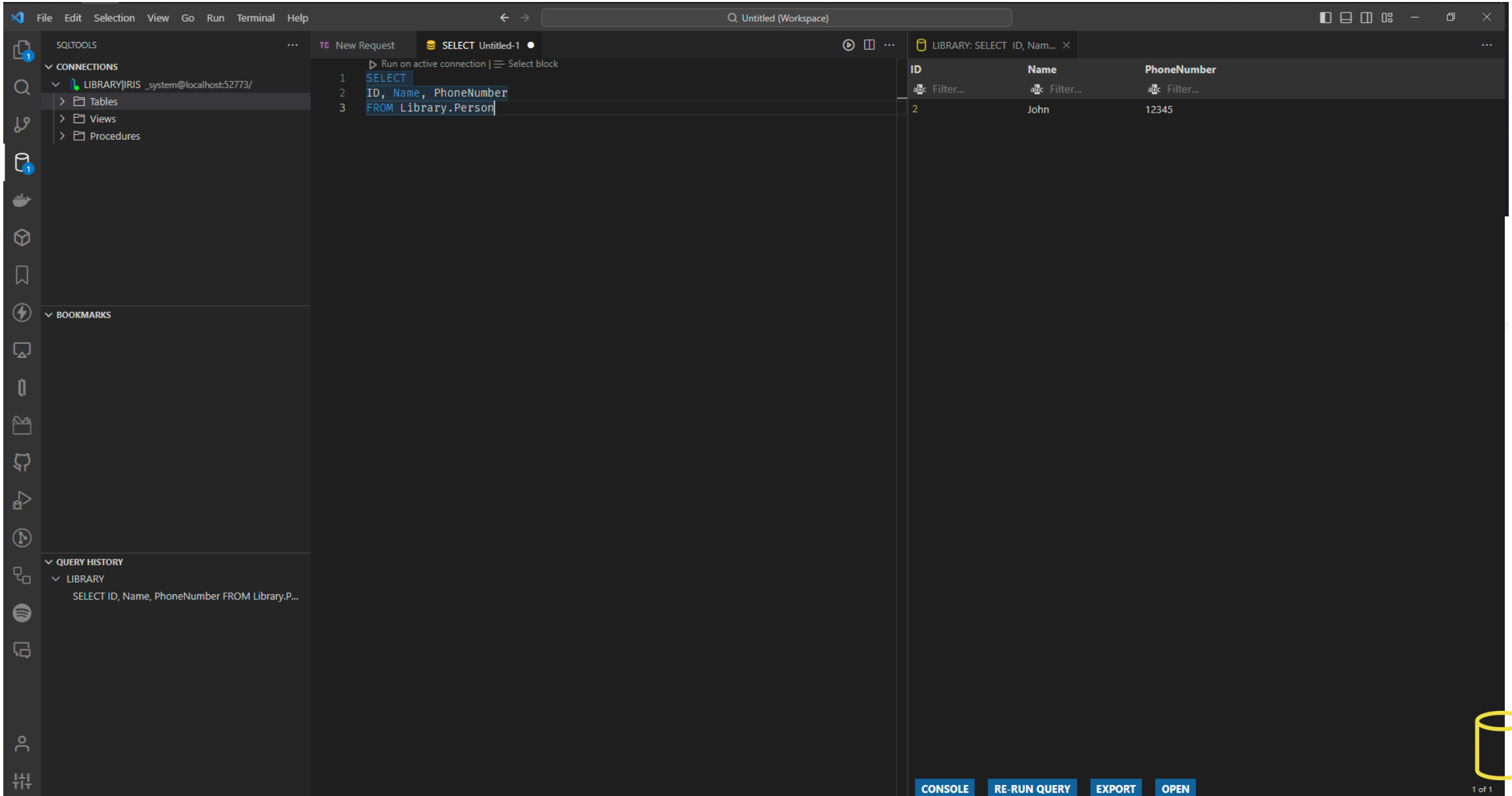
Test /findabook ungültige bookID



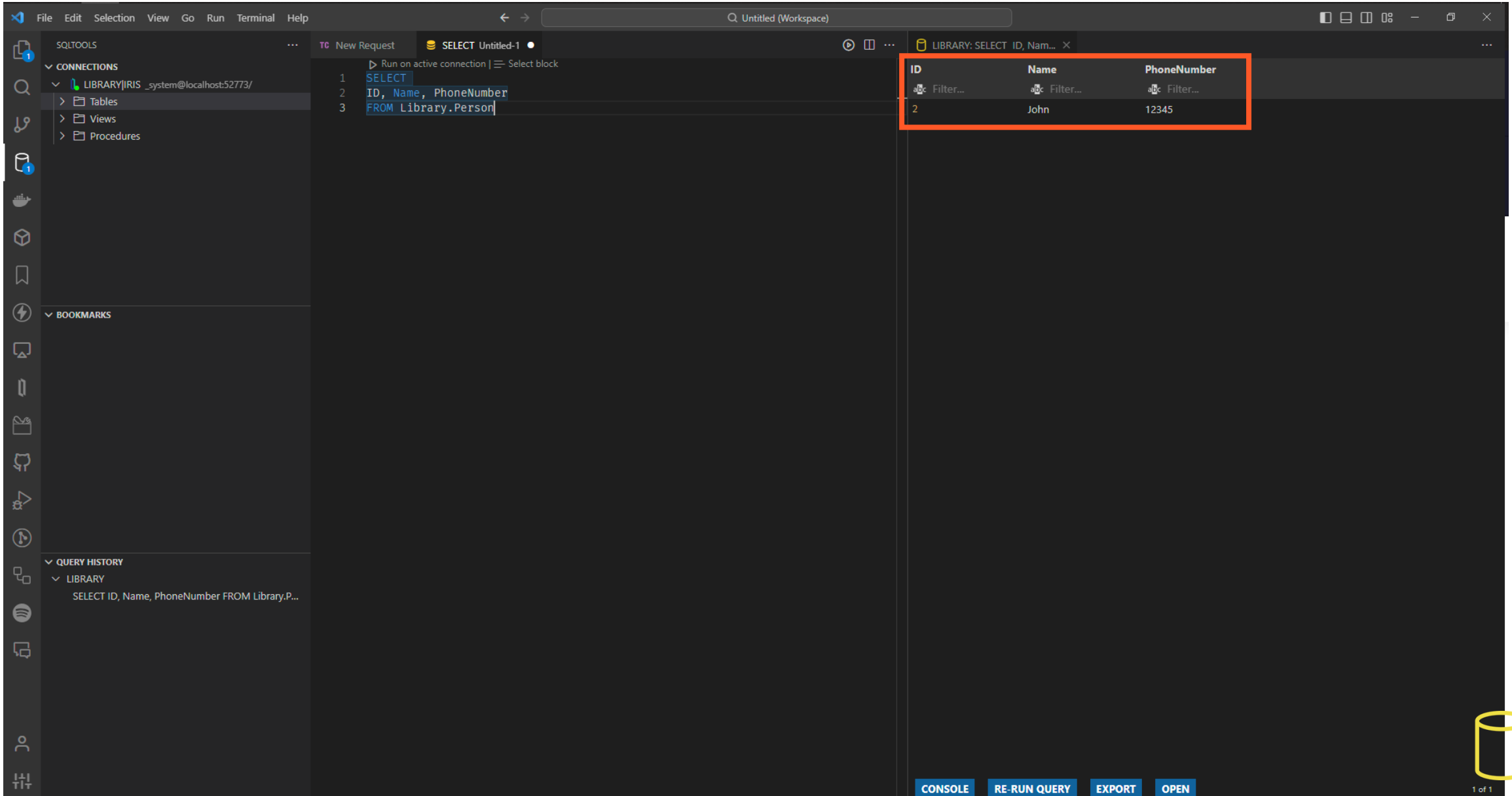
Test /addfriend



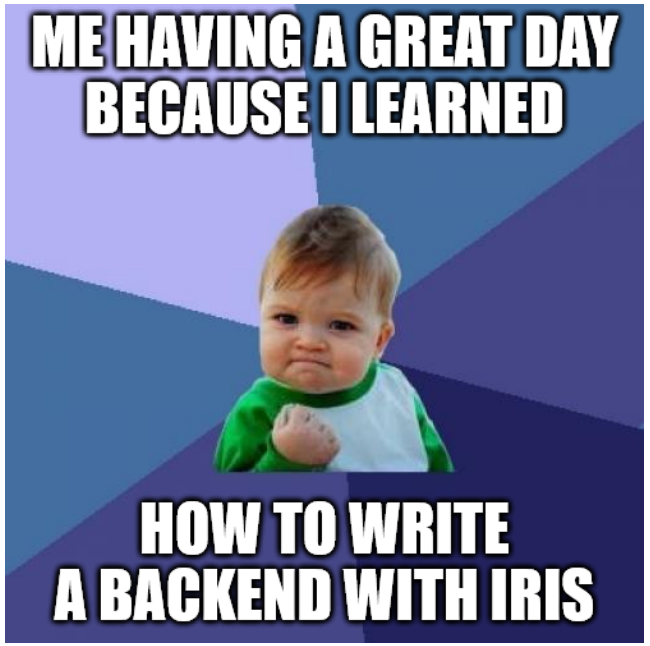
Test /addfriend SQL



Test /addfriend SQL



Thank you!


ME HAVING A GREAT DAY
BECAUSE I LEARNED
HOW TO WRITE
A BACKEND WITH IRIS

Tools