IBM i Development with PHP: Configuring Your Environment for Success

Bridging RPG and PHP for Modern IBM i Applications

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Setting Up a PUB400 Account

- Go to: https://pub400.com/cgi/signup.nd/start
- Complete the Registration Form
- Submit the Form
- Confirm Your Registration
- Access Your Account

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Downloading and Installing Access Client Solutions (ACS)

- Go to: https://www.ibm.com/support/pages/ibm-i-access-client-solutions
- Log in using your IBM ID if not Logged In or Sign Up
- Download ACS
- Extract and Install

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Access Client Solutions Configuration

- Configuration
  - Launch ACS and configure it for your IBM i system by adding a new connection.
  - Enter your PUB400 or company system details as needed.
- Verify Installation
  - Open **5250 Emulator** to ensure a successful setup.
  - Test connectivity by logging in with your IBM i credentials

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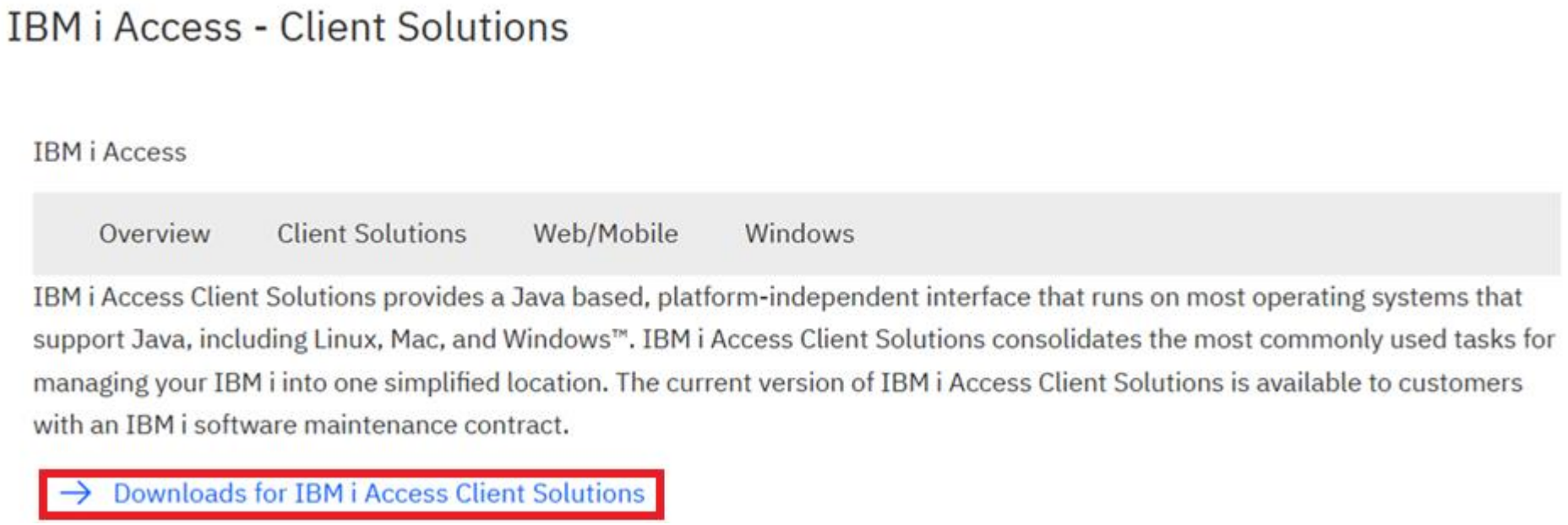
Installing the ODBC Driver

- Go to: https://www.ibm.com/support/pages/ibm-i-access-client-solutions



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Installing the ODBC Driver

- Log in using your IBM ID
- Read and agree to the terms of service
- Select the application package for your operating system

ACS EHLLAPI - Version 9.24.318	acshllapi.exe	1254688 B	Download
ACS Windows App Pkg English (64bit)	IBMiAccess_v1r1_WindowsAP_English.zip	93603051 B	Download
ACS Linux App Pkg	IBMiAccess_v1r1_LinuxAP.zip	15406418 B	Download
ACS PASE App Pkg	IBMiAccess_v1r1_PASE_AP.zip	3103678 B	Download
ACS Mac App Pkg	IBMiAccess_v1r1_macOS_AP.zip	3850099 B	Download

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Installing the ODBC Driver

- Open the ACS PASE application package
- Select your language and choose ‘Typical Install’ and Click Install
- Open run dialog (for Windows press the Windows Key + R)
- Type ODBCAD32.exe and hit Enter to open the ODBC Data Source Administrator.
- Click Add to add a new ODBC connection.

