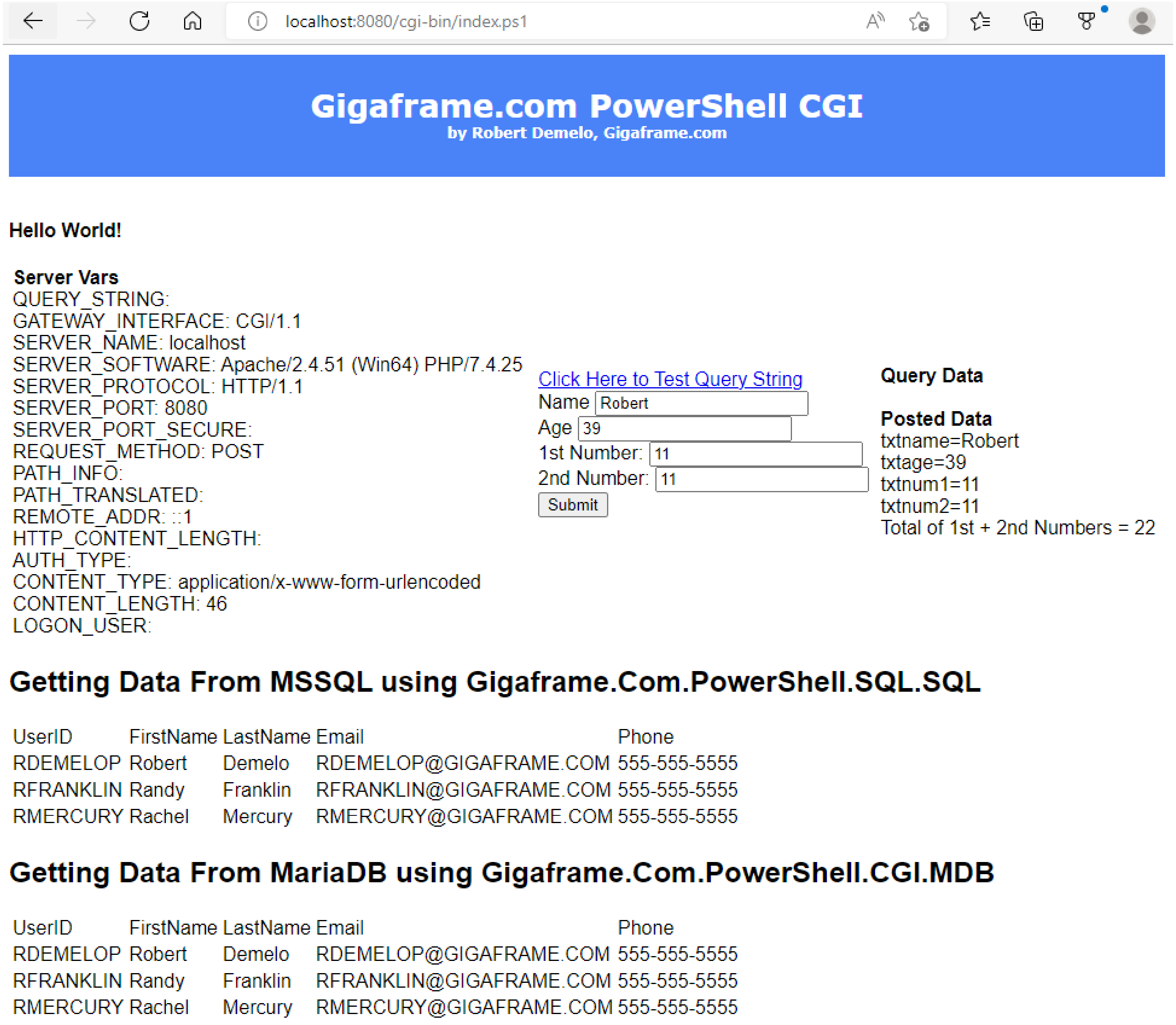
Gigaframe.Com.PowerShell.CGI Web App Handler & Library

Download Here



Gigaframe.com PowerShell CGI
by Robert Demelo, Gigaframe.com

Hello World!

Server Vars
QUERY_STRING:
GATEWAY_INTERFACE: CGI/1.1
SERVER_NAME: localhost
SERVER_SOFTWARE: Apache/2.4.51 (Win64) PHP/7.4.25
SERVER_PROTOCOL: HTTP/1.1
SERVER_PORT: 8080
SERVER_PORT_SECURE:
REQUEST_METHOD: POST
PATH_INFO:
PATH_TRANSLATED:
REMOTE_ADDR: ::1
HTTP_CONTENT_LENGTH:
AUTH_TYPE:
CONTENT_TYPE: application/x-www-form-urlencoded
CONTENT_LENGTH: 46
LOGON_USER:

Click Here to Test Query String
Name: Robert
Age: 39
1st Number: 11
2nd Number: 11
Submit

Query Data

Posted Data
txtname=Robert
txtage=39
txtnum1=11
txtnum2=11
Total of 1st + 2nd Numbers = 22

