

Integration of External Libraries: RTE & PDF Editor

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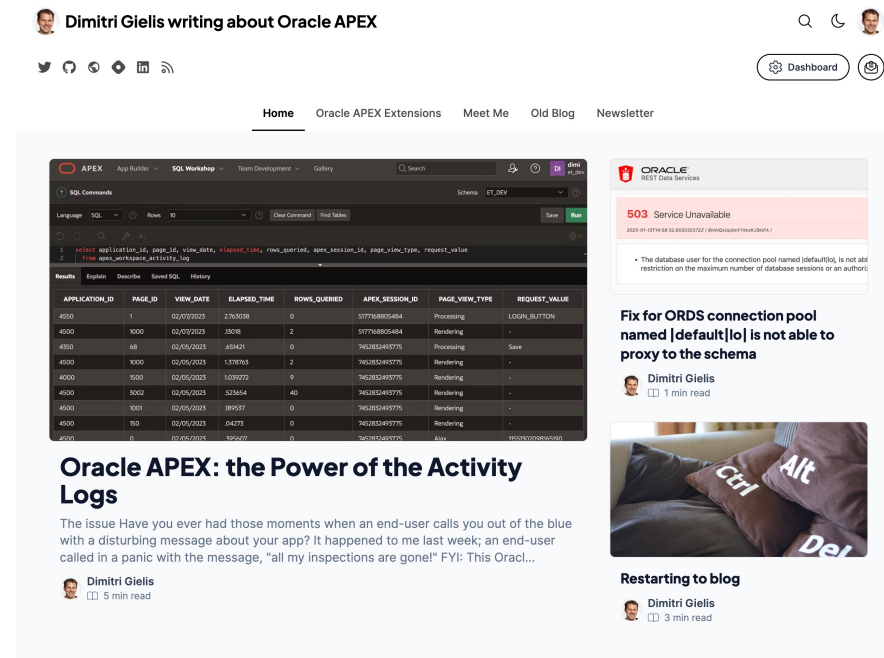


Dimitri Gielis

- Founder & CEO of **United Codes**
- 23+ years of Oracle Experience (OCP & APEX Certified)
- Oracle ACE Director
- “APEX Developer of the year 2009” by Oracle Magazine
- “Oracle Developer Choice award (ORDS)” in 2015
- Author Expert **Oracle APEX**
- Presenter at Conferences



@ D G I E L I S



www.united-codes.com



-  APEX Office Print
-  APEX Media Extension
-  APEX Project Eye
-  Plug-ins Pro

-  APEX Office Edit

How do you start?

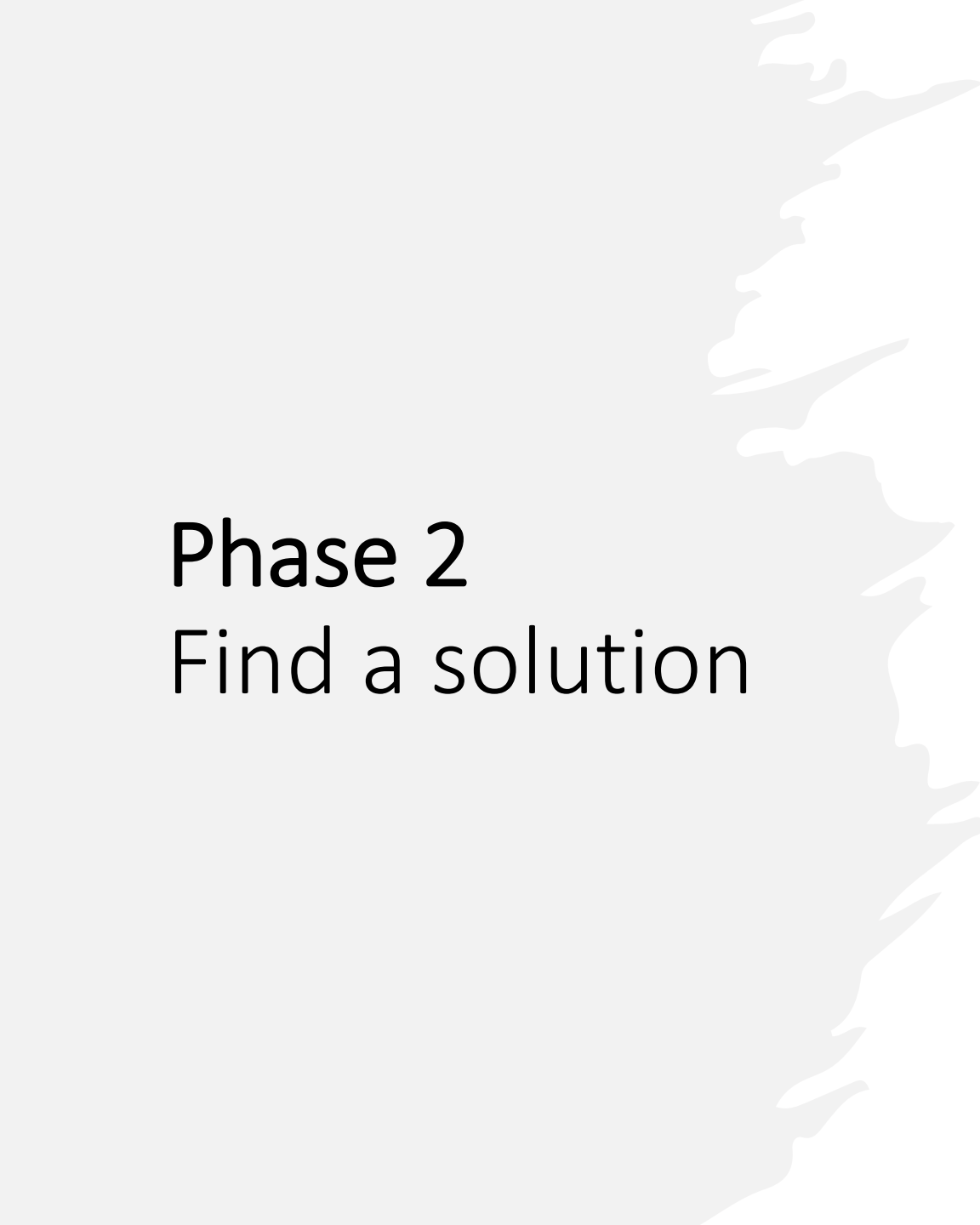
- Phase 1: Identify a missing feature
- Phase 2: Find a solution
- Phase 3: Initial draft
- Phase 4: Integrate into APEX
- Phase 5: Sample app & documentation



Phase 1
Identify a
missing feature

PDF manipulation in APEX

- Annotate
- Insert
- Edit
- Measure
- Forms
- Layers
- Measurements
- Digital Signatures

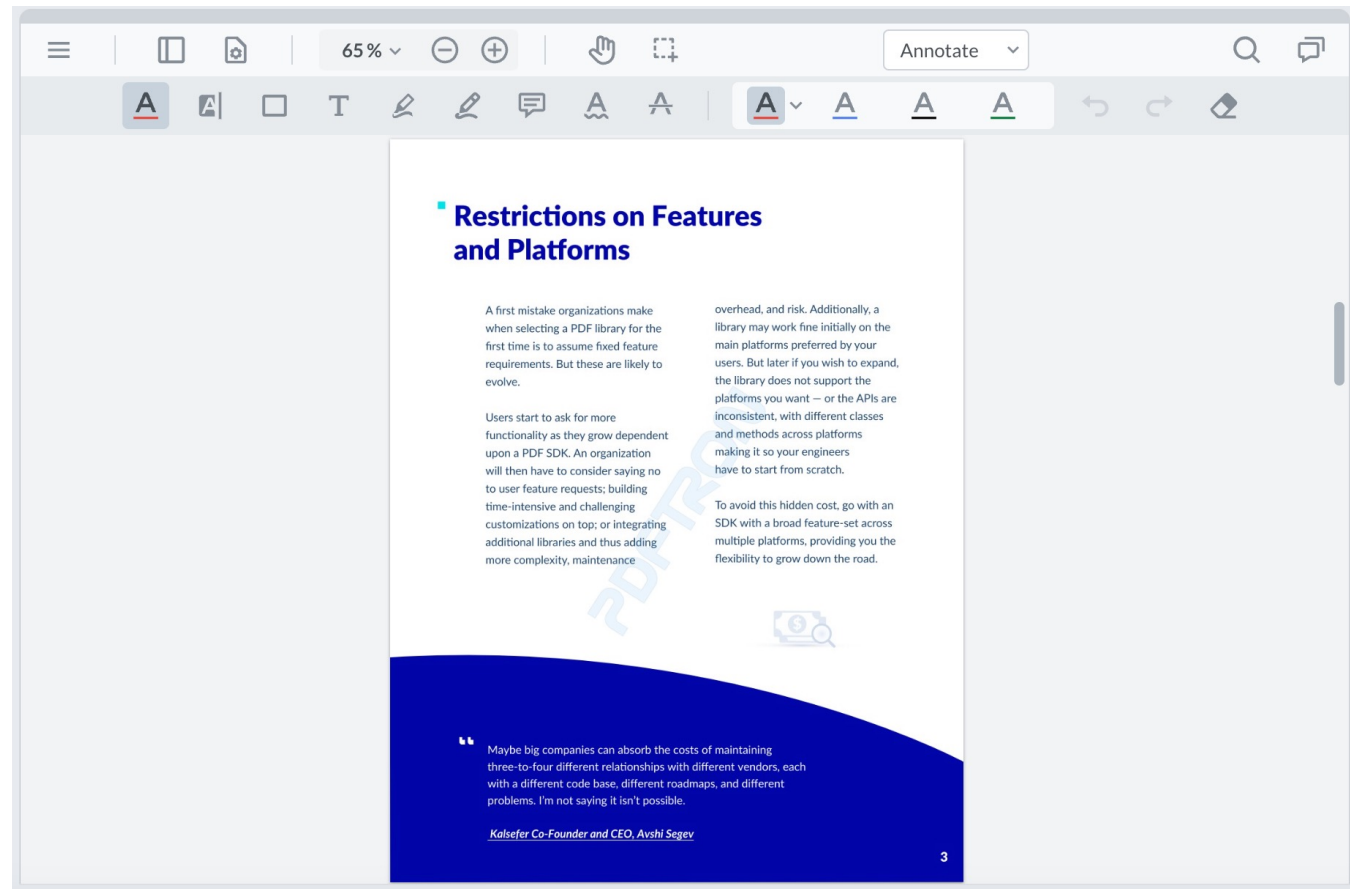


Phase 2

Find a solution

JavaScript libraries

- PDF-LIB
- PDFKit
- PSPDFKIT
- PDFjs
- PDFTron (Apyrse)



<https://apryse.com> – PDF Viewer & Editor



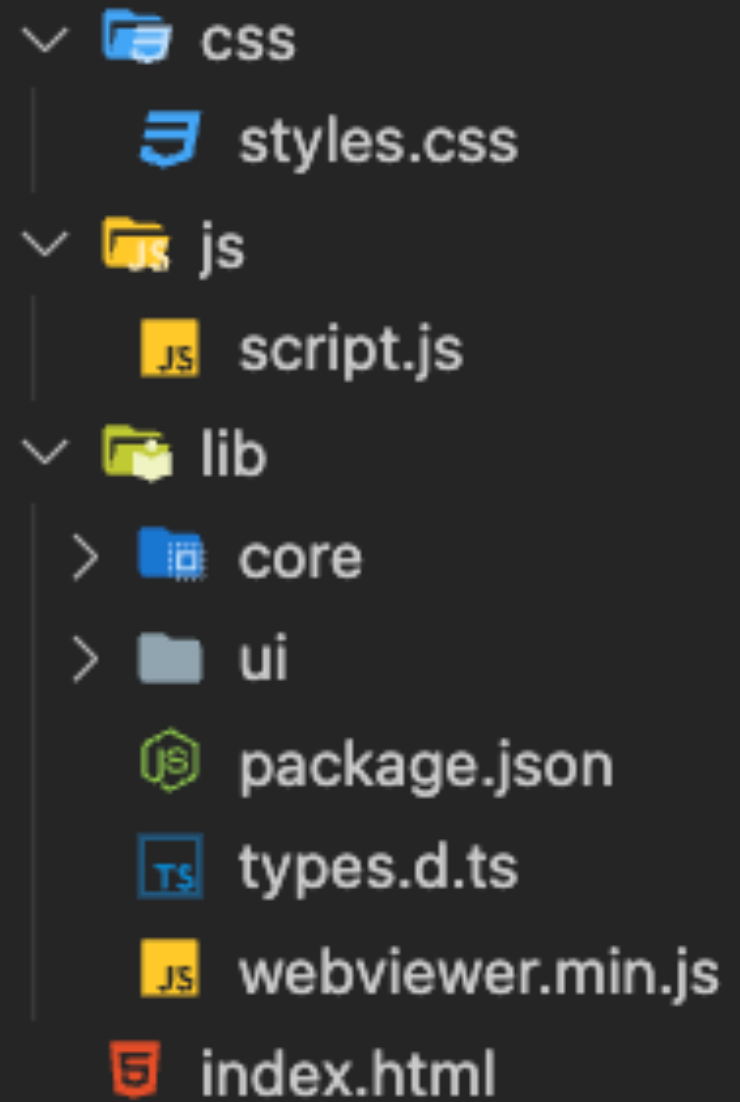
Phase 3

Initial draft

Validate your solution

- Works in plain HTML
 - Test base functionality
 - Does it work as expected?
 - Additional functionality
 - Need REST API
-
- Supported & Maintained
 - License Fee

Plain HTML Files



Plain HTML

index.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <script src="lib/webviewer.min.js"></script>
  <link rel="stylesheet" href="css/styles.css">
</head>

<body>
  <div id="viewer"></div>
  <script src="js/script.js"></script>
</body>

</html>
```

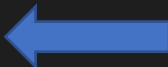
Most important parts in index.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <script src="lib/webviewer.min.js"></script>
  <link rel="stylesheet" href="css/styles.css">
</head>

<body>
  <div id="viewer"></div>
  <script src="js/script.js"></script>
</body>

</html>
```



JS library code

Most important parts in index.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <script src="lib/webviewer.min.js"></script>
  <link rel="stylesheet" href="css/styles.css">
</head>

<body>
  <div id="viewer"></div>
  <script src="js/script.js"></script>
</body>

</html>
```



Styling

Most important parts in index.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <script src="lib/webviewer.min.js"></script>
  <link rel="stylesheet" href="css/styles.css">
</head>

<body>
  <div id="viewer"></div>
  <script src="js/script.js"></script>
</body>

</html>
```