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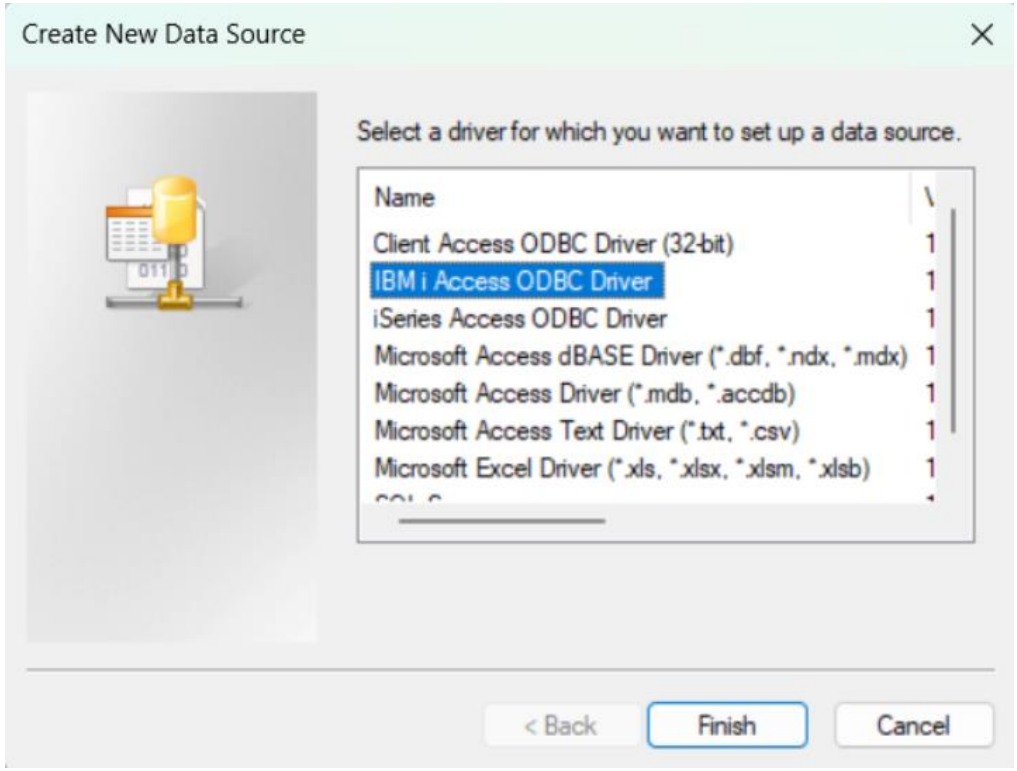
Installing the ODBC Driver

- Select the IBM i Access ODBC Driver and click Finish.