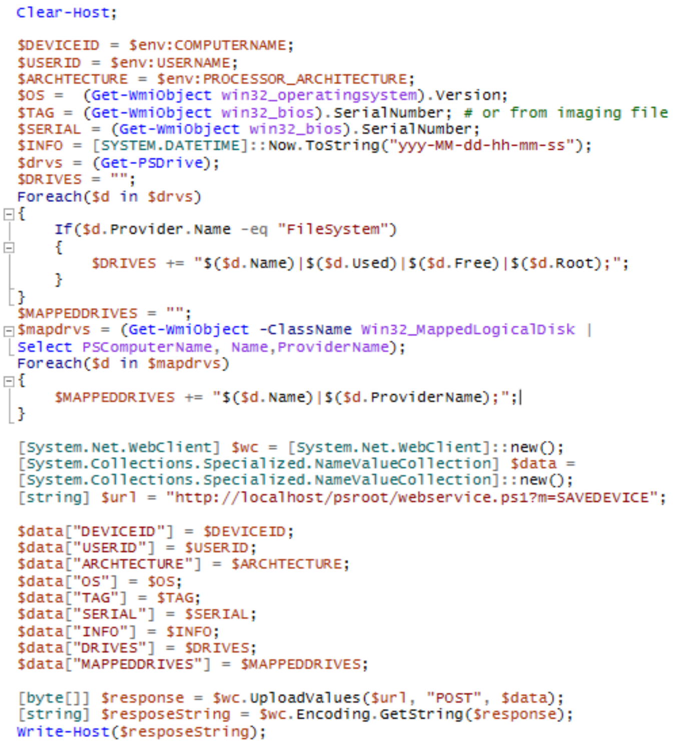
Getting Data From MSSQL using Gigaframe.Com.PowerShell.SQL.SQL

UserID	FirstName	LastName	Email	Phone
RDEMELOP	Robert	Demelo	RDEMELOP@GIGAFRAME.COM	555-555-5555
RFRANKLIN	Randy	Franklin	RFRANKLIN@GIGAFRAME.COM	555-555-5555
RMERCURY	Rachel	Mercury	RMERCURY@GIGAFRAME.COM	555-555-5555

Getting Data From MariaDB using Gigaframe.Com.PowerShell.CGI.MDB

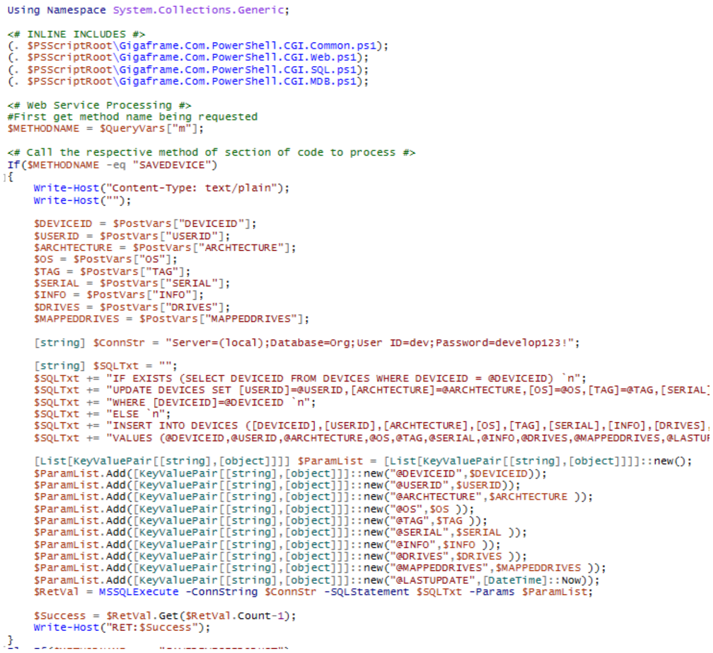
UserID	FirstName	LastName	Email	Phone
RDEMELOP	Robert	Demelo	RDEMELOP@GIGAFRAME.COM	555-555-5555
RFRANKLIN	Randy	Franklin	RFRANKLIN@GIGAFRAME.COM	555-555-5555
RMERCURY	Rachel	Mercury	RMERCURY@GIGAFRAME.COM	555-555-5555

DeviceClient.ps1 - PowerShell Script on Client
Send device information



```
Clear-Host;

$DEVICEID = $env:COMPUTERNAME;
$USERID = $env:USERNAME;
$ARCHTECTURE = $env:PROCESSOR_ARCHITECTURE;
$OS =  (Get-WmiObject win32_operatingsystem).Version;
$TAG = (Get-WmiObject win32_bios).SerialNumber; # or from imaging file
$SERIAL = (Get-WmiObject win32_bios).SerialNumber;
$INFO = [SYSTEM.DATETIME]::Now.ToString("yyy-MM-dd-hh-mm-ss");
$drvs = (Get-PSDrive);
$DRIVES = "";
Foreach($d in $drvs)
{
    If($d.Provider.Name -eq "FileSystem")
    {
        $DRIVES += "$($d.Name)|$($d.Used)|$($d.Free)|$($d.Root);";
    }
}
$MAPPEDDRIVES = "";
$mapdrvs = (Get-WmiObject -ClassName Win32_MappedLogicalDisk |
Select PSComputerName, Name,ProviderName);
Foreach($d in $mapdrvs)
{
    $MAPPEDDRIVES += "$($d.Name)|$($d.ProviderName);";
}

[System.Net.WebClient] $wc = [System.Net.WebClient]::new();
[System.Collections.Specialized.NameValueCollection] $data =
[System.Collections.Specialized.NameValueCollection]::new();
[string] $url = "http://localhost/psroot/webservice.ps1?m=SAVEDEVICE";

$data["DEVICEID"] = $DEVICEID;
$data["USERID"] = $USERID;
$data["ARCHTECTURE"] = $ARCHTECTURE;
$data["OS"] = $OS;
$data["TAG"] = $TAG;
$data["SERIAL"] = $SERIAL;
$data["INFO"] = $INFO;
$data["DRIVES"] = $DRIVES;
$data["MAPPEDDRIVES"] = $MAPPEDDRIVES;

[byte[]] $response = $wc.UploadValues($url, "POST", $data);
[string] $resposeString = $wc.Encoding.GetString($response);
Write-Host($resposeString);
```