Necessary HTML

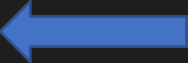
Most important parts in index.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <script src="lib/webviewer.min.js"></script>
  <link rel="stylesheet" href="css/styles.css">
</head>

<body>
  <div id="viewer"></div>
  <script src="js/script.js"></script>
</body>

</html>
```



Custom code

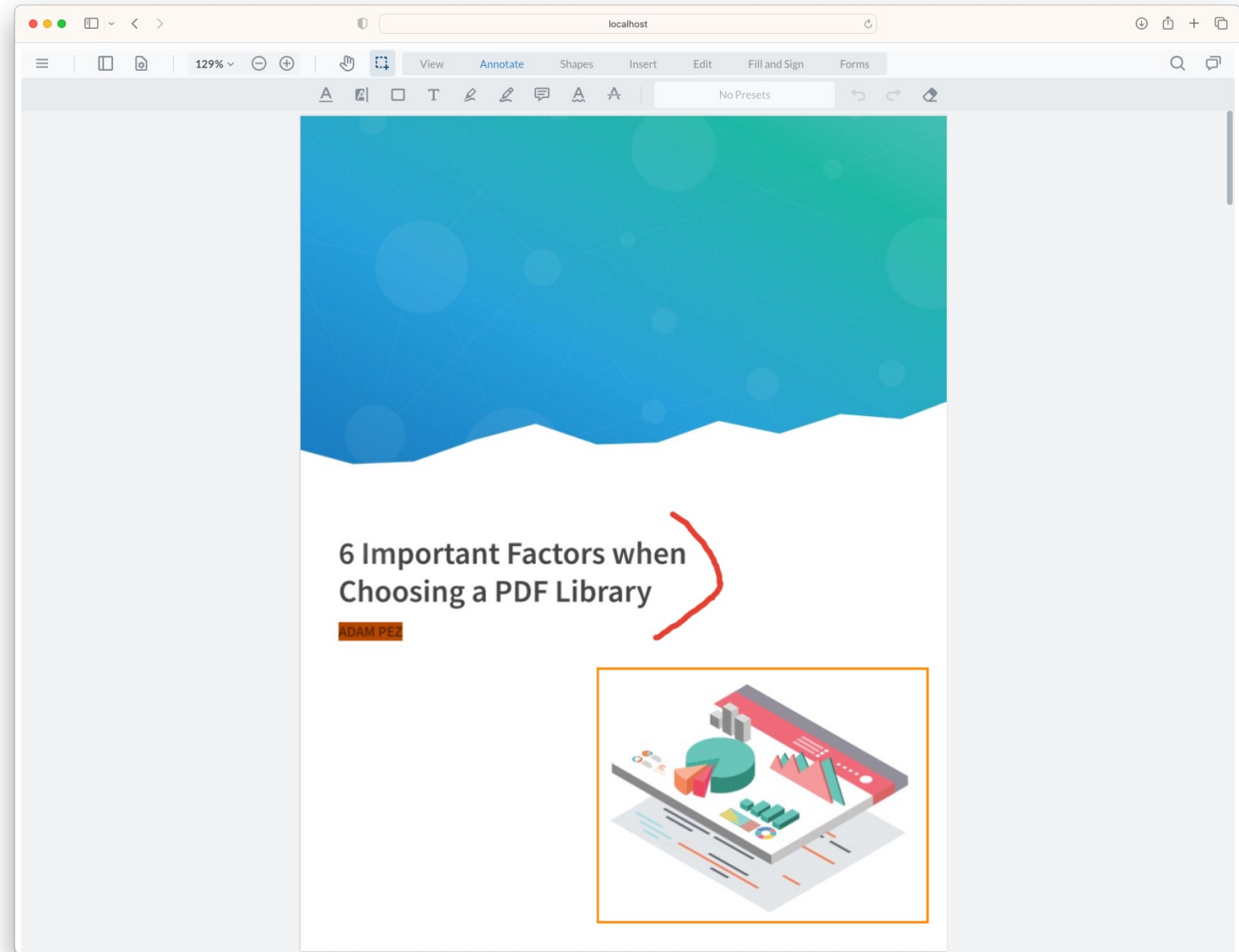
styles.css

```
#viewer {  
    height: 100%;  
    width: 100%;  
}  
  
body {  
    height: 100vh;  
}
```

script.js

```
WebView(  
  {  
    // Path below needs to be dynamic  
    path: "lib",  
    initialDoc: "https://pdftron.s3.amazonaws.com/downloads/pl/demo-annotated.pdf",  
  },  
  document.getElementById("viewer")  
)  
.then((instance) => {  
  if (navigator.appVersion.indexOf("MSIE") > -1) {  
    return alert("This WebView version is not supported in your browser. ");  
  }  
});
```

Plain HTML Result





Phase 4

Integrate into APEX

Backwards compatibility

- Develop in oldest APEX version – we chose 19.2

HTML → APEX → Plug-in?

Why create an
APEX plug-in?

- Extend an APEX application with custom functionality
- Highly customizable
- Feels like native APEX
- Reusable

Types of plug-ins

Item

Dynamic
Action

Region

Process

Authorization
Scheme type

Authentication
Scheme type

Integrate into
APEX

HTML → APEX → Plug-in

1. Create Application
2. Create Plug-in
3. Upload files
4. Implement on page

Create APEX Application

Application 165

Application 165 - PDF Region Pro

Edit Application Properties

About

Use the Application home page to run, edit, import, export, copy, or delete an application. Select a page to edit the page properties, or click **Create Page** to add a page to the application.

[Learn More ...](#)

Tasks

Delete this Application

Copy this Application

Recently Edited Pages

0. Global Page - Desktop

9999. Login Page

1. Home

Run Application

Supporting Objects

Shared Components

Utilities

Export / Import

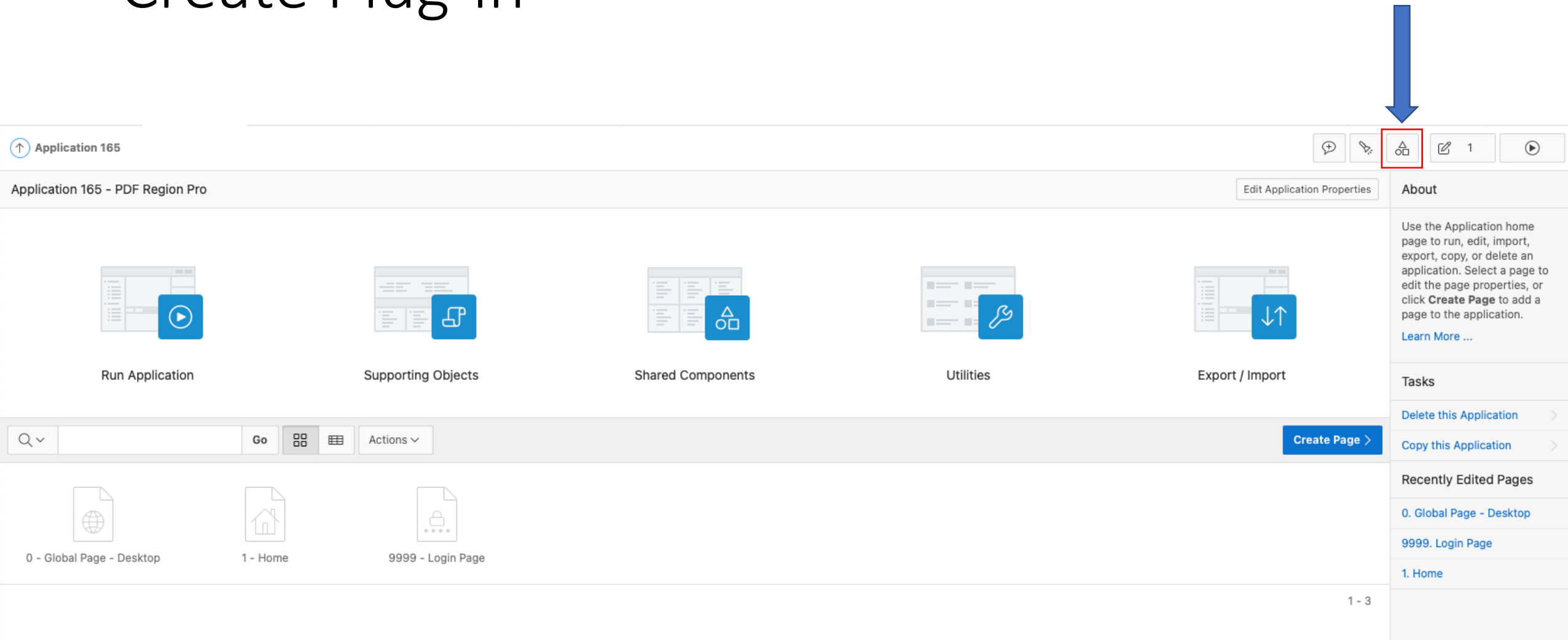
0 - Global Page - Desktop

1 - Home

9999 - Login Page

1 - 3

Create Plug-in



The screenshot shows the PDF Region Pro application interface. At the top, a blue arrow points to a red box containing the 'Create Page' icon (a triangle with a circle inside). The interface includes a top bar with 'Application 165', a search bar, and a 'Go' button. Below this is a main area with five icons: 'Run Application', 'Supporting Objects', 'Shared Components', 'Utilities', and 'Export / Import'. A bottom bar contains a search bar, a 'Go' button, and a 'Create Page' button. The right sidebar shows 'About', 'Tasks', and 'Recently Edited Pages'.

Application 165

Application 165 - PDF Region Pro

Edit Application Properties

About

Use the Application home page to run, edit, import, export, copy, or delete an application. Select a page to edit the page properties, or click **Create Page** to add a page to the application.

[Learn More ...](#)

Tasks

[Delete this Application](#) >

[Copy this Application](#) >

Recently Edited Pages

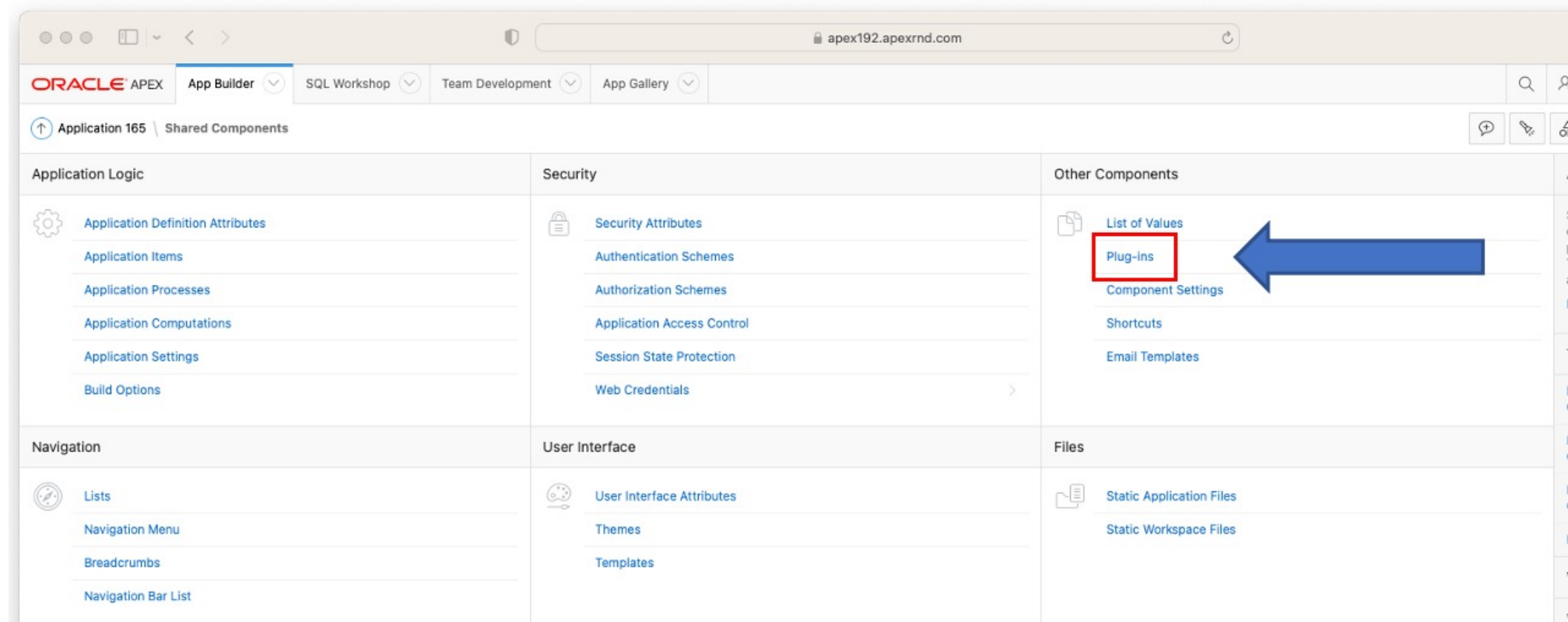
[0. Global Page - Desktop](#)

[9999. Login Page](#)

[1. Home](#)

1 - 3

Create Plug-in



Create Plug-in

The screenshot displays the Oracle APEX web interface. At the top, the browser address bar shows 'apex192.apexrnd.com'. The navigation bar includes tabs for 'ORACLE APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'App Gallery'. Below this, the breadcrumb trail reads 'Application 165 > Shared Components > Plug-ins'. The main toolbar contains buttons for 'Plug-ins', 'Utilization', and 'History'. A search bar with a 'Go' button and an 'Actions' dropdown is also present. The 'Create >' button is highlighted with a red rectangular box. A large blue arrow points upwards towards this button. The main content area shows a magnifying glass icon and the text 'No plug-ins found.'. On the right sidebar, the 'Plug-ins' section provides a definition: 'A plug-in is an extension to the built-in types of Application Express. Use plug-ins for declarative use of new item, region, dynamic action process, authentication scheme and authorization scheme types in your application.' Below this, the 'Tasks' section includes a link for 'Export Plug-in' and another 'No plug-ins found' message.

Oracle APEX App Builder SQL Workshop Team Development App Gallery

Application 165 > Shared Components > Plug-ins

Plug-ins Utilization History

Search Go Actions

Reset View Plug-in Repository Import > **Create >**

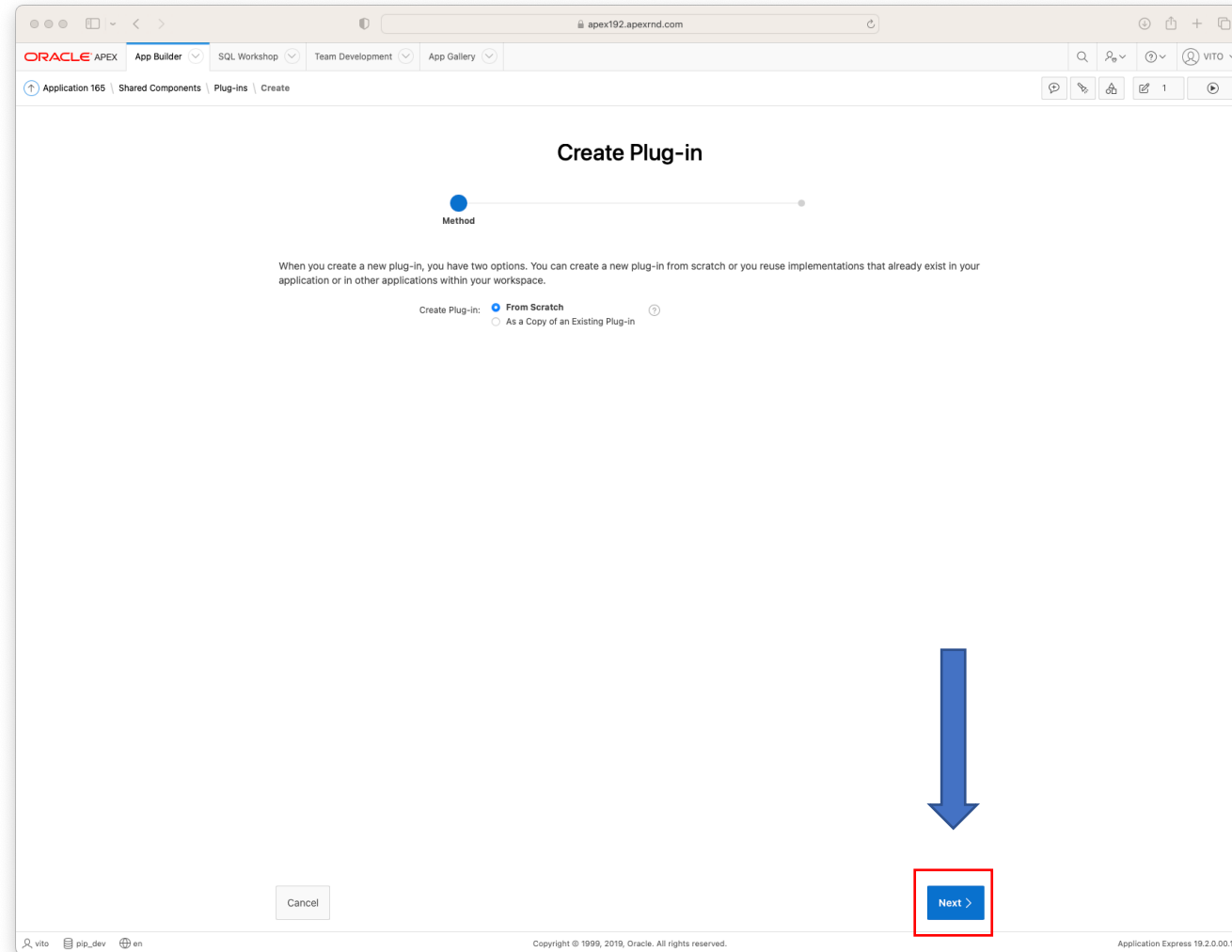
No plug-ins found.

Plug-ins
A plug-in is an extension to the built-in types of Application Express. Use plug-ins for declarative use of new item, region, dynamic action process, authentication scheme and authorization scheme types in your application.

Tasks
[Export Plug-in](#)

Recently Edited
No plug-ins found

Create Plug-in



Create Plug-in: Give your plug-in a name and type