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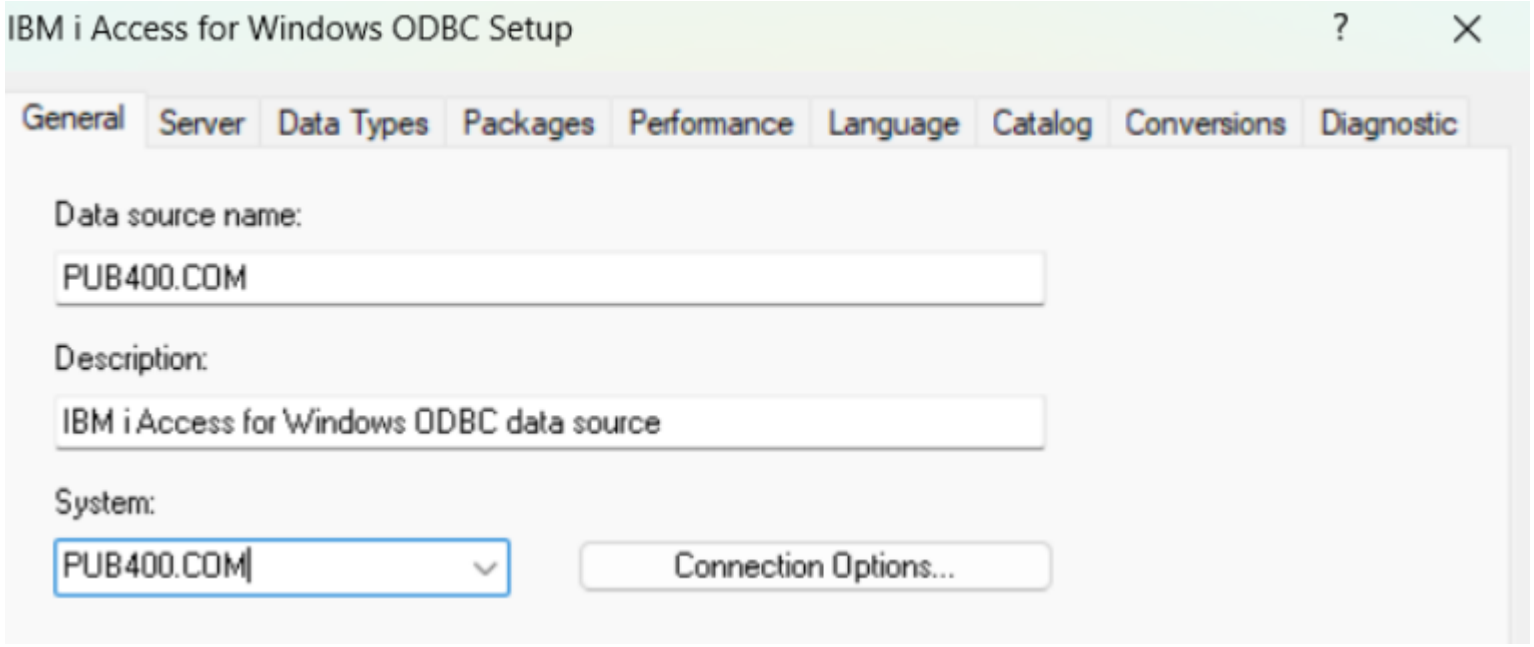
Configuring ODBC Connection

- In the new window, type the name of your DSN for the Data Source Name and click OK.
- In the System field, type a descriptive name for your system.



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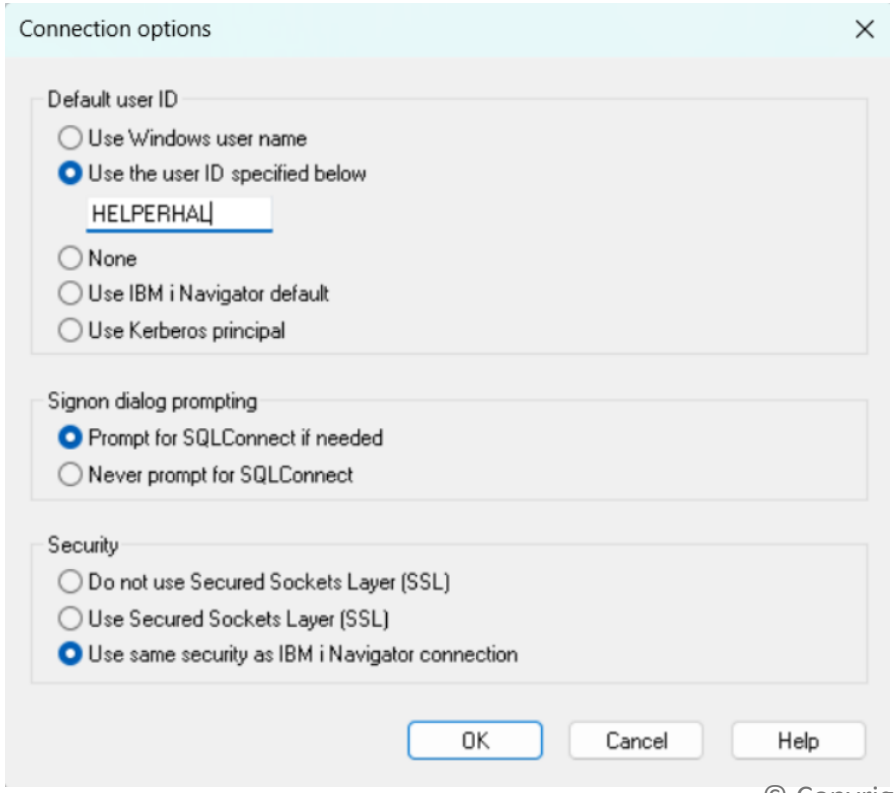
Configuring ODBC Connection

- Click Connection Options, enter your Username to default to your User ID, and then click OK.