WebService.ps1 - PowerShell Script on Server
Receives device information and save to SQL



```
Using Namespace System.Collections.Generic;

<# INLINE INCLUDES #>
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.Common.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.Web.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.SQL.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.MDB.ps1);

<# Web Service Processing #>
#First get method name being requested
$METHODNAME = $QueryVars["m"];

<# Call the respective method of section of code to process #>
If($METHODNAME -eq "SAVEDEVICE")
{
    Write-Host("Content-Type: text/plain");
    Write-Host("");

    $DEVICEID = $PostVars["DEVICEID"];
    $USERID = $PostVars["USERID"];
    $ARCHTECTURE = $PostVars["ARCHTECTURE"];
    $OS = $PostVars["OS"];
    $TAG = $PostVars["TAG"];
    $SERIAL = $PostVars["SERIAL"];
    $INFO = $PostVars["INFO"];
    $DRIVES = $PostVars["DRIVES"];
    $MAPPEDDRIVES = $PostVars["MAPPEDDRIVES"];

    [string] $ConnStr = "Server=(local);Database=Org;User ID=dev;Password=develop123!";

    [string] $SQLTxt = "";
    $SQLTxt += "IF EXISTS (SELECT DEVICEID FROM DEVICES WHERE DEVICEID = @DEVICEID) `n";
    $SQLTxt += "UPDATE DEVICES SET [USERID]=@USERID,[ARCHTECTURE]=@ARCHTECTURE,[OS]=@OS,[TAG]=@TAG,[SERIAL]
    $SQLTxt += "WHERE [DEVICEID]=@DEVICEID `n";
    $SQLTxt += "ELSE `n";
    $SQLTxt += "INSERT INTO DEVICES ([DEVICEID],[USERID],[ARCHTECTURE],[OS],[TAG],[SERIAL],[INFO],[DRIVES],
    $SQLTxt += "VALUES (@DEVICEID,@USERID,@ARCHTECTURE,@OS,@TAG,@SERIAL,@INFO,@DRIVES,@MAPPEDDRIVES,@LASTU

    [List[KeyValuePair[[string],[object]]]] $ParamList = [List[KeyValuePair[[string],[object]]]]::new();
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@DEVICEID",$DEVICEID));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@USERID",$USERID));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@ARCHTECTURE",$ARCHTECTURE ));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@OS",$OS ));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@TAG",$TAG ));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@SERIAL",$SERIAL ));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@INFO",$INFO ));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@DRIVES",$DRIVES ));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@MAPPEDDRIVES",$MAPPEDDRIVES ));
    $ParamList.Add([KeyValuePair[[string],[object]]]::new("@LASTUPDATE",[DateTime]::Now));
    $RetVal = MSSQLExecute -ConnString $ConnStr -SQLStatement $SQLTxt -Params $ParamList;

    $Success = $RetVal.Get($RetVal.Count-1);
    Write-Host("RET:$Success");
}
```

Table of Contents

Introduction

In today's fast paced ecosystem of numerous technology frameworks, and if you've resided in the technology industry long enough gradually moving from either one area to another, one project to another, or role to another, you come to realize there is an ever increasing and exuberant need for simplicity and building an efficient and effective workforce to combat the ever more demanding, complex and challenging times. For developers who move into systems management and/or systems administrative roles and/or Cybersecurity roles who need to achieve more, you quickly find that your programming, analytical and solutioning skills along with deep low-level understanding of all things technology are invaluable and highly transferable into numerous other areas by employing the many patterns known or using sheer ingenuity to develop novel solutions. For any technology person, the need for programming skills is a requirement in a variety of industries as it provides a means to deliver efficiencies and exponentially handle workloads and deliver outcomes. Programming, and its inherently associated skills, in today's world can make one man an army.

For most in this modern ecosystem of technology, architectures, systems, their management and solution design to support necessary or evolutionary changes, PowerShell has become an indispensable highly flexible tool for many reasons, but primarily for its broad powers combined with its simplicity. Microsoft has done a great job with PowerShell. Many developers will know that PowerShell is an extension to an underlining .NET framework as a scripted run on demand language, but it offers much more, especially on Windows systems. Recently with .NET Core/5+, PowerShell has become cross-platform bringing its power to Linux and other platforms.

Even though PowerShell can do many things, such as making web requests to web services on your network or on the Internet, one thing that has been missing was the ability to develop web applications using PowerShell scripting. We hope to change that with this CGI script handler and a set of supporting web application scripted libraries and demo apps.

With a common Client and Server scripting language and framework, you don't have employ the complexities that are inherent when incorporating a different server-side web app framework, and you don't have to compile, and that is a throw back to other scripted server-side frameworks like ASP. Having a common client-server scripting environment helps with sustainability, such as continuity of services in life-cycle and change management and training of new staff, as PowerShell is widely used and appears will continue to be used deep into the future, especially now that it recently shifted to cross-platform, especially moving into the Linux word.