The screenshot shows the Oracle APEX 'Create Plug-in' interface. The browser address bar displays 'apex192.apexrnd.com'. The top navigation bar includes 'ORACLE APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'App Gallery'. The breadcrumb trail indicates the path: 'Application 165 > Shared Components > Plug-ins > Create / Edit'. The main form is titled 'Plug-in:' and features a 'Cancel' button and a 'Create Plug-in' button. Below the title, there are tabs for 'Show All', 'Name', 'Source', 'Callbacks', 'Supported for', 'Standard Attributes', 'Information', 'Help Text', and 'Comments'. The 'Name' tab is active, showing three required fields: 'Name', 'Internal Name', and 'Type'. The 'Name' field is highlighted with a red box, and a blue arrow points to it. The 'Type' field is a dropdown menu currently set to 'Item'. The 'Source' tab is also visible, showing a 'PL/SQL Code' editor with a line number '1'.

Plug-in:

Cancel Create Plug-in

Show All Name Source Callbacks Supported for Standard Attributes Information Help Text Comments

Name

* Name ?

* Internal Name ?

* Type Item ?

Source

PL/SQL Code ?

1

Plug-ins

A plug-in is an extension to the built-in types of Application Express. Use plug-ins for declarative use of new item, region, process and dynamic action types in your application.

Create Plug-in: Give your plug-in a name and type

The screenshot shows the Oracle APEX 'Create Plug-in' interface. The browser address bar displays 'apex192.apexrnd.com'. The top navigation bar includes 'ORACLE APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'App Gallery'. The breadcrumb trail indicates the path: 'Application 165 > Shared Components > Plug-ins > Create / Edit'. The 'Plug-in:' section has a 'Cancel' button and a 'Create Plug-in' button. Below this is a table with columns: 'Show All', 'Name', 'Source', 'Callbacks', 'Supported for', 'Standard Attributes', 'Information', 'Help Text', and 'Comments'. The 'Name' section is highlighted with a red box, and a blue arrow points to it. The 'Name' section contains three fields: 'Name' (text input with value 'PDF Region Pro'), 'Internal Name' (text input with value 'UC PDF Region Pro'), and 'Type' (dropdown menu with value 'Region'). The 'Source' section is currently empty. The 'PL/SQL Code' section is also empty. A sidebar on the right contains a 'Plug-ins' section with a description: 'A plug-in is an extension to the built-in types of Application Express. Use plug-ins for declarative use of new item, region, process and dynamic action types in your application.'

Show All	Name	Source	Callbacks	Supported for	Standard Attributes	Information	Help Text	Comments
Name * Name PDF Region Pro * Internal Name UC PDF Region Pro * Type Region Source PL/SQL Code 1								

Create Plug-in

ORACLE APEX App Builder SQL Workshop Team Development App Gallery

Application 165 Shared Components Plug-ins Create / Edit

Plug-in: Cancel **Create Plug-in**

Plug-ins

A plug-in is an extension to the built-in types of Application Express. Use plug-ins for declarative use of new item, region, process and dynamic action types in your application.

Name

Name PDF Region Pro ⓘ

Internal Name UC PDF Region Pro ⓘ

Type Region ⓘ

Source

PL/SQL Code ⓘ

1

Do not validate PL/SQL code (parse PL/SQL code at runtime only).

Callbacks

Render Procedure/Function Name ⓘ

AJAX Procedure/Function Name ⓘ

Supported for

User interface ☒ Desktop ⓘ
☐ Mobile

Standard Attributes

Attributes: ☐ Region Source supports different Data Sources ⓘ
☐ Region Source is SQL Statement [Deprecated]
☐ Region Source is Plain Text

Create Plug-in: upload necessary files

Plug-in: PDF Region Pro

Cancel

Delete

Apply Changes

Show All	Name	Subscription	Source	Callbacks	Supported for	Standard Attri...	Standard Attri...	Custom Attrib...	Files	File URLs to L...	Events	Information	Help Text	Comments
Files														
File Prefix No Files found.														
Created: 60 minutes ago - VITO Updated: 60 minutes ago - VITO														

Upload File

Plug-ins

A plug-in is an extension to the built-in types of Application Express. Use plug-ins for declarative use of new item, region, process and dynamic action types in your application.

☐ Return to page

Tasks

Export Plug-in

Utilization

Create Plug-in: upload necessary files

Upload File(s)



Use this page to associate files like images, CSS- or Javascript files with your plug-in. To associate a file with your plug-in, click Browse, select the file(s), and click Upload.

Use **p_plugin.file_prefix** in your plug-in code to reference a plug-in file.

Directory

* File ☐ 3 files

* File Character Set

* Unzip File ☒

Cancel

Upload

Cancel



Upload

Upload and Upload Another

Choose Files to Upload

pdf-test

css

css.zip

index.html

js

js.zip

lib

lib.zip

ZIP

3 items

3 documents - 97,5 MB

Information

Cancel

Upload

Create Plug-in: Reference files



Plug-in: PDF Region Pro

Cancel

Delete

Apply Changes

Show All

Name

Subscription

Source

Callbacks

Supported for

Standard Attri...

Standard Attri...

Custom Attrib...

Files

File URLs to L...

Events

Information

Help Text

Comments

Files