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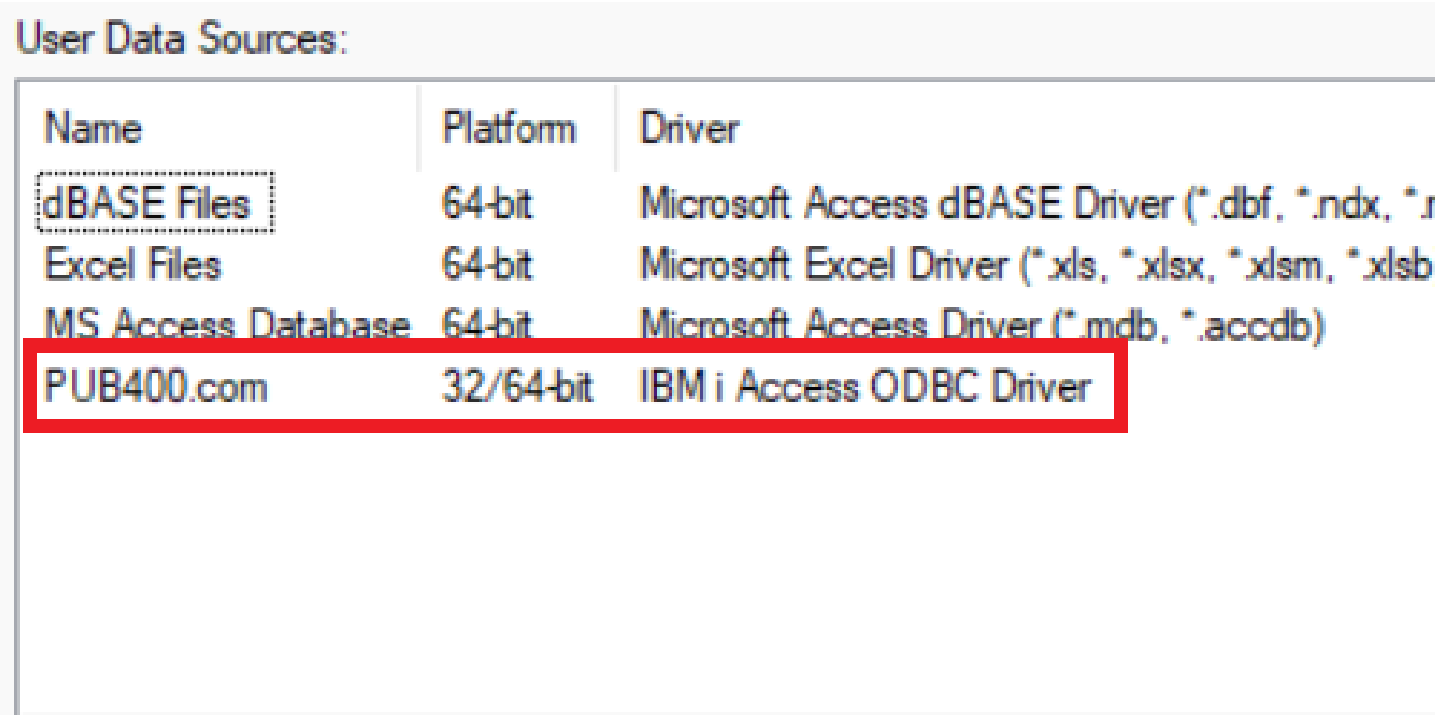
Verify DSN

- You should now see your DSN in the User Data Sources List.



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Install PHP

- Head to this link: https://www.php.net/downloads.php
- Download the version of PHP for your Operating System.
- Extract all from the zipped file.
- Move the unzipped folder into your C:/ Drive.
- Double Click on the folder you moved into your C:/ Drive and copy the file path. We will be using this to set up our environment variables.

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Install PHP (Edit Environment Variables)

- In your search bar type “Edit Environment Variables” and click on the Edit Environment Variables option.
- If you would like to add for just one user, you will be editing the user variables path.
- If you would like to add for the whole PC, you will be editing the System Variables path.
- Click on the path variable relating to your preferred configuration type and click Edit.
- On a new line, paste the previously copied file path and hit OK.