With this CGI handler and supporting scripts, you can develop your desktop management scripts as you do now and develop simple server-side web services that can accept those web calls using the same scripting language and framework, harnessing the power of PowerShell. You can also develop web apps that encompass the whole spectrum of modern-day web app functionality (using HTML5 and modern JavaScript libraries of course) and also generate reports from the server or any other output using PowerShell as a web app framework, expanding on the definition of “full-stack”.

What is Old and New Again!

Potential Uses

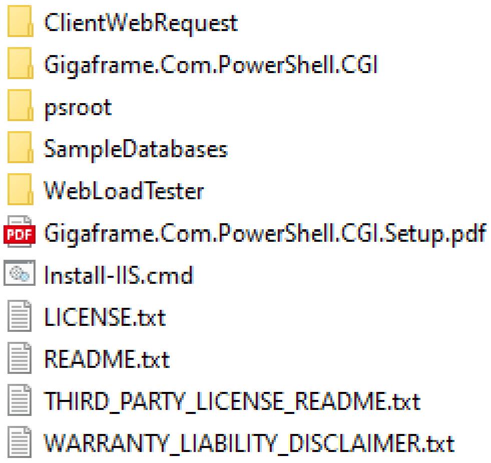
Given this was a fun little project with limited testing, the handler and supporting scripts are intended for learning on small scale solutions on private networks. Further testing is required for it to be Internet ready, but multi-threaded load testing has been positive. Also further development can done to employ caching approaches.

In this scope:

- Learning web programming
- Building a custom web UI for IT administrative processes
- Building simple web services to receive computer communications
- Building online reports
- Building web apps

What’s Included

In the package the following is included upon unzipping:



ClientWebRequest
Gigaframe.Com.PowerShell.CGI
psroot
SampleDatabases
WebLoadTester
Gigaframe.Com.PowerShell.CGI.Setup.pdf
Install-IIS.cmd
LICENSE.txt
README.txt
THIRD_PARTY_LICENSE_README.txt
WARRANTY_LIABILITY_DISCLAIMER.txt

- Gigaframe.Com PowerShell CGI Script Handler Executable
- psroot
    - Script libraries:
        - Gigaframe.Com.PowerShell.CGI.Common.ps1
        - Gigaframe.Com.PowerShell.CGI.Web.ps1
        - Gigaframe.Com.PowerShell.CGI.SQL.ps1
        - Gigaframe.Com.PowerShell.CGI.MDB.ps1
    - Web Apps
        - test.ps1
        - index.ps1

  - Web Service
    - webservice.ps1
  - ClientWebRequest with DeviceClient scripts to connect to WebService.ps1 and send data
  - WebLoadTester is a VS C# multi-threaded console project that can be updated to load test CGI web apps

Install PowerShell

Install Powershell by selecting “Turn Windows Features On” under “Control Panel” and “Programs and Features” and selecting Powershell option.

Installing cross-platform PowerShell 7.0+ based on .NET Core:
Installing PowerShell on Windows - PowerShell | Microsoft Learn
To install PowerShell on Windows, use the following links to download the install package from GitHub.

- PowerShell-7.2.6-win-x64.msi
- PowerShell-7.2.6-win-x86.msi

How to install on Linux:
Install PowerShell on Linux - PowerShell | Microsoft Learn

Install Editor (Visual Code)

Perhaps the best code editor on the market today, at least best free editor, is Microsoft’s Visual Code. It is also cross platform and offers many powerful features.
Download Visual Studio Code - Mac, Linux, Windows

Install Database Server

For the demos to work fully, install MS SQL and MariaDB.

There are minimally no limits to which databases you can use with Gigaframe.Com.PowerShell.CGI as that limit is restricted by PowerShell and underlining .NET framework itself, but there are 2 script libraries that come with the software you can use to connect to MSSQL and MariaDB (MariaDB is a free variant of MySQL).

Install Microsoft SQL Server

To Install MS SQL Server (Full, Express, or Developer), go this page, download and install the engine and SQL Management Tools
SQL Server Downloads | Microsoft

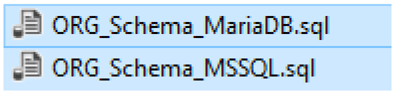
Install MariaDB

Recommend version 10, minimally version 10.5 version, and can be found here:
MariaDB Products & Tools Downloads | MariaDB
Install the version of your choice, but Community is a free option that works.
Also download needed connector for PowerShell and .NET based applications to use:

[Download MariaDB Connectors for data access & analysis | MariaDB]()
[All Files - C connector (mariadb.com)]()
[All Files - ODBC connector (mariadb.com)]()
[MySQL :: Download Connector/NET]()
Must install "mysql-connector-net-8.0.30.msi" minimally
Ensure to install HeidiSQL management tool.

Install Sample Database in MSSQL and MariaDB

Under the "SampesDatabase" folder you'll find two SQL files for MSSQL and MariaDB respectively to produce the same database.
Use each in each respective database server.