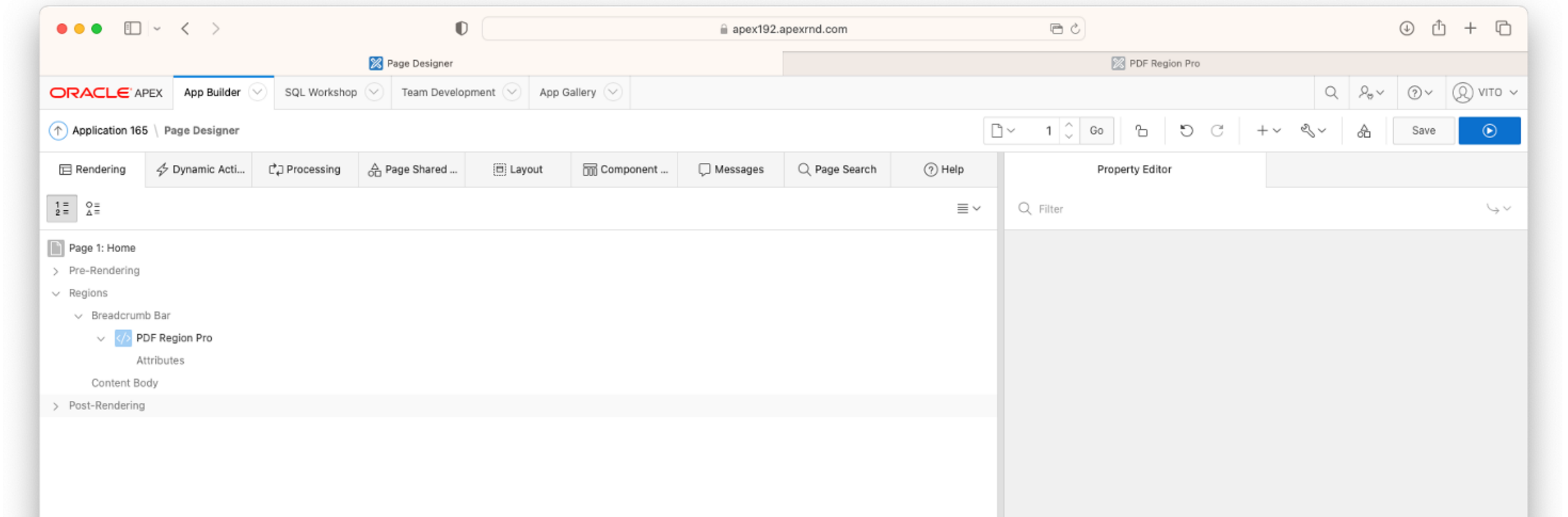
Upload File

File Prefix

?

File Name ↑	Mime Type	File Size	File
css/styles.css	text/css	70	Download
js/script.js	application/x-javascript	356	Download
lib/core/20.chunk.js	application/x-javascript	3KB	Download
lib/core/21.chunk.js	application/x-javascript	4KB	Download
lib/core/AndroidContentPartRetriever.chunk.js	application/x-javascript	948	Download
lib/core/ArrayBufferPdfPartRetriever.chunk.js	application/x-javascript	623	Download
lib/core/AzurePartRetriever.chunk.js	application/x-javascript	776	Download
lib/core/CORSWorker.js	application/x-javascript	1KB	Download
lib/core/ContentEdit.chunk.js	application/x-javascript	27KB	Download
lib/core/DecryptWorker.js	application/x-javascript	14KB	Download
lib/core/ExternalAnnotationMerger.chunk.js	application/x-javascript	7KB	Download
lib/core/ExternalPdfPartRetriever.chunk.js	application/x-javascript	3KB	Download
lib/core/HttpPartRetriever.chunk.js	application/x-javascript	6KB	Download
lib/core/IOSPartRetriever.chunk.js	application/x-javascript	979	Download
lib/core/LocalPartRetriever.chunk.js	application/x-javascript	2KB	Download

Implement on Page



Implement on Page

The screenshot displays the Oracle APEX Page Designer interface for 'Application 165'. The top navigation bar includes 'ORACLE APEX', 'App Builder', 'SQL Workshop', 'Team Development', and 'App Gallery'. The main toolbar contains icons for rendering, dynamic actions, processing, page sharing, layout, component, messages, page search, and help. A blue arrow points to the 'Run' button (a play icon) in the top right corner of the toolbar.

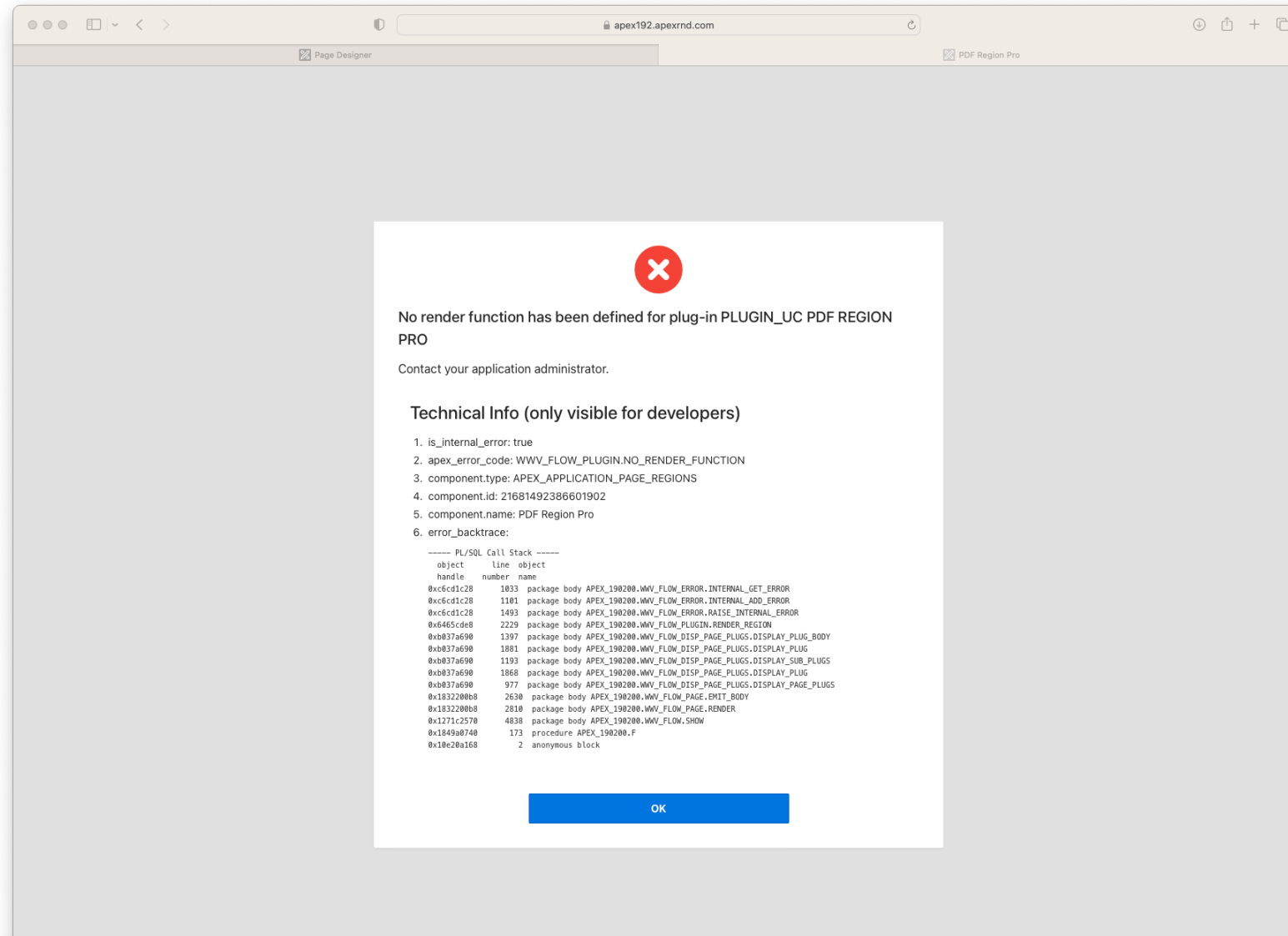
The left sidebar shows the page structure: 'Page 1: Home' > 'Pre-Rendering' > 'Regions' > 'Breadcrumb Bar' > 'PDF Region Pro' (selected). Below this, 'Attributes' and 'Sub Regions' are listed. The 'PDF Region Pro' item is highlighted in blue.

The right sidebar shows the configuration for the 'PDF Region Pro' plug-in. It is divided into two sections: 'Identification' and 'Layout'.

Identification	
Title	PDF Region Pro
Type	PDF Region Pro [Plug-In]

Layout	
Sequence	10
Parent Region	PDF Region Pro

Implement on Page



Core Concepts: Region Plug-in

- Attributes
 - Standard & Custom
- Callbacks
 - Render
 - Ajax
- Events

Core Concepts: Region Plug-in

- **Attributes**
 - **Standard & Custom**
- Callbacks
 - Render
 - Ajax
- Events

Attributes: Standard

- Source
- Read only
- ...

mobile

Standard Attributes

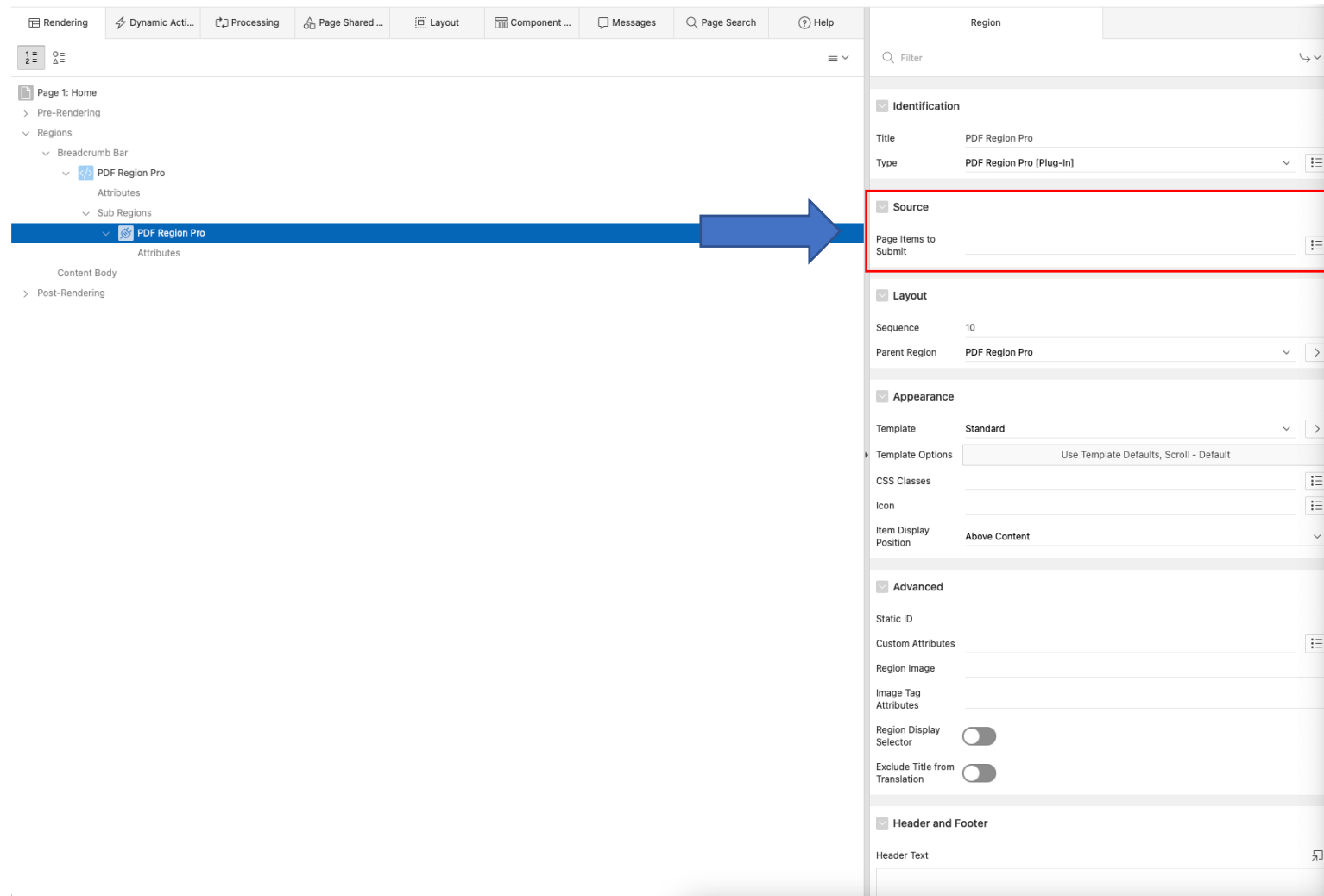
Attributes: ☐ Region Source supports different Data Sources ?
☐ Region Source is SQL Statement [Deprecated]
☐ Region Source is Plain Text
☒ **Has "Page Items to Submit" Attribute**
☐ Has "Number of Fetched Rows" Attribute
☐ Has "No Data Found Message" Attribute
☐ Has "Escape Special Characters" Region Attribute
☒ **Has "Initialization JavaScript Code" Attribute**
☐ Has "Region Columns"
☐ Has "Heading" Column Attribute
☐ Has "Heading Alignment" Column Attribute
☐ Has "Alignment" Column Attribute
☐ Has "CSS Class" Column Attribute
☒ **Has "Custom Attributes" Column Attribute**
☐ Has "Escape Special Characters" Column Attribute

Standard Attribute additional Meta Data

Standard Attribute	Required	Default Value	Depending on Custom Attribute
Has "Initialization JavaScript Code" Attribute	No		

Attributes: Standard

- Source
- Read only
- ...



Attributes: Custom

Custom Attributes							Add Attribute
Substitute Attribute Values ☒ ?							
Label	Scope ↑	Attribute	Sequence	Type	Required	Default Value	Depending on
Editor Settings	Component	2	20	Checkboxes	No		
Table Name	Component	6	2110	Text	Yes		Source
Content Column	Component	7	2120	Text	Yes		Source
Primary Key(s) Column(s)	Component	8	2115	Text	Yes		Source
Item(s) Containing Primary Key(s) Value(s)	Component	9	2000	Page Items	Yes		
Last Update Column	Component	10	2400	Text	Yes		Source
Owner Column	Component	11	2100	Text	No		Source
Filename Column	Component	12	2200	Text	Yes		Source
MIME Type Column	Component	13	2300	Text	Yes		Source
Custom PL/SQL Package Name	Component	14	2990	Text	No		
Version Column	Component	15	2500	Text	No		Source
Document Permissions	Component	21	2570	Select List	Yes	EVERYONE_CAN_READ_AND_EDIT	
Initialization PL/SQL Code	Component	24	3000	PL/SQL Code	No		
Source	Component	25	2100	Select List	Yes	DEFAULT	

Attributes: Custom

The screenshot displays the Oracle APEX application editor interface. On the left, the 'Page 100: Online demo' tree shows the 'Attributes' section under the 'PDF Region Pro' item, highlighted with a red arrow. The right panel, titled 'Attributes', contains the following settings:

- Settings**
 - ☐ Disable Annotations
 - ☐ Disable Shapes
 - ☐ Disable Insert
 - ☐ Disable Edit
 - ☐ Disable Forms
 - ☐ Disable Fill and Sign
- Editor Settings**
- Item(s)**
 - Containing: P100_DOCUMENT_ID
 - Primary Key(s):
 - Value(s):
- Source**: Default table
- Document Permissions**: Everyone can read and edit
- Custom PL/SQL**
 - Package Name:
 - Initialization PL/SQL Code:
- Advanced**
 - JavaScript Initialization Code:

```
function( pOptions ) {  
  pOptions.darkMode = false;  
  pOptions.language = "EN";  
  pOptions.zoomLevel = 90;  
  pOptions.showSidebar = true;  
  pOptions.activeTool = "VIEW"  
  
  return pOptions;  
}
```

Core Concepts: Region Plug-in

- Attributes
 - Standard & Custom
- **Callbacks**
 - **Render**
 - Ajax
- Events

Callbacks

ORACLE APEX

App Builder

SQL Workshop

Team Development

App Gallery

?

VITO

Application 165 / Shared Components / Plug-ins / Create / Edit

Plug-in: PDF Region Pro

Cancel

Apply Changes

Show All	Name	Subscription	Source	Callbacks	Supported for	Standard Attri...	Standard Attri...	Custom Attrib...	Files	File URLs to L...	Events	Information	Help Text	Comments
Callbacks														
Render Procedure/Function Name	UC_DEMO.render ?													
AJAX Procedure/Function Name	UC_DEMO.ajax ?													
Created: 18 hours ago - VITO Updated: 17 hours ago - VITO														

Plug-ins

A plug-in is an extension to the built-in types of Application Express. Use plug-ins for declarative use of new item, region, process and dynamic action types in your application.

☐ Return to page ?

Tasks

Export Plug-in

Utilization

Callbacks

ORACLE APEX

App Builder

SQL Workshop

Team Development

App Gallery

Application 165

Shared Components

Plug-ins

?

?

VITO

?

?

?

?

?

?

✓

Action processed.

Plug-ins

Utilization

History

Q

Go

Actions

Reset

View Plug-in Repository

Import

Create

Name	Type	Updated	Version	About URL	Subscribed From	Subscribers	References
PDF Region Pro	Region	Now	1.0				1

1 - 1

Plug-ins

A plug-in is an extension to the built-in types of Application Express. Use plug-ins for declarative use of new item, region, dynamic action process, authentication scheme and authorization scheme types in your application.

Tasks

Export Plug-in

Recently Edited

PDF Region Pro

Callbacks

ORACLE APEX

App Builder

SQL Workshop

Team Development

App Gallery

VITO

Object Browser

SQL Commands

SQL Scripts

Utilities

RESTful Services

Recently Created Tables

UC_PDF_REGION_PRO_FILES_UPLOADED	6 days ago	select VERSION, ...	4 days ago
UC_PDF_DEFAULT_FILES	12 days ago	select VERSION, ...	4 days ago
UC_PDF_DEFAULT_VERSIONS	12 days ago	CREATE OR REPLACE EDITIONABLE TRIGG...	6 days ago
UC_GRID_PROJECTS	13 days ago	CREATE OR REPLACE EDITIONABLE TRIGG...	6 days ago
UC_GRID_TASKS	13 days ago	drop TRIGGER "BI_UC_PDF_REGION_PRO_...	6 days ago
UC_PDF_REGION_PRO_EXT_FILES	2 weeks ago	CREATE OR REPLACE EDITIONABLE TRIGG...	6 days ago
UC_PDF_REGION_PRO_CUSTOM_TBL	2 weeks ago	CREATE OR REPLACE EDITIONABLE TRIGG...	6 days ago

Recent SQL Commands

select VERSION, ...	4 days ago
select VERSION, ...	4 days ago
CREATE OR REPLACE EDITIONABLE TRIGG...	6 days ago
CREATE OR REPLACE EDITIONABLE TRIGG...	6 days ago
drop TRIGGER "BI_UC_PDF_REGION_PRO_...	6 days ago
CREATE OR REPLACE EDITIONABLE TRIGG...	6 days ago
CREATE OR REPLACE EDITIONABLE TRIGG...	6 days ago

About

The SQL Workshop is a collection of tools to manage database objects.

Learn More ...

Schema

Select the default database schema for your SQL Workshop session.

PIP_DEV Set

Create Object

Table

View

Index

Sequence

Type

Package

Procedure

Callbacks

The screenshot displays the Oracle APEX interface. The top navigation bar includes the Oracle APEX logo and several tabs: App Builder, SQL Workshop (which is the active tab), Team Development, and App Gallery. On the right side of the navigation bar, there are icons for search, user profile, help, and the current user (VITO).

Below the navigation bar, the main area is divided into two sections. On the left is the Object Browser, which shows a list of objects in the current schema (PIP_DEV). The list includes tables like AOE_API_STAGING, AOE_BUCKET_CONFIG, AOE_BUCKET_FILES, AOE_CONFIG, AOE_CUSTOM_TBL, AOE_DEFAULT_FILES, AOE_DEFAULT_VERSIONS, AOE_EXT_FILES, AOE_FILES_CUSTOM, AOE_FILES_UPLOADED, AOE_REST_LOGS, DEPT, and several DR\$ tables. On the right is the main workspace, which is currently empty. A blue arrow points from the main workspace towards a dropdown menu that is open, showing a list of object types: Table, View, Index, Sequence, Type, Package (highlighted with a red box), Procedure, Function, Trigger, Database Link, Materialized View, and Synonym.

Callbacks

ORACLE APEX App Builder SQL Workshop Team Development App Gallery

Create Package

Select Type

Create Package: ☒ Specification ☐ Body ☐ Package with methods on database table(s)

A **package** is a database object that groups logically related PL/SQL types, items, functions and procedures. Packages usually have two parts:

- **Specification.** The interface to your application.
- **Body.** Implements the specification (sometimes unnecessary).

Cancel

Next >

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Callbacks

ORACLE APEX App Builder SQL Workshop Team Development App Gallery

Create Package

Create Package

Progress bar: [Green checkmark] [Blue dot] [Grey dot]

Name

* Package Name UC_DEMO ⓘ

☐ Preserve Case

< Cancel

Next >

vito pip_dev en Copyright © 1999, 2019, Oracle. All rights reserved. Application Express 19.2.0.00.18

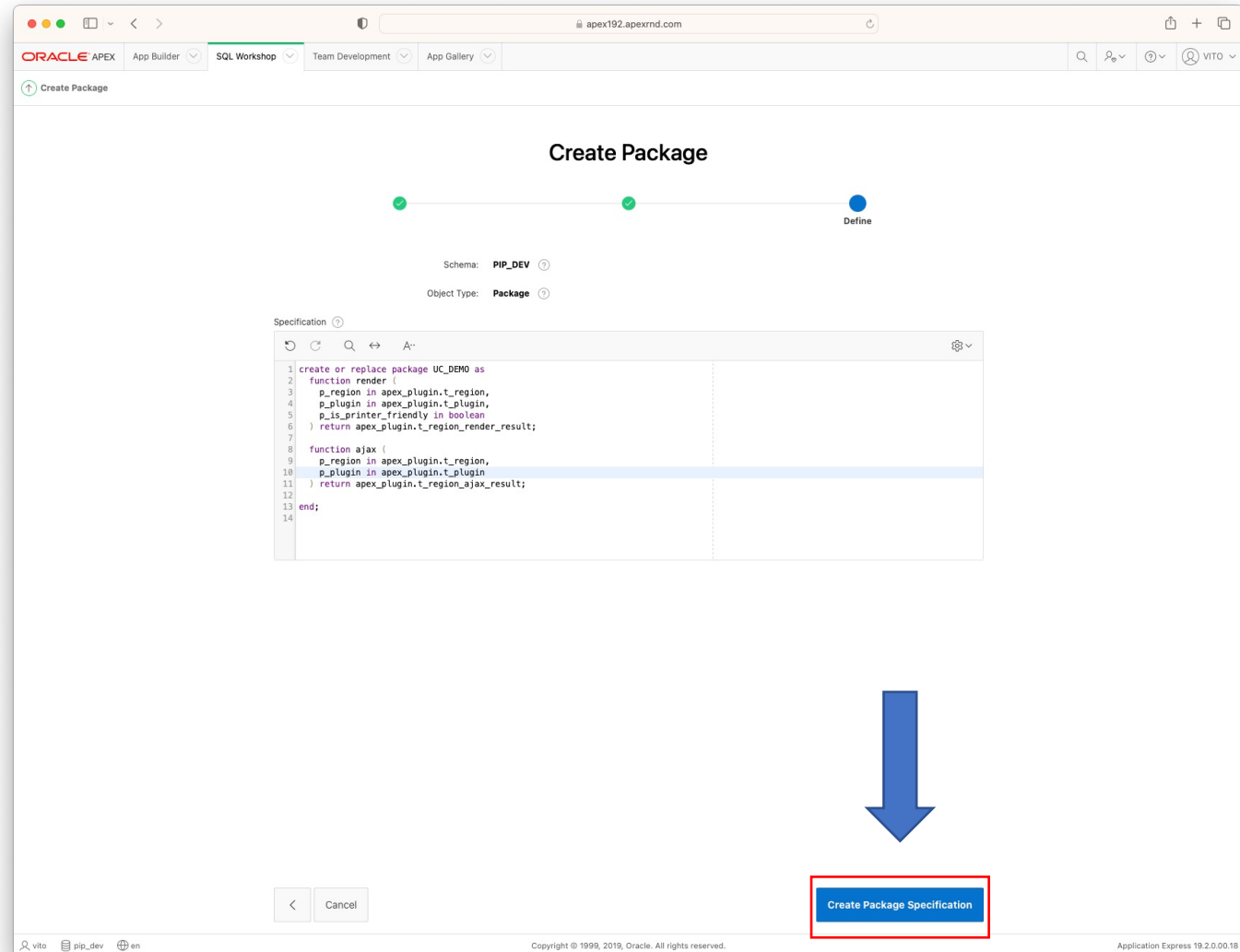
Callbacks

```
create or replace package UC_DEMO as
  function render (
    p_region in apex_plugin.t_region,
    p_plugin in apex_plugin.t_plugin,
    p_is_printer_friendly in boolean
  ) return apex_plugin.t_region_render_result;

  function ajax (
    p_region in apex_plugin.t_region,
    p_plugin in apex_plugin.t_plugin
  ) return apex_plugin.t_region_ajax_result;

end;
```

Callbacks



Callbacks

ORACLE APEX App Builder SQL Workshop Team Development App Gallery

Object Browser Schema PIP_DEV

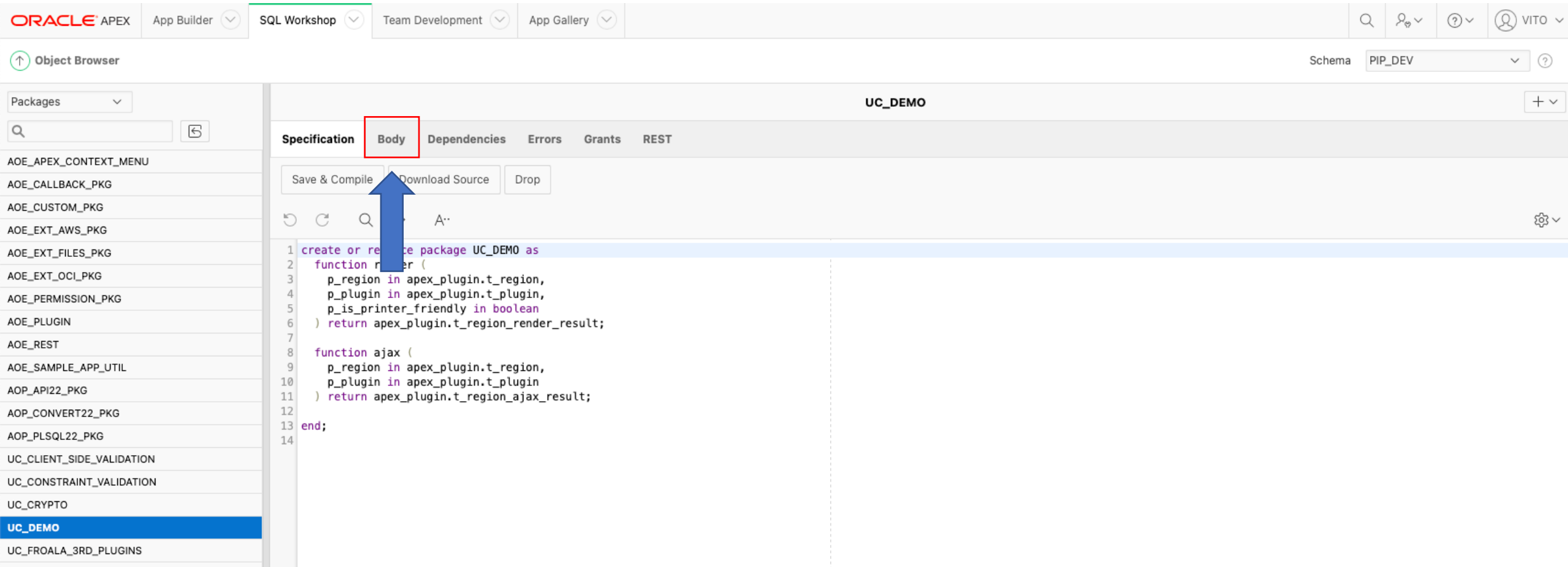
Packages

UC_DEMO

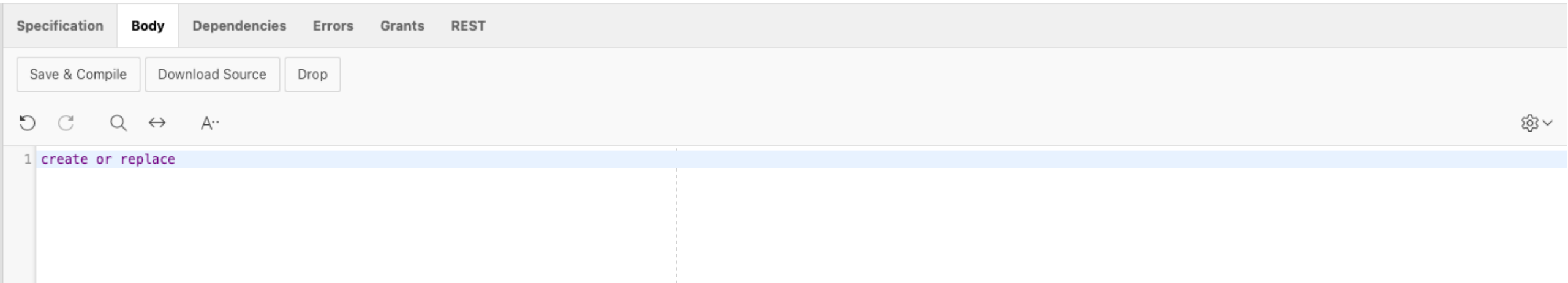
Specification **Body** Dependencies Errors Grants REST

Save & Compile Download Source Drop

```
1 create or replace package UC_DEMO as
2   function render (
3     p_region in apex_plugin.t_region,
4     p_plugin in apex_plugin.t_plugin,
5     p_is_printer_friendly in boolean
6   ) return apex_plugin.t_region_render_result;
7
8   function ajax (
9     p_region in apex_plugin.t_region,
10    p_plugin in apex_plugin.t_plugin
11   ) return apex_plugin.t_region_ajax_result;
12
13 end;
14
```



Callback: Render function



Callback: Render function

Specification

Body

Dependencies

Errors

Grants

REST

Save & Compile

Download Source

Drop

↶ ↷ 🔍 ↔ A..

⚙️ ✓

```
1 create or replace package body UC_DEMO as
2   function render (
3     p_region in apex_plugin.t_region,
4     p_plugin in apex_plugin.t_plugin,
5     p_is_printer_friendly in boolean
6   ) return apex_plugin.t_region_render_result
7   as
8     l_result          apex_plugin.t_region_render_result;
9   begin
10    sys.http.p('<div id="viewer"></div>');
11
12    --creating json
13    apex_json.initialize_clob_output;
14    apex_json.open_object;
15    apex_json.write('pluginFolder', p_plugin.file_prefix);
16    apex_json.write('ajaxIdentifier', apex_plugin.get_ajax_identifier);
17    apex_json.close_object;
18
19    --onload code
20    apex_javascript.add_onload_code(p_code => 'UC.region.PDFRegionPro.initPDF(' || apex_json.get_clob_output || ');');
21    apex_json.free_output;
22
23    return l_result;
24  end;
25
26  function ajax (
27    p_region in apex_plugin.t_region,
28    p_plugin in apex_plugin.t_plugin
29  ) return apex_plugin.t_region_ajax_result
30  as
31  begin
32    null;
33  end;
34 end;
```

Render function

```
2 function render (  
3     p_region in apex_plugin.t_region,  
4     p_plugin in apex_plugin.t_plugin,  
5     p_is_printer_friendly in boolean  
6 ) return apex_plugin.t_region_render_result  
7 as  
8     l_result          apex_plugin.t_region_render_result;  
9 begin  
10     sys.http.p('<div id="viewer"></div>');  Send HTML to frontend  
11  
12     --creating json  
13     apex_json.initialize_clob_output;  
14     apex_json.open_object;  
15     apex_json.write('pluginFolder', p_plugin.file_prefix);  
16     apex_json.write('ajaxIdentifier', apex_plugin.get_ajax_identifier);  
17     apex_json.close_object;  
18  
19     --onload code  
20     apex_javascript.add_onload_code(p_code => 'UC.region.PDFRegionPro.initPDF(' || apex_json.get_clob_output || ');');  
21     apex_json.free_output;  
22  
23     return l_result;  
24 end;
```

Render function

```
2  function render (  
3      p_region in apex_plugin.t_region,  
4      p_plugin in apex_plugin.t_plugin,  
5      p_is_printer_friendly in boolean  
6  ) return apex_plugin.t_region_render_result  
7  as  
8      l_result          apex_plugin.t_region_render_result;  
9  begin  
10     sys.http.p('<div id="viewer"></div>');  
11  
12     --creating json  
13     apex_json.initialize_clob_output;  
14     apex_json.open_object;  
15     apex_json.write('pluginFolder', p_plugin.file_prefix);  
16     apex_json.write('ajaxIdentifier', apex_plugin.get_ajax_identifier);  
17     apex_json.close_object;  
18  
19     --onload code  
20     apex_javascript.add_onload_code(p_code => 'UC.region.PDFRegionPro.initPDF(' || apex_json.get_clob_output || ');');  
21     apex_json.free_output;  
22  
23     return l_result;  
24 end;
```

Send necessary config/attributes to frontend

Render function

```
2  function render (  
3      p_region in apex_plugin.t_region,  
4      p_plugin in apex_plugin.t_plugin,  
5      p_is_printer_friendly in boolean  
6  ) return apex_plugin.t_region_render_result  
7  as  
8      l_result          apex_plugin.t_region_render_result;  
9  begin  
10     sys.http.p('<div id="viewer"></div>');  
11  
12     --creating json  
13     apex_json.initialize_clob_output;  
14     apex_json.open_object;  
15     apex_json.write('pluginFolder', p_plugin.file_prefix);  
16     apex_json.write('ajaxIdentifier', apex_plugin.get_ajax_identifier);  
17     apex_json.close_object;  
18  
19     --onload code  
20     apex_javascript.add_onload_code(p_code => 'UC.region.PDFRegionPro.initPDF(' || apex_json.get_clob_output || ');');  
21     apex_json.free_output;  
22  
23     return l_result;  
24 end;
```



Reference function in JavaScript file

JavaScript onLoad code

- Executed via the render function on page load
- Links backend → frontend
 - Set configurations for the JavaScript library
 - Communicate with APEX
 - Fetch data, if needed

Modifying our JavaScript 'script.js' file