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Install PHP(Verify Installation)

- Open command prompt and type “php --version” hit Enter
- If you get some text similar to the following, you have successfully installed php:

```
C:\php-8.3.11>php --version
PHP 8.3.11 (cli) (built: Aug 27 2024 21:28:59) (ZTS Visual C++ 2019 x64)
Copyright (c) The PHP Group
Zend Engine v4.3.11, Copyright (c) Zend Technologies
```

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Getting info about PHP install

- You will need to create a file named phpinfo.php. You can do this with a code editor, or notepad if you do not have one.
- Create a new file and save it as phpinfo.php.
- Inside the file include the following code: **<?php phpinfo(); ?>**
- Save the file in your PHP root folder (Example: C:\php-8.3.11)

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Start a LocalHost

- Open Command Prompt
- Type cd and a space then the root directory of your php folder. Example: cd C:\php-8.4.1
- Type the following: php -S localhost:8000
- In your web browser, type in the following: http://localhost:8000/phpinfo.php

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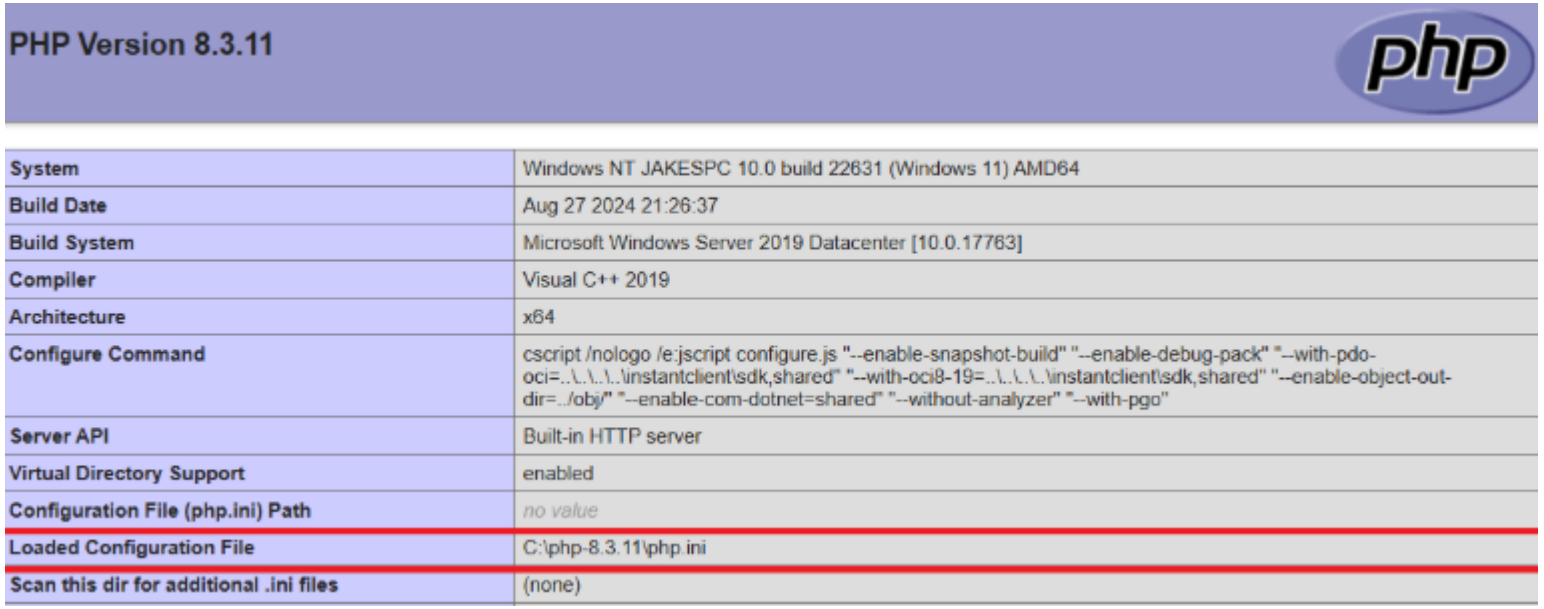
Verifying PHP Info