ORG_Schema_MariaDB.sql
ORG_Schema_MSSQL.sql

Install Web App Server

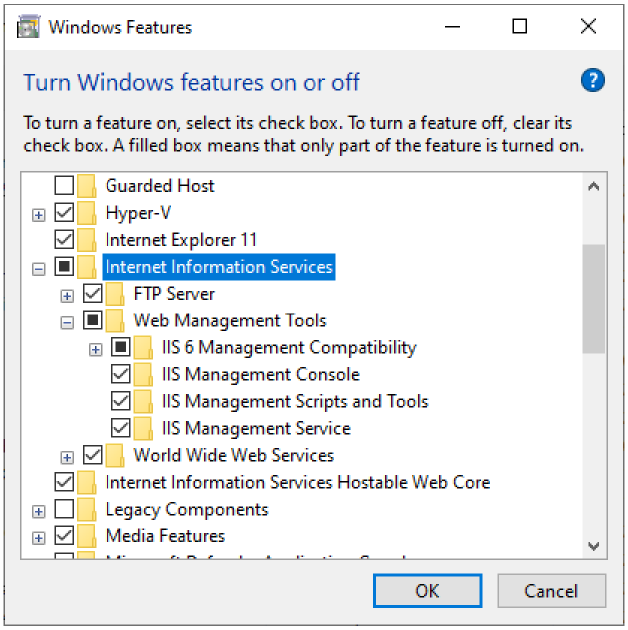
There are two options for web application servers Gigaframe.Com.powerShell.CGI can be use with:

- Microsoft IIS Server
- Apache HTTP Server

Install Internet Information Services

On Windows you can install IIS which is built for Windows by Microsoft and is free with virtually all Windows versions. You need Windows Server to process web requests for unlimited users. Other versions have limits client-server connections but are good for development.

Install Internet Information Services (Web App Server on Windows) on Windows:
Control panel-> Select Program-> Turn Windows features on and off
And Select "Internet Information Services" and install



Turn Windows features on or off

To turn a feature on, select its check box. To turn a feature off, clear its check box. A filled box means that only part of the feature is turned on.

☐ Guarded Host
☑ Hyper-V
☑ Internet Explorer 11
■ Internet Information Services
  ☑ FTP Server
  ■ Web Management Tools
    ■ IIS 6 Management Compatibility
    ☑ IIS Management Console
    ☑ IIS Management Scripts and Tools
    ☑ IIS Management Service
  ☑ World Wide Web Services
☑ Internet Information Services Hostable Web Core
☐ Legacy Components
☑ Media Features

Or install IIS Express:
Download Internet Information Services (IIS) 10.0 Express from Official Microsoft Download Center

Install Apache Web Server

On Windows:
Using Apache HTTP Server on Microsoft Windows - Apache HTTP Server Version 2.4
On Linux:
Download - The Apache HTTP Server Project

Setup IIS

On IIS on Windows, add CGI and handler for “*.ps1” files to process PowerShell scripts and render web output. Set Handler Script Mapped to:
C:\gigaframecom\Gigaframe.Com.Powershell.CGI\Gigaframe.Com.PowerShell.CGI.exe %s

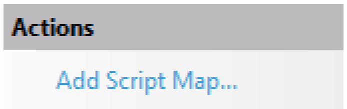
The CGI script handler is explained further below but same script handler can be used on Apache HTTP Server.

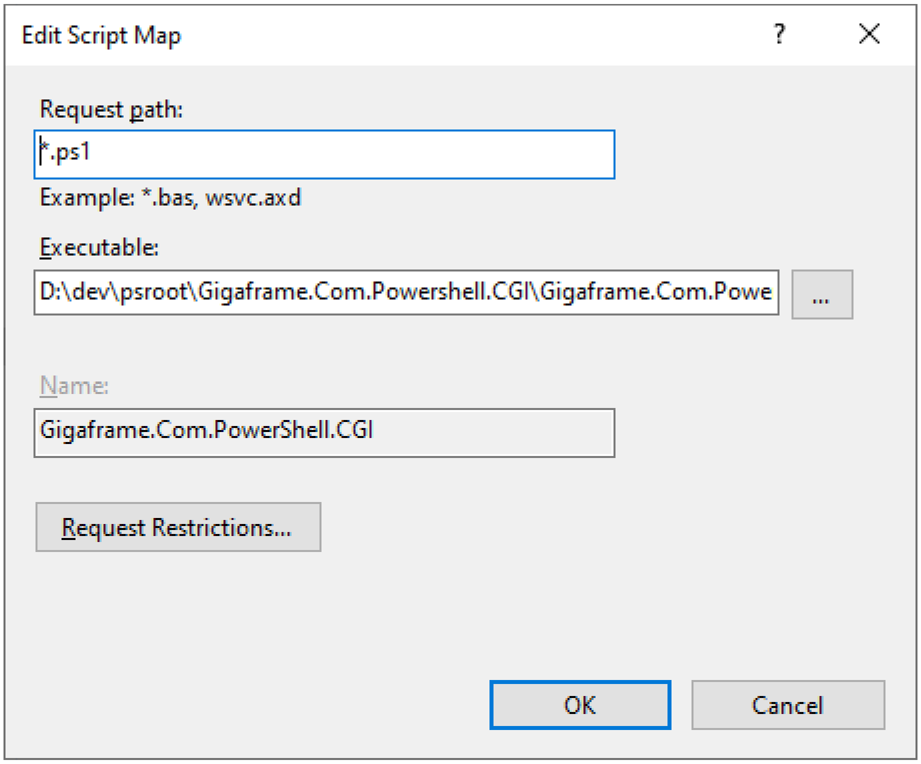
The PowerShell CGI Handler

The basis for this is a mapping is to run the PowerShell comment line as script handler:
c:\windows\system32\WindowsPowerShell\v1.0\powershell.exe -NoLogo -NoProfile -ExecutionPolicy Unrestricted -File %s

But it became quickly obvious this required something additional process CGI requests for PowerShell to handle. The CGI script handler address this gap.