```
/* globals apex,$ */
var fileName;
window.UC = window.UC || {};
UC.region = UC.region || {};
UC.region.PDFRegionPro = UC.region.PDFRegionPro || {};

/**
 * Initialization function for the PDF Region Pro Plugin.
 *
 * @param {object}      config          The object holding the slider's configuration.
 * @param {string}      [config.pluginFolder]  Folder where the plugin is located.
 * @param {string}      [config.ajaxIdentifier] Identifier for the AJAX call.
 */

UC.region.PDFRegionPro.initPDF = function (config) {
  WebViewer(
    {
      // Path below needs to be dynamic
      path: config.pluginFolder + "lib",
    },
    document.getElementById("viewer")
  ).then((instance) => {
    if (navigator.appVersion.indexOf("MSIE") > -1) {
      return alert("This WebViewer version is not supported in your browser. ");
    }
  });
};
```

Modifying our JavaScript 'script.js' file

```
/* globals apex,$ */
var fileName;
window.UC = window.UC || {};
UC.region = UC.region || {};
UC.region.PDFRegionPro = UC.region.PDFRegionPro || {};

/**
 * Initialization function for the PDF Region Pro Plugin.
 *
 * @param {object}      config      The object holding the slider's configuration.
 * @param {string}     [config.pluginFolder]  Folder where the plugin is located.
 * @param {string}     [config.ajaxIdentifier] Identifier for the AJAX call.
 */

UC.region.PDFRegionPro.initPDF = function (config) {
  WebViewer(
    {
      // Path below needs to be dynamic
      path: config.pluginFolder + "lib",
    },
    document.getElementById("viewer")
  ).then((instance) => {
    if (navigator.appVersion.indexOf("MSIE") > -1) {
      return alert("This WebViewer version is not supported in your browser. ");
    }
  });
};
```

} Namespace to group our plug-in code

Modifying our JavaScript 'script.js' file

```
/* globals apex,$ */
var fileName;
window.UC = window.UC || {};
UC.region = UC.region || {};
UC.region.PDFRegionPro = UC.region.PDFRegionPro || {};

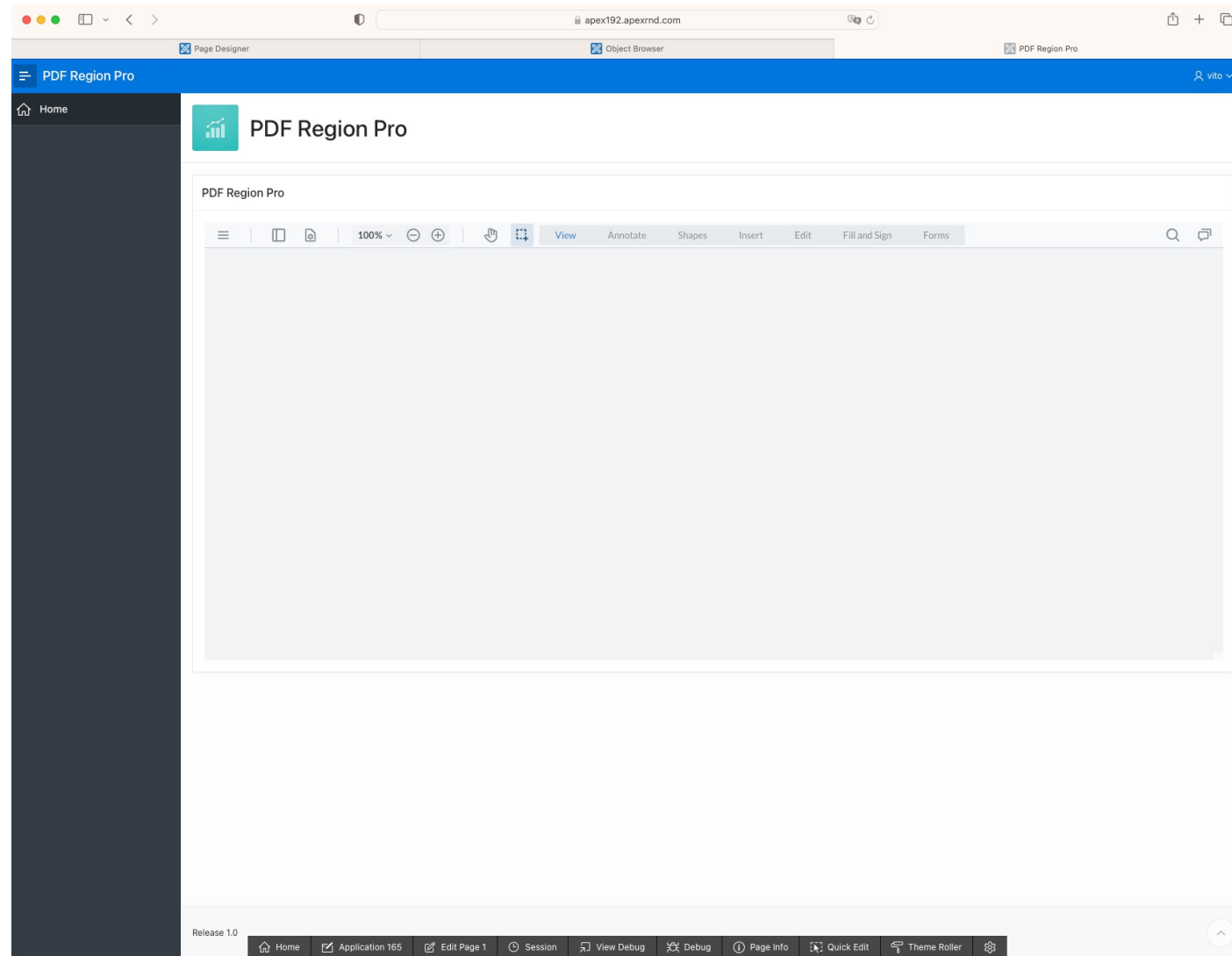
/**
 * Initialization function for the PDF Region Pro Plugin.
 *
 * @param {object}      config          The object holding the slider's configuration.
 * @param {string}     [config.pluginFolder]  Folder where the plugin is located.
 * @param {string}     [config.ajaxIdentifier] Identifier for the AJAX call.
 */

UC.region.PDFRegionPro.initPDF = function (config) {
  WebViewer(
    {
      // Path below needs to be dynamic
      path: config.pluginFolder + "lib",
    },
    document.getElementById("viewer")
  ).then((instance) => {
    if (navigator.appVersion.indexOf("MSIE") > -1) {
      return alert("This WebViewer version is not supported in your browser. ");
    }
  });
};
```

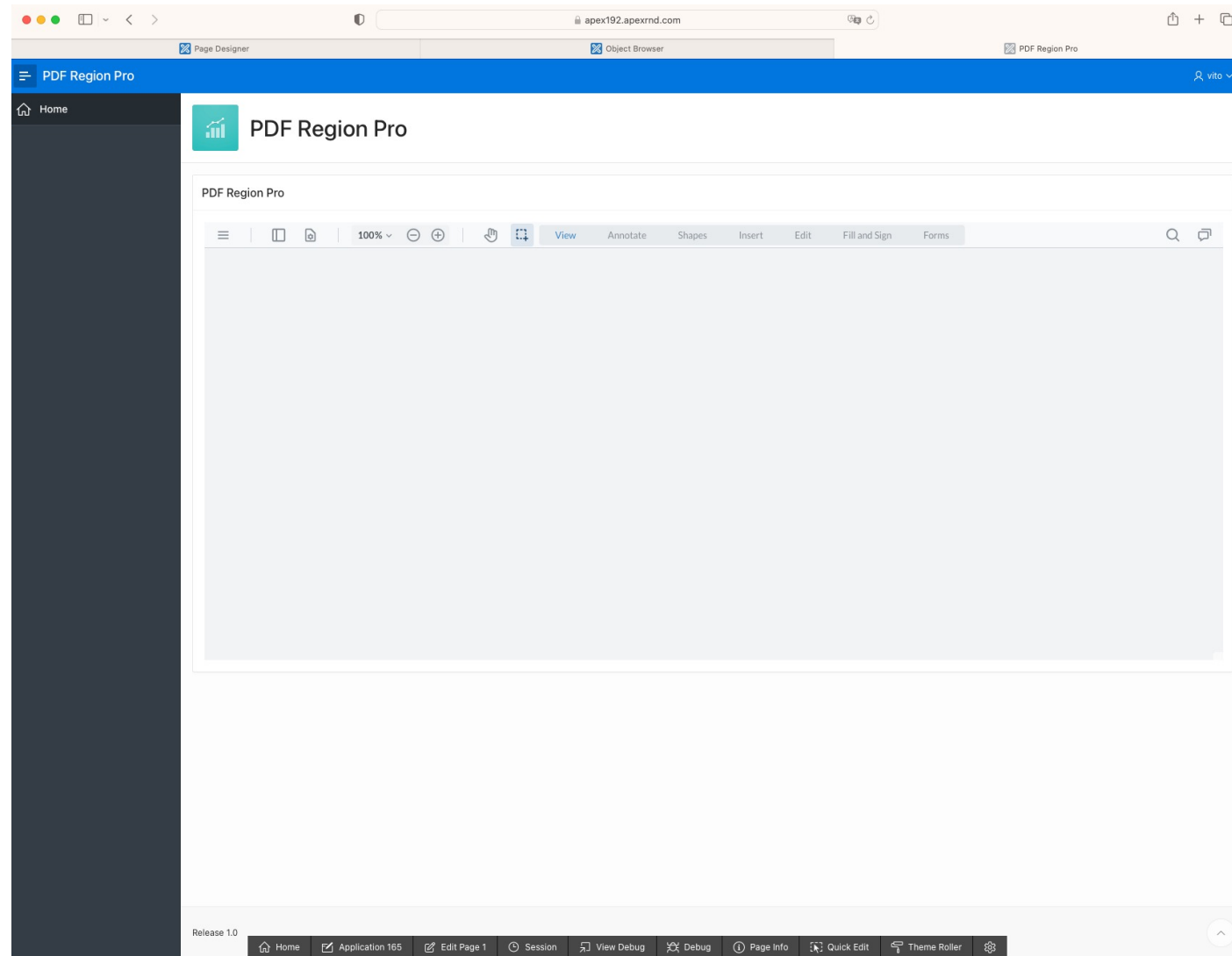


Reference the lib folder we uploaded in plug-in files

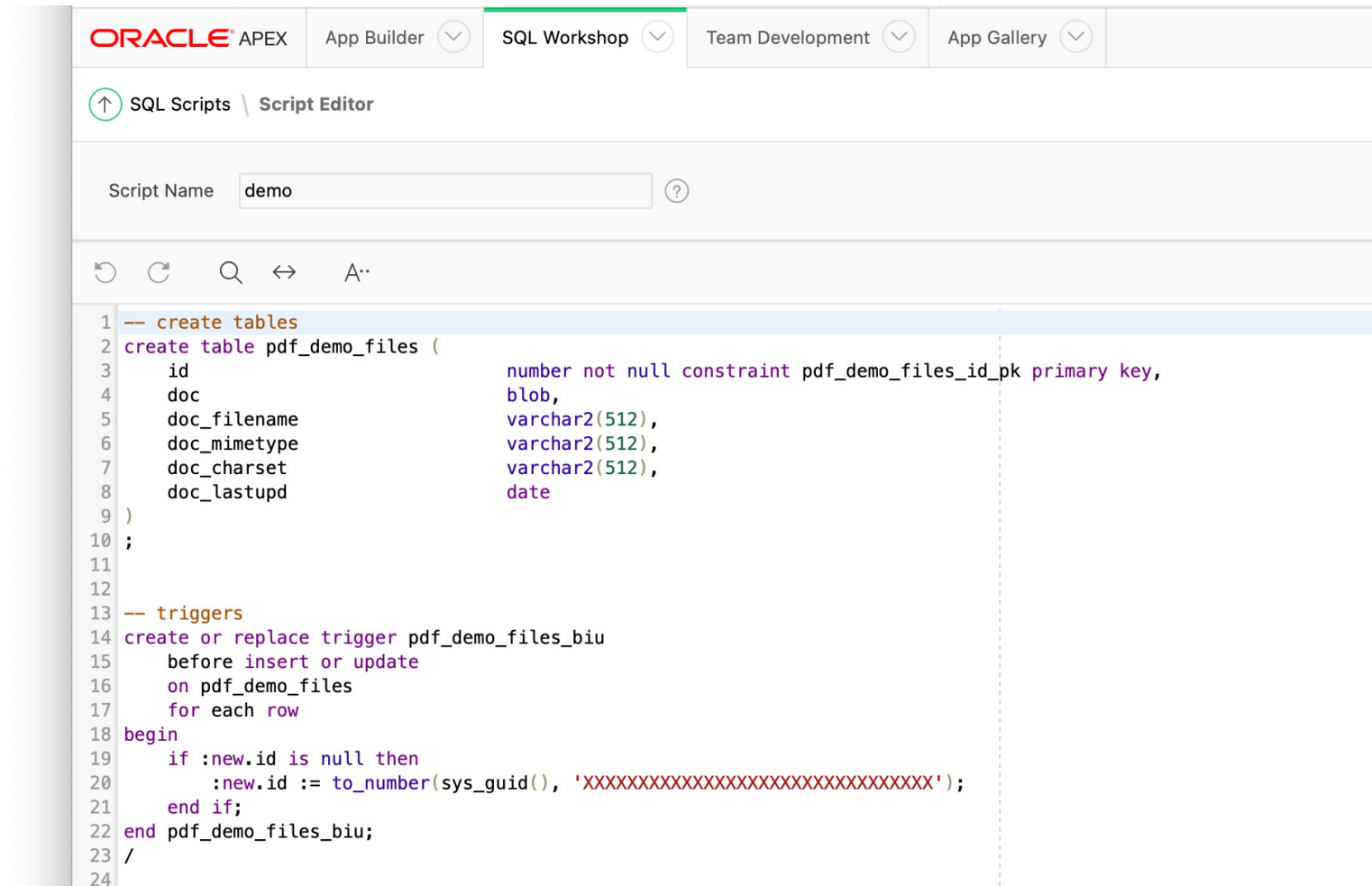
View the result



View the result: where is the PDF?



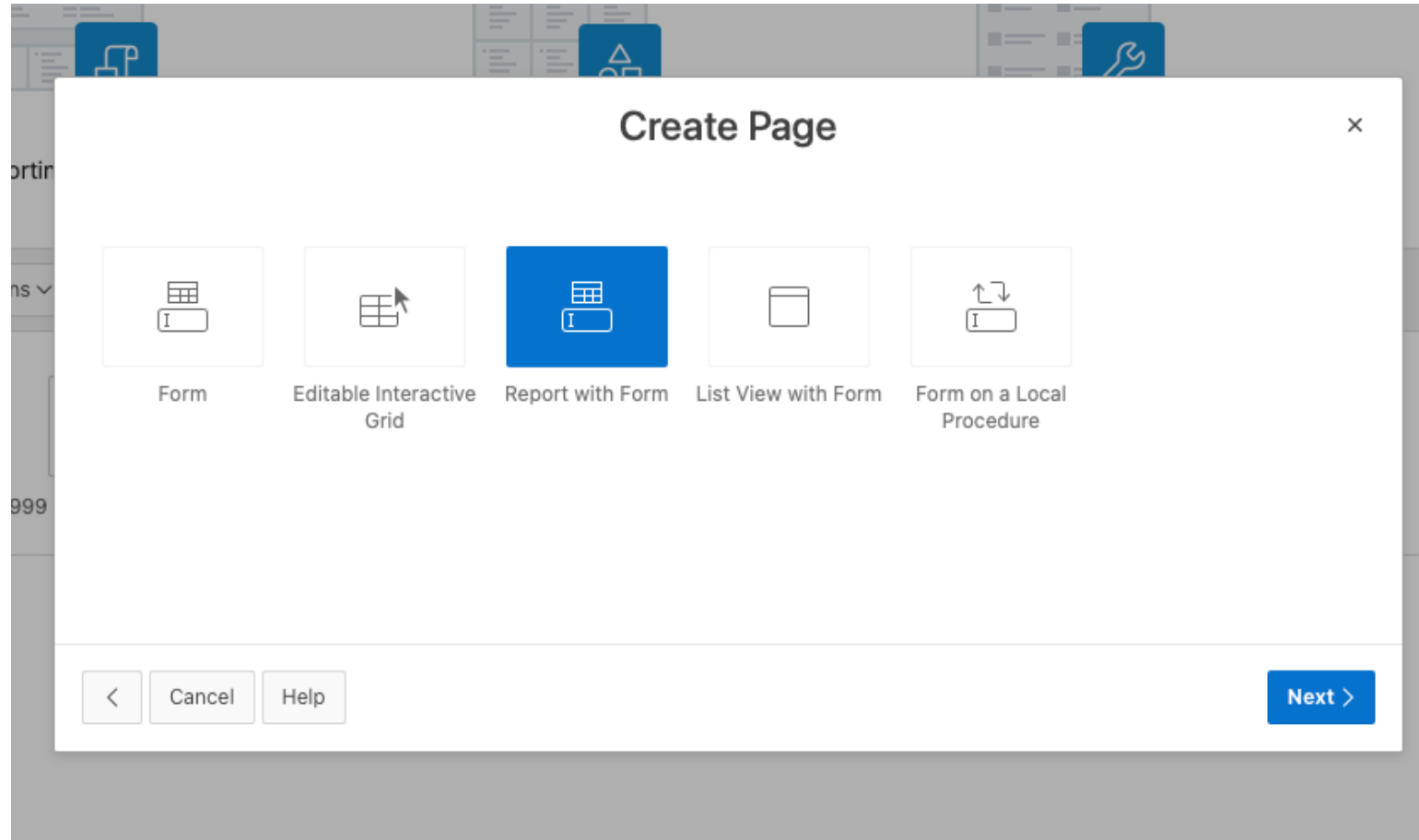
Add a table to store our PDF's



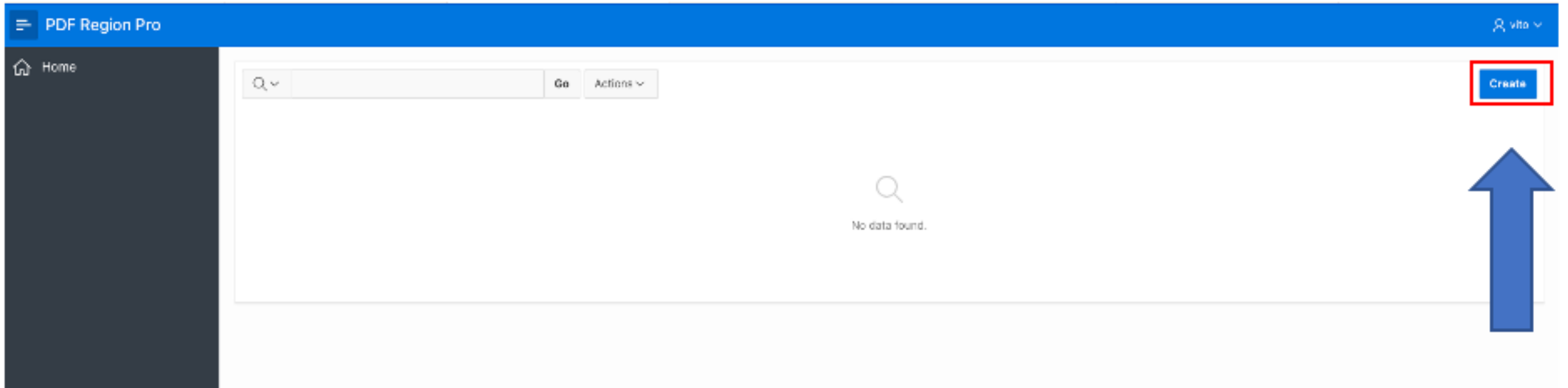
The screenshot shows the Oracle APEX SQL Workshop interface. The top navigation bar includes 'ORACLE APEX', 'App Builder', 'SQL Workshop' (selected), 'Team Development', and 'App Gallery'. Below this, the 'SQL Scripts' section is active, showing the 'Script Editor'. The 'Script Name' field is set to 'demo'. The script content is as follows:

```
1  -- create tables
2  create table pdf_demo_files (
3      id                                number not null constraint pdf_demo_files_id_pk primary key,
4      doc                               blob,
5      doc_filename                       varchar2(512),
6      doc_mimetype                       varchar2(512),
7      doc_charset                        varchar2(512),
8      doc_lastupd                        date
9  )
10 ;
11
12
13 -- triggers
14 create or replace trigger pdf_demo_files_biu
15     before insert or update
16     on pdf_demo_files
17     for each row
18 begin
19     if :new.id is null then
20         :new.id := to_number(sys_guid(), 'XXXXXXXXXXXXXXXXXXXXXXXXXXXX');
21     end if;
22 end pdf_demo_files_biu;
23 /
24
```

Create a page to upload a PDF



Create a page to upload a PDF



Create a page to upload a PDF

The screenshot displays the 'PDF Region Pro' application interface. On the left is a dark sidebar with a 'Home' link. The main content area is titled 'Add/Edit File' and contains several input fields: 'Doc' with the value 'something-just-like-this-lyrics.pdf', 'Doc Filename' with the same value, 'Doc Mimetype' with 'application/pdf', 'Doc Charset' (empty), and 'Doc Lastupd' (empty). At the bottom left of the form is a 'Cancel' button, and at the bottom right is a 'Create' button, which is highlighted with a red rectangular border. A large blue arrow is positioned below the 'Create' button, pointing directly at it.

Create a page to upload a PDF

PDF Region Pro

Home

Q

Go

Actions

	Id	Doc	Doc Filename	Doc Mimetype	Doc Charset	Doc Lastupd
	328863081987187356170865129631431428691	Download	something-just-like-this-lyrics.pdf	application/pdf	-	3/21/2023

1 - 1

Create

Row created.

Core Concepts: Region Plug-in

- Attributes
 - Standard & Custom
- **Callbacks**
 - Render
 - **Ajax**
- Events

Calling the AJAX function in JS

```
UC.region.PDFRegionPro.initPDF = function (config) {
  WebViewer(
    {
      // Path below needs to be dynamic
      path: config.pluginFolder + "lib",
    },
    document.getElementById("viewer")
  ).then((instance) => {
    if (navigator.appVersion.indexOf("MSIE") > -1) {
      return alert("This WebViewer version is not supported in your browser. ");
    }

    const result = apex.server.plugin(config.ajaxIdentifier, {
      x01: '328863081987187356170865129631431428691',
    });

    result.done(function (data) {
      instance.UI.loadDocument(base64ToBlob(data.clob));
    });
  });
};

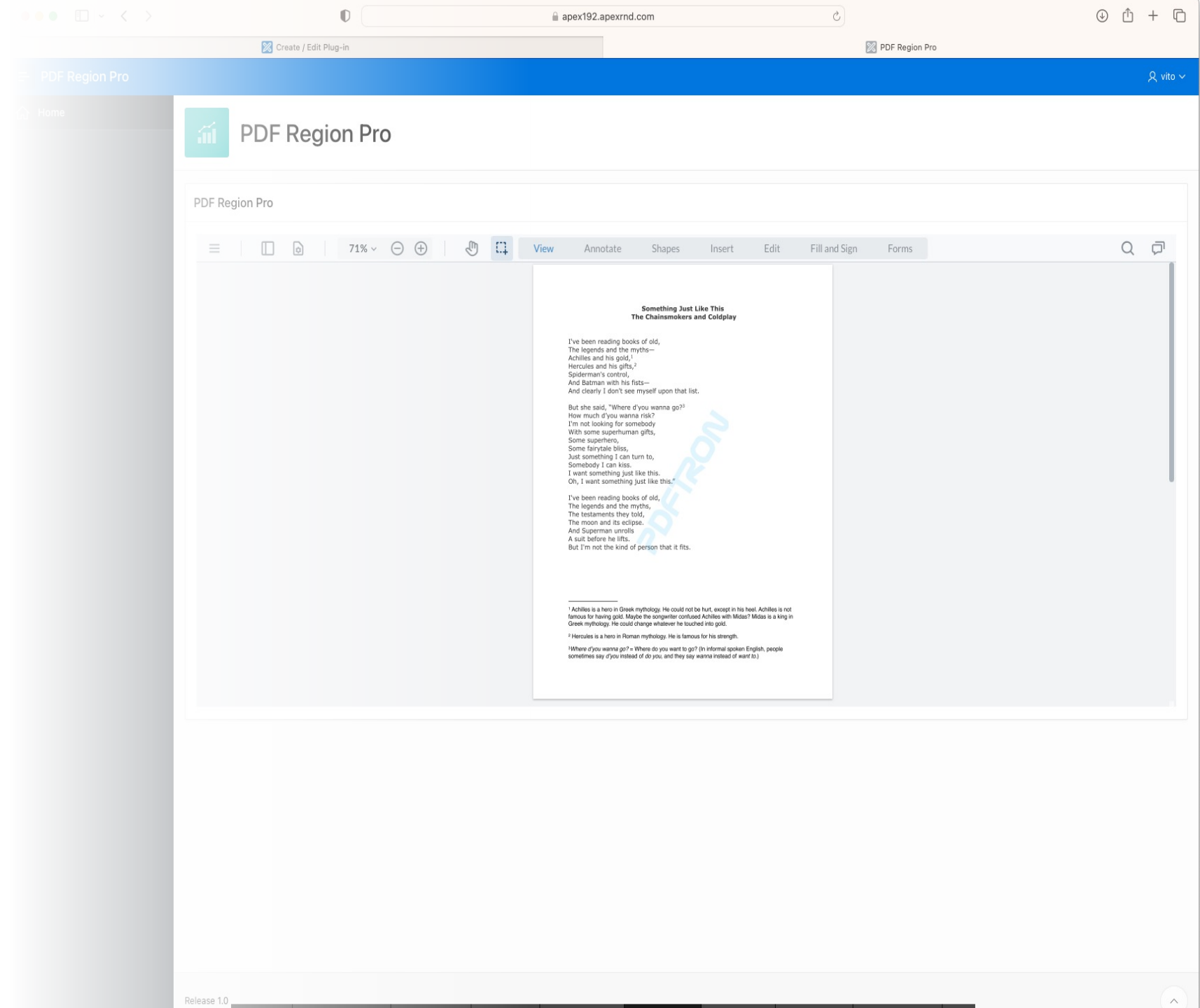
function base64ToBlob(base64) {
  const binaryString = window.atob(base64);
  const len = binaryString.length;
  const bytes = new Uint8Array(len);
  for (let i = 0; i < len; ++i) {
    bytes[i] = binaryString.charCodeAt(i);
  }

  return new Blob([bytes], { type: "application/pdf" });
}
```

Callback: AJAX

```
function ajax (  
  p_region in apex_plugin.t_region,  
  p_plugin in apex_plugin.t_plugin  
) return apex_plugin.t_region_ajax_result  
as  
  l_return apex_plugin.t_region_ajax_result;  
  l_id      varchar2(4000) := apex_application.g_x01;  
  
  l_clob    clob;  
  l_blob    blob;  
begin  
  
  select doc  
  into l_blob  
  from pdf_demo_files  
  where id = l_id;  
  
  l_clob := apex_web_service.BLOB2CLOBBASE64(l_blob);  
  
  apex_json.open_object;  
    apex_json.write('clob', l_clob);  
  apex_json.close_object;  
  