PHP Version 8.3.11

System	Windows NT JAKESPC 10.0 build 22631 (Windows 11) AMD64
Build Date	Aug 27 2024 21:26:37
Build System	Microsoft Windows Server 2019 Datacenter [10.0.17763]
Compiler	Visual C++ 2019
Architecture	x64
Configure Command	cscript /nologo /e:jscript configure.js "--enable-snapshot-build" "--enable-debug-pack" "--with-pdo-oci=..\..\..\..\instantclient\sdk,shared" "--with-oci8-19=..\..\..\..\instantclient\sdk,shared" "--enable-object-out-dir=../obj/" "--enable-com-dotnet=shared" "--without-analyzer" "--with-pgo"
Server API	Built-in HTTP server
Virtual Directory Support	enabled
Configuration File (php.ini) Path	*no value*
Loaded Configuration File	C:\php-8.3.11\php.ini
Scan this dir for additional .ini files	(none)

- If you are met with a screen like the one above, you have successfully installed PHP and started a localhost!
- Take note of the name and location of your php.ini file.

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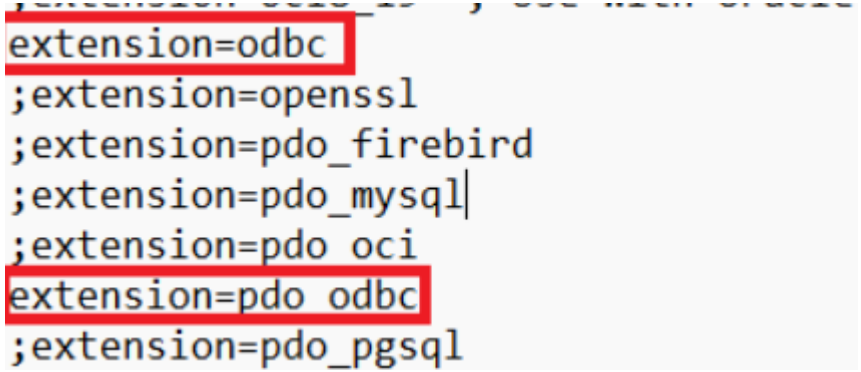
Configuring your php.ini file

- Locate the php.ini-development file and open it in notepad or a code editor.
- Do a CTL+F to find ODBC in the document.
- Uncomment the two lines displayed below. This will enable the use of your ODBC and PDO.



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Configuring your php.ini file (Continued)

- Save the changed file to your project root as php.ini.
- The php.ini file will serve as the main configuration file for PHP, allowing you to customize settings for your PHP environment.
- Restart the localhost so the changes will be active. You can accomplish this by closing the command prompt with the running localhost.
- Type cd and a space then the root directory of your php folder. Example: cd C:\php-8.4.1
- Type the following: php -S localhost:8000

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Verify ODBC Connectivity

- Open your code editor or notepad and open a new file.
- Save it as PDOTest.php
- Paste the following code into the PDOTest.php file and update with your credentials. (Code on next page).

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Code for PDOTest.php

```
<?php
$dsn = ‘YourDSNName’;           // Replace 'YourDSNName' with the your DSN
$user = 'YourUserName';         // Replace with your IBM i username
$password = 'YourPassword';     // Replace with your IBM i password

try {
    $pdo = new PDO($dsn, $user, $password);
    $pdo->setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION);
    echo "Connected successfully!";
} catch (PDOException $e) {
    echo "Connection failed: " . $e->getMessage();
}
?>
```

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Run PDOTest.php

- Ensure your localhost is running and enter the following into your browsers address bar:
- http://localhost:8000/pdotest.php
- If you have done everything right, you should be met with text that says “Connected successfully!“.
- If the connection was successful, congratulations, you are now ready to start working with PHP on power servers!

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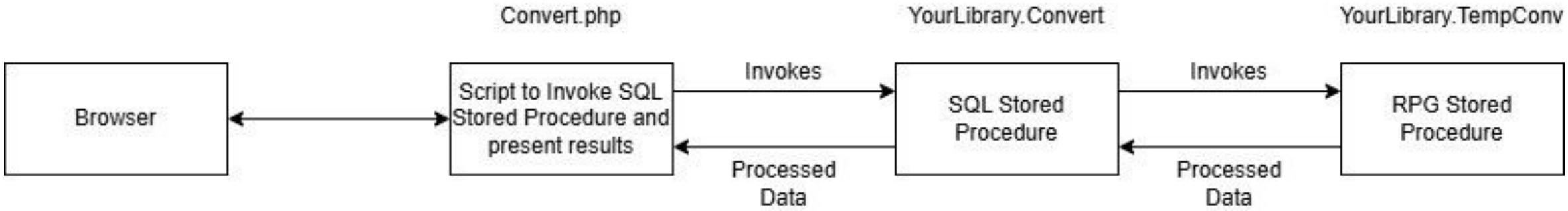
DFD for Temperature Conversion App