The IIS script hander for “*.ps1” files mapped must be assigned to this executable:
C:\gigaframecom\Gigaframe.Com.PowerShell.CGI\Gigaframe.Com.PowerShell.CGI.exe %s





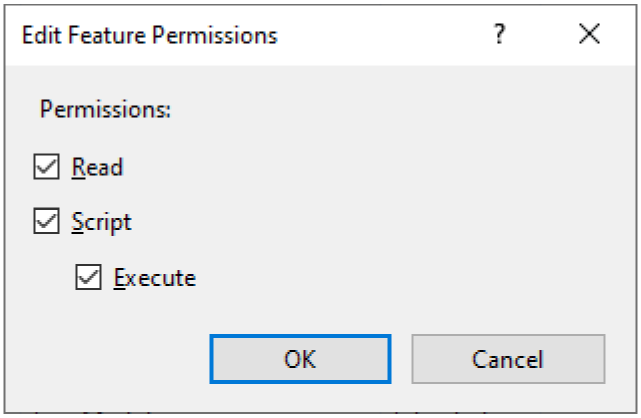
Request path: *.ps1

Example: *.bas, wsvc.axd

Executable: D:\dev\psroot\Gigaframe.Com.Powershell.CGI\Gigaframe.Com.Powe

Name: Gigaframe.Com.PowerShell.CGI

You may have to set the Feature Permission to allow Execute
This right-click the entry and select “Edit Feature Permission”, and check “Execute” and click OK.



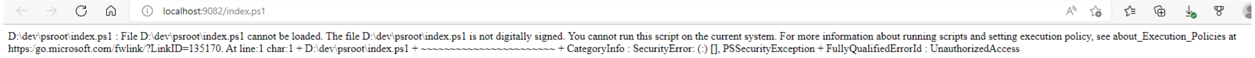
Permissions:

☑ Read

☑ Script

☑ Execute

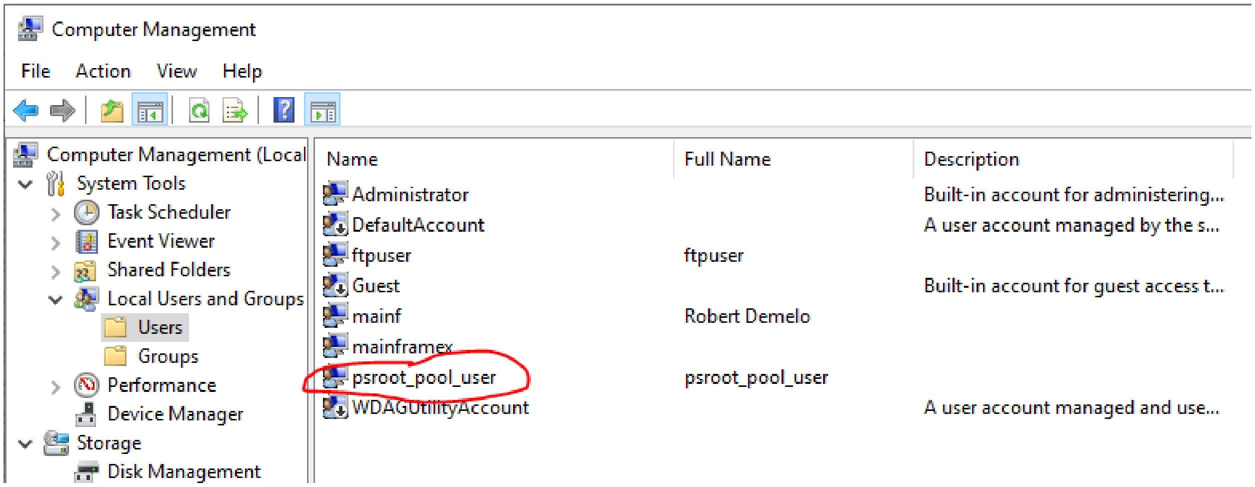
This worked but resulted in a the following error:



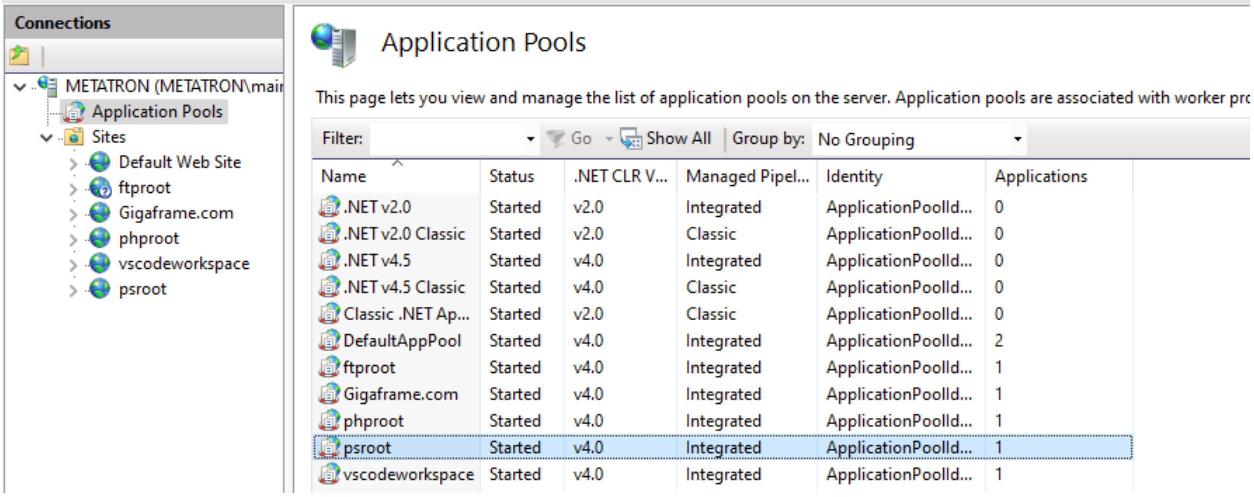
```
D:\dev\psroot\index.ps1 : File D:\dev\psroot\index.ps1 cannot be loaded. The file D:\dev\psroot\index.ps1 is not digitally signed. You cannot run this script on the current system. For more information about running scripts and setting execution policy, see about_Execution_Policies at
https:/go.microsoft.com/fwlink/?LinkID=135170. At line:1 char:1 + D:\dev\psroot\index.ps1 + ~~~~~~~~~~~~~~~~~~~~~~~ + CategoryInfo : SecurityError: (:) [], PSSecurityException + FullyQualifiedErrorId : UnauthorizedAccess
```

```
D:\dev\psroot\index.ps1 : File D:\dev\psroot\index.ps1 cannot be loaded. The
file D:\dev\psroot\index.ps1 is not digitally signed. You cannot run this script
on the current system. For more information about running scripts and setting
execution policy, see about_Execution_Policies at
https:/go.microsoft.com/fwlink/?LinkID=135170. At line:1 char:1 + D:\dev\psroot\
index.ps1 + ~~~~~~~~~~~~~~~~~~~~~~~ + CategoryInfo : SecurityError: (:) [],
PSSecurityException + FullyQualifiedErrorId : UnauthorizedAccess
```

To resolve this create a local user as service account for the IIS application pool



Name	Full Name	Description
Administrator		Built-in account for administering...
DefaultAccount		A user account managed by the s...
ftpuser	ftpuser	
Guest		Built-in account for guest access t...
mainf	Robert Demelo	
mainframex		
psroot_pool_user	psroot_pool_user	
WDAGUtilityAccount		A user account managed and use...



Application Pools

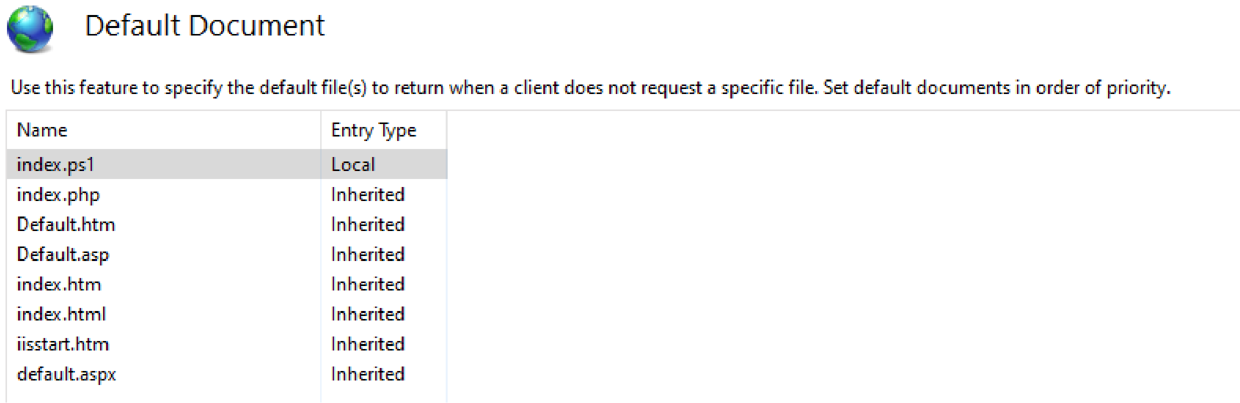
This page lets you view and manage the list of application pools on the server. Application pools are associated with worker prc

Filter:

Group by: No Grouping

Name	Status	.NET CLR V...	Managed Pipel...	Identity	Applications
.NET v2.0	Started	v2.0	Integrated	ApplicationPoolId...	0
.NET v2.0 Classic	Started	v2.0	Classic	ApplicationPoolId...	0
.NET v4.5	Started	v4.0	Integrated	ApplicationPoolId...	0
.NET v4.5 Classic	Started	v4.0	Classic	ApplicationPoolId...	0
Classic .NET Ap...	Started	v2.0	Classic	ApplicationPoolId...	0
DefaultAppPool	Started	v4.0	Integrated	ApplicationPoolId...	2
ftproot	Started	v4.0	Integrated	ApplicationPoolId...	1
Gigaframe.com	Started	v4.0	Integrated	ApplicationPoolId...	1
phproot	Started	v4.0	Integrated	ApplicationPoolId...	1
psroot	Started	v4.0	Integrated	ApplicationPoolId...	1
vscodeworkspace	Started	v4.0	Integrated	ApplicationPoolId...	1

Add index.ps1 to default document:

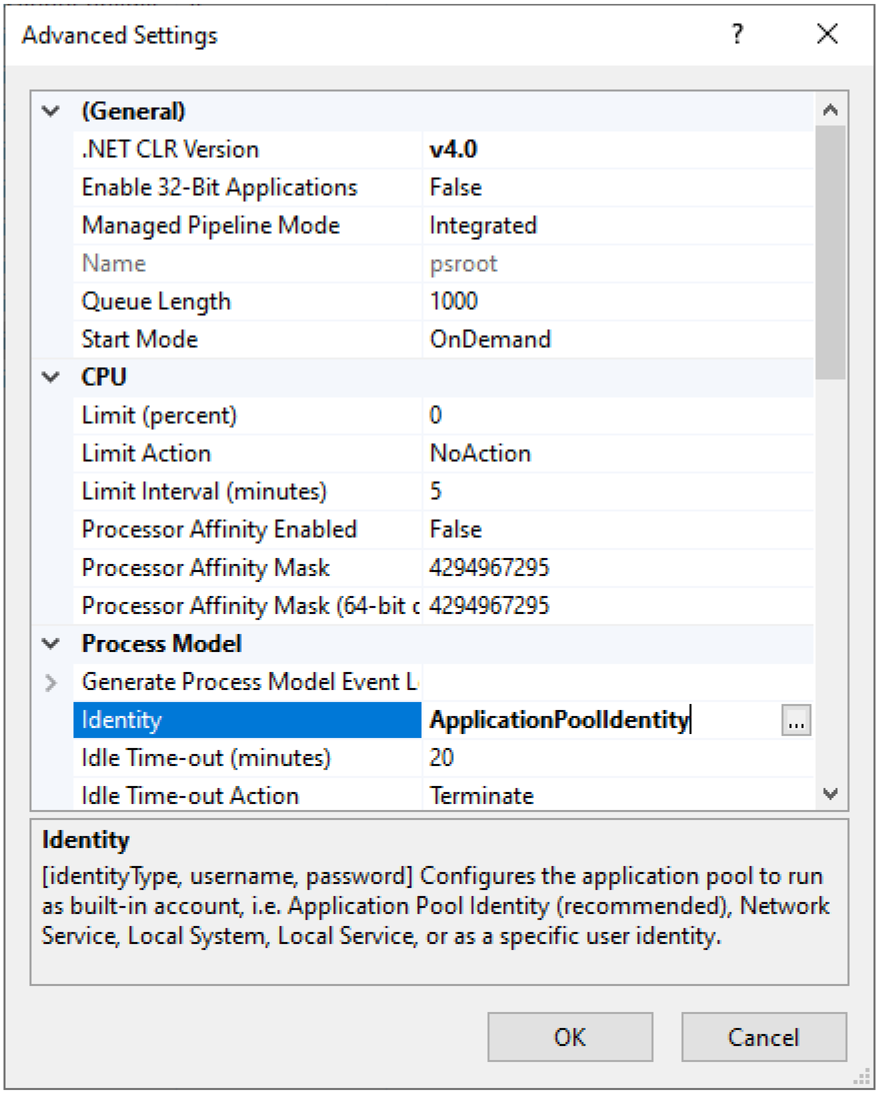

Default Document

Use this feature to specify the default file(s) to return when a client does not request a specific file. Set default documents in order of priority.

Name	Entry Type
index.ps1	Local
index.php	Inherited
Default.htm	Inherited
Default.asp	Inherited
index.htm	Inherited
index.html	Inherited
iisstart.htm	Inherited
default.aspx	Inherited

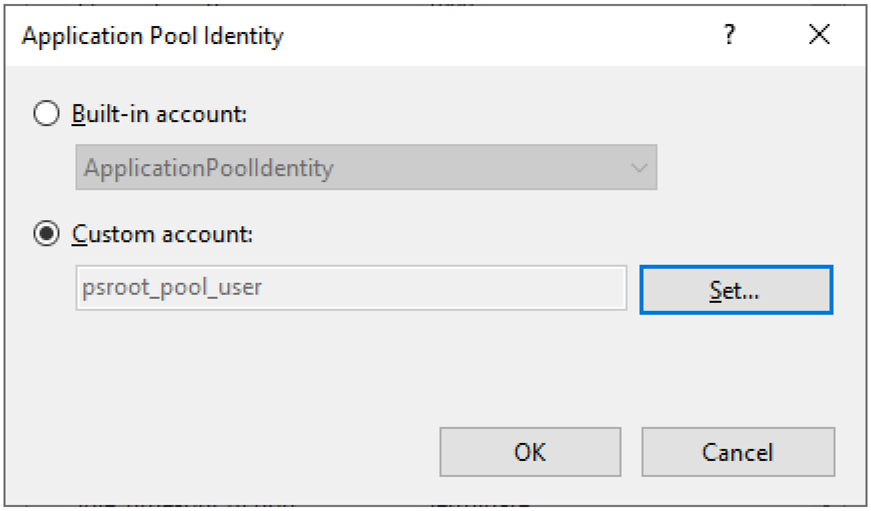
New create a Website or Application under your main Website and assign the created app pool.
The path of the Website or Application should the path to where you placed Gigaframe.Com.PowerShell.CGI/psroot folder.

Change the application pool user to the user you created.



(General)	
.NET CLR Version	**v4.0**
Enable 32-Bit Applications	False
Managed Pipeline Mode	Integrated
Name	psroot
Queue Length	1000
Start Mode	OnDemand
CPU	
Limit (percent)	0
Limit Action	NoAction
Limit Interval (minutes)	5
Processor Affinity Enabled	False
Processor Affinity Mask	4294967295
Processor Affinity Mask (64-bit c	4294967295
Process Model	
Generate Process Model Event L	
Identity	**ApplicationPoolIdentity**
Idle Time-out