  return l_return;  
end;
```

Result





Phase 5

Sample App & Documentation

Sample Application

- Implementation examples
- Easy to reuse
- Explanation

Documentation

- About
- Getting Started
- Different Attributes
- Database Objects
- Known Issues

PDF Region Pro

PDF Region Pro delivers the highest quality rendering, conversion, and PDF manipulation capabilities through a single, customizable Oracle APEX plug-in.

Type: Region

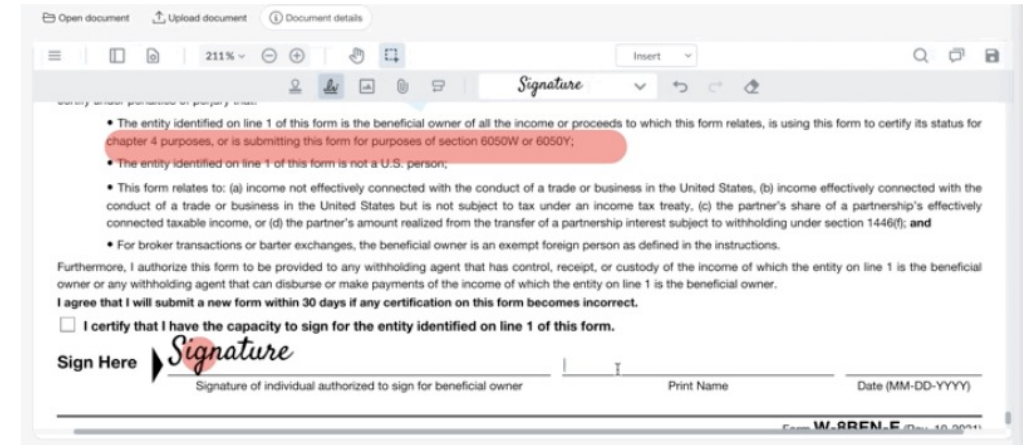
Author: Vito Van Hecke

Level: Gold

APEX versions: 19.2

Maintained by: United Codes

Last updated: 30-APR-2023



Close

[View Documentation](#)

[View Sample App](#)

Rich Text Editor Pro

United Codes Rich Text Editor Pro integrates the popular Froala WYSIWYG Editor into an awesome plug-in for APEX. This enhanced HTML/Rich Text editor takes care of the CLOB handling for you - so you don't have to worry about the 32,767 character limit! Easily handles images, is highly customizable, and supports multiple languages.

Type: Item

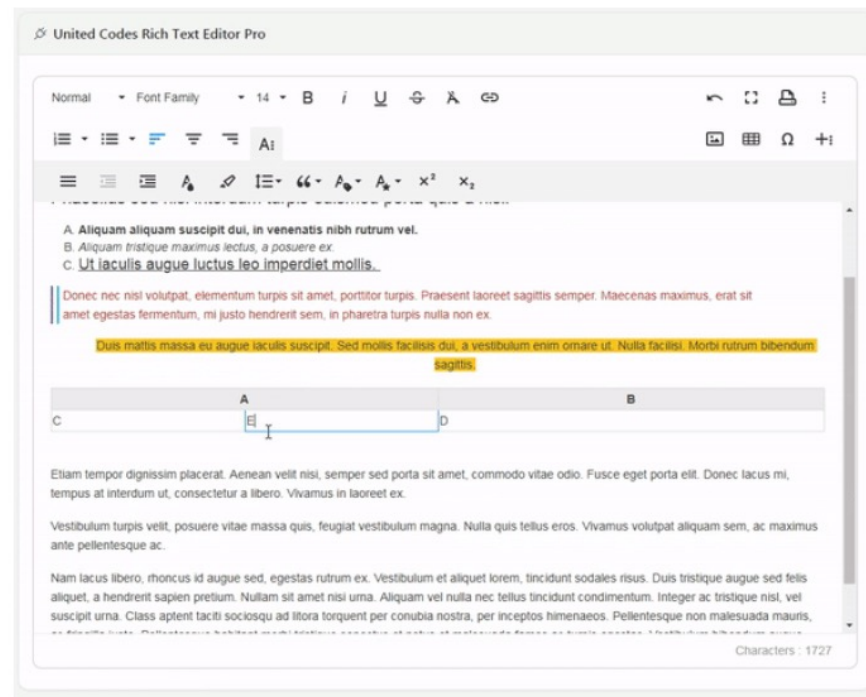
Author: Bartosz Ostrowski

Level: Gold

APEX versions: 19.2 and up

Maintained by: United Codes

Last updated: 21-MAR-2023



Close

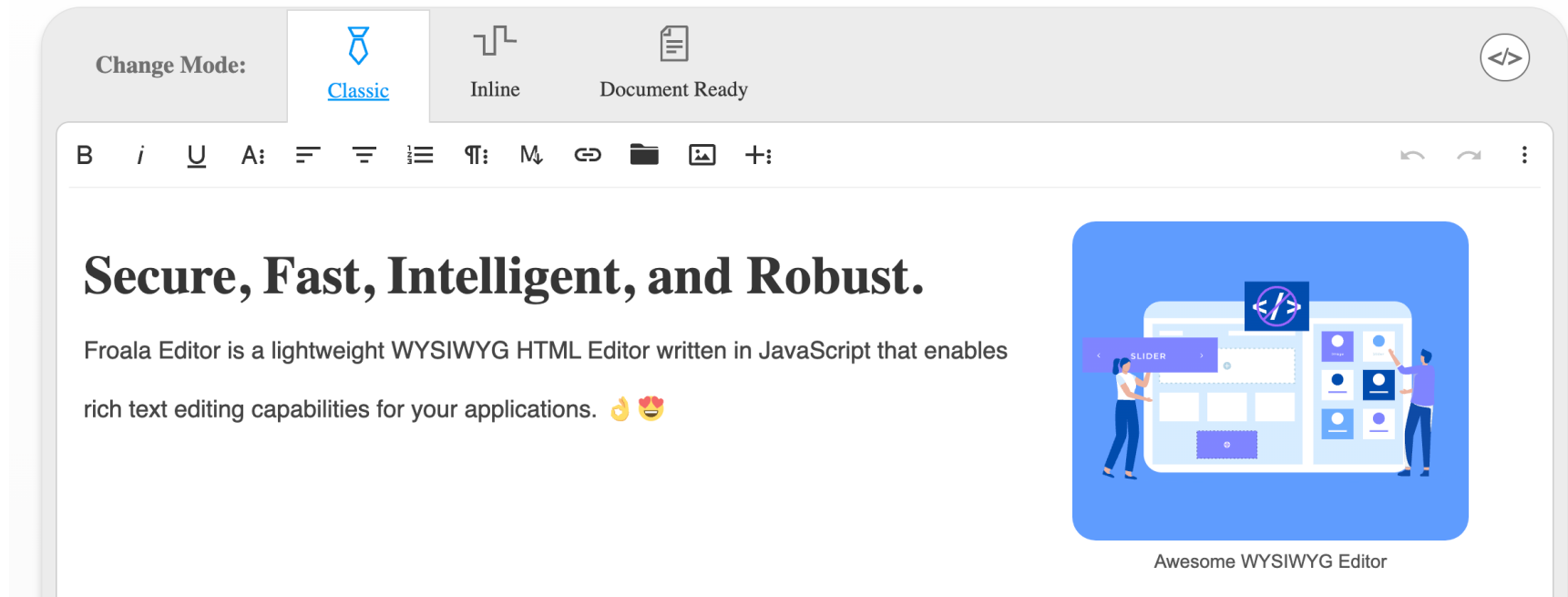
[View Documentation](#)

[View Sample App](#)

<https://froala.com> – A better HTML Editor

All-purpose, easy to use WYSIWYG editor with elegance

Froala editor makes web editing easier, more powerful, and more enjoyable with every single click.



RTE Editor Pro

More than just
1 plug-in!

Name	Date Modified	Size	Kind
apexplugin.json	21 Mar 2023 at 20:23	2 KB	JSON
> app	31 Jan 2023 at 15:00	--	Folder
> build	17 Mar 2023 at 09:55	--	Folder
> doc	10 Mar 2023 at 16:14	--	Folder
> docs	17 Mar 2023 at 09:55	--	Folder
> install_extras	17 Mar 2023 at 09:55	--	Folder
README.md	14 Mar 2023 at 19:46	4 KB	Document
src	17 Mar 2023 at 09:55	--	Folder
apps	13 Mar 2023 at 20:11	--	Folder
help_creator	13 Mar 2023 at 20:11	--	Folder
sample_app	17 Mar 2023 at 09:55	--	Folder
assets	31 Jan 2023 at 15:46	--	Folder
froala	13 Mar 2023 at 20:11	--	Folder
css	13 Mar 2023 at 20:11	--	Folder
js	13 Mar 2023 at 20:11	--	Folder
plsql_src	13 Mar 2023 at 20:11	--	Folder
tables	13 Mar 2023 at 20:11	--	Folder
plugin	17 Mar 2023 at 09:55	--	Folder
assets	13 Mar 2023 at 20:11	--	Folder
css	13 Mar 2023 at 20:11	--	Folder
dynamic_action_plugin_...s_froala_rte_da_conf.sql	17 Mar 2023 at 09:55	35 KB	Document
item_type_plugin_unitedcodes_froala_rte.sql	17 Mar 2023 at 09:55	6.6 MB	Document
js	13 Mar 2023 at 20:11	--	Folder
plsql	13 Mar 2023 at 20:11	--	Folder
process_type_plugin_u...s_froala_rte_process.sql	17 Mar 2023 at 09:55	14 KB	Document
README.md	31 Jan 2023 at 15:54	1 byte	Document
rest	13 Mar 2023 at 20:11	--	Folder
ORDS_REST.sql	13 Mar 2023 at 20:11	9 KB	Document
packages	13 Mar 2023 at 20:11	--	Folder
sequences	13 Mar 2023 at 20:11	--	Folder
tables	13 Mar 2023 at 20:11	--	Folder
scripts	17 Mar 2023 at 09:55	--	Folder
ddl_uc_rte_manual_deinstall.sql	17 Mar 2023 at 09:55	873 bytes	Document

3 plug-ins

- item
- dynamic action
- process

2 apps

REST API

Name	Date Modified	Size	Kind
apexplugin.json	21 Mar 2023 at 20:23	2 KB	JSON
> app	31 Jan 2023 at 15:00	--	Folder
> build	17 Mar 2023 at 09:55	--	Folder
> doc	10 Mar 2023 at 16:14	--	Folder
> docs	17 Mar 2023 at 09:55	--	Folder
> install_extras	17 Mar 2023 at 09:55	--	Folder
README.md	14 Mar 2023 at 19:46	4 KB	Document
▼ src	17 Mar 2023 at 09:55	--	Folder
▼ apps	13 Mar 2023 at 20:11	--	Folder
> help_creator	13 Mar 2023 at 20:11	--	Folder
> sample_app	17 Mar 2023 at 09:55	--	Folder
▼ assets	31 Jan 2023 at 15:46	--	Folder
> froala	13 Mar 2023 at 20:11	--	Folder
> css	13 Mar 2023 at 20:11	--	Folder
> js	13 Mar 2023 at 20:11	--	Folder
▼ plsql_src	13 Mar 2023 at 20:11	--	Folder
▼ tables	13 Mar 2023 at 20:11	--	Folder
▼ plugin	17 Mar 2023 at 09:55	--	Folder
> assets	13 Mar 2023 at 20:11	--	Folder
> css	13 Mar 2023 at 20:11	--	Folder
dynamic_action_plugin_...s_froala_rte_da_conf.sql	17 Mar 2023 at 09:55	35 KB	Document
item_type_plugin_unitedcodes_froala_rte.sql	17 Mar 2023 at 09:55	6.6 MB	Document
> js	13 Mar 2023 at 20:11	--	Folder
> plsql	13 Mar 2023 at 20:11	--	Folder
process_type_plugin_u...s_froala_rte_process.sql	17 Mar 2023 at 09:55	14 KB	Document
README.md	31 Jan 2023 at 15:54	1 byte	Document
▼ rest	13 Mar 2023 at 20:11	--	Folder
ORDS_REST.sql	13 Mar 2023 at 20:11	9 KB	Document
> packages	13 Mar 2023 at 20:11	--	Folder
> sequences	13 Mar 2023 at 20:11	--	Folder
> tables	13 Mar 2023 at 20:11	--	Folder
▼ scripts	17 Mar 2023 at 09:55	--	Folder
ddl_uc_rte_manual_deinstall.sql	17 Mar 2023 at 09:55	873 bytes	Document

Identification

Name

P304_CLOB_CONTENT

Type

UC - Rich Text Editor Pro [Plug-In]

Label

Label

Content

Settings

Settings

☒ Enable Browser Built-in Spell Check

☐ Enable Sticky Toolbar

☐ Override Application Attributes

☐ Validate CLOB Checksum On Page Submit

☒ Enable Plug-in: TUI Image Editor

☒ Enable Plug-in: Codox.io

☒ Enable Plug-in: Track Changes

☒ Enable Plug-in: Spell Check

☒ Enable Plug-in: Wiris

Toolbar

Full

Height

500

px

Upload Image(s)
on Request(s)

Initialization PL/SQL Code

Item Plug-in

(supports extra plug-ins)

Dynamic Action Plug-in

Identification

Action UC - Rich Text Editor Pro (Extend) [Plug-I ▼] ⋮

Settings

Action

Toolbar Customization

Group

Buttons Visible

Change Toolbar

Change Settings

Image Browser Parameters

Reset value

Update CLOB

Upload Parameters

Affected Elements

Identification

Action UC - Rich Text Editor Pro (Extend) [Plug-I ▼] ⋮

Settings

Action Change Toolbar ▼

Toolbar Customization Change Number of Visible Buttons ▼

Group Paragraph ▼

Buttons Visible 10

Affected Elements

Process Plug-in

Type	UC - Rich Text Editor Pro (Process) [Plug·
Settings	
Type	
Item	
Schema	
Table Name	UC_FROALA_SAMPLE_CLOBS
CLOB Column Name	clob_content
PK(s) Column(s) Name(s)	session_id,id

Clear CLOB

Load CLOB (SQL Query)

Load CLOB (Function Body returning CLOB)

✓ Load CLOB (Table)

Update CLOB (PL/SQL Code)

Update CLOB (Table)

Delete Removed Images

Name	Load CLOB
Type	UC - Rich Text Editor Pro (Process) [Plug·
Settings	
Type	Load CLOB (Table)
Item	P304_CLOB_CONTENT
Schema	#OWNER#
Table Name	UC_FROALA_SAMPLE_CLOBS
CLOB Column Name	clob_content
PK(s) Column(s)	

Item plug-in exposes dynamic actions

UC Froala Before Initialization [UC - Rich Text Editor Pro]

UC Froala CLOB Reset [UC - Rich Text Editor Pro]

UC Froala CLOB Updated [UC - Rich Text Editor Pro]

UC Froala Content Changed [UC - Rich Text Editor Pro]

UC Froala Image Browser Error [UC - Rich Text Editor Pro]

UC Froala Image Upload Error [UC - Rich Text Editor Pro]

UC Froala Images In Collection [UC - Rich Text Editor Pro]

UC Froala Initialized [UC - Rich Text Editor Pro]

UC Froala Option Changed [UC - Rich Text Editor Pro]



RICH TEXT EDITOR PRO

Froala WYSIWYG

Installation

Database objects

Error handling

Dynamic Action

PL/SQL

Changelog

Next »



united codes
Plug-ins Pro

United Codes Rich Text Editor Pro integrates the popular **Froala Editor** into an awesome plug-in for **Oracle APEX**. So, what is the Froala Editor? Well, it's a lightweight WYSIWYG HTML Editor written in Javascript that enables rich text editing capabilities for your applications. Its beautiful, easy to integrate for developers, and your users will simply fall in love with its clean design. We think Froala is the perfect addition to Oracle APEX making HTML editing easy and aesthetically pleasing. Visit [Froala's website](#) to find out more.

The plug-in implements the Froala editor using the Froala API options, events, and methods.



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Built with [MkDocs](#) using a [theme](#) provided by [Read the Docs](#).

> 1500 hours of work



Demo

PDF Region Pro
Rich Text Editor Pro

References

- Plug-ins Pro
<https://www.plugin-pro.com>

Q&A



**Integration of External Libraries Froala
and PDF Editor**

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