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Calling an RPG Stored Procedure from PHP

- Create a folder to hold your project
- Create PHP script to call Stored Procedure and present results
- Create SQL Stored Procedure to invoke RPG Stored Procedure
- Create RPG Program
- Run the application

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Create PHP File For Your App

- Create a folder named TempConvert in your root php folder
- Create a file using VS Code or notepad
- Save it as convert.php
- Add the code on the next slide and adapt the dsn, username, password, and stored procedure library values to those matching your IBM i credentials.

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The PHP Script

```
<!DOCTYPE html>
<html>
<head>
    <title>Temperature Converter</title>
</head>
<body>
    <h1>Temperature Converter</h1>
    <form method="post" action="">
        <label for="celsius">Enter temperature in Celsius:</label>
        <input type="text" id="celsius" name="celsius" placeholder="Enter temperature in Celsius" required>
        <button type="submit">Convert</button>
    </form>
</body>
</html>

    <?php

    if ($_SERVER["REQUEST_METHOD"] == "POST") {

        // Get the Celsius temperature from the form
        $celsius = floatval($_POST["celsius"]);

        // Call the stored procedure to convert Celsius to Fahrenheit
        try {
            $dsn = 'odbc:PUB400.com';        // Replace 'YourDSNName' with the name of your DSN
            $user = 'YourUserName';          // Replace with your IBM i username
            $password = 'YourPassword';      // Replace with your IBM i password
```

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The PHP Script (Continued)

```
            $pdo = new PDO($dsn, $user, $password);

            $sql = "CALL YourLibrary.Convert(?, ?)";  //Change to your library

            $stmt = $pdo->prepare($sql) or die("Error in Prepare: ");

            $fahrenheit ='';

            $stmt->bindParam(1, $celsius, PDO::PARAM_STR);
            $stmt->bindParam(2, $fahrenheit, PDO::PARAM_STR|PDO::PARAM_INPUT_OUTPUT);

               try {
                $stmt->execute();
            }
            catch (PDOException $e) {
                echo 'Error: '.$e->getMessage();
            }
               echo "<p>Temperature in Fahrenheit: " . $fahrenheit . "</p>";
        } catch (PDOException $e) {
            echo "Error: " . $e->getMessage();
        }
    }
    ?>
</body>
</html>
```

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Creating the Stored Procedure

- Open Access Client Solutions
- Open SQL Scripts
- Copy the code on the next slide to create your SQL Stored Procedure and change the library to your library value
- Run the SQL Script to create the Stored Procedure

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The SQL Stored Procedure

```
Create Or Replace Procedure YourLibrary.Convert ( //Change to your lib
IN Celsius Char(15),
OUT Fahrenheit Char(15)
)
LANGUAGE RPGLE
EXTERNAL NAME 'YourLibrary/TEMPCONV' //Change to your lib
PARAMETER STYLE GENERAL;
```

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Add Physical File Member and RPG Program

- Open the 5250 Emulator
- Type ADDPFM on the command line
  - Hit F4 to prompt
  - Name it TEMPCONV
- Copy and paste the RPG Code on the next page
- Take option 14 on the member and hit F4 to prompt

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RPGLE Source for TEMPCONV

```
**Free

DCL-PI *n;
  celsius char(15);
  fahrenheit char(15);
END-PI;

fahrenheit = %EditC(%Dec(celsius:15:5) * 9/5 + 32:'3');

*inlr = *on;
return;
```

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Run the Application

- Start your localhost if not already started
  - Type cd and a space then the root directory of your php folder.
    Example: cd C:\php-8.4.1
  - Type the following: php -S localhost:8000
- Type http://localhost:8000/TempConvert/convert.php into your browser
- You should see a form like the one below:

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Run the Application (Continued)

- Enter a numeric value into the text box to be converted to Fahrenheit
- If you see a value returned, congratulations, you have now exposed an RPG Stored Procedure to the web!
- Feel free to change and adapt this application and build your own creation!

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Queries?

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Thank You!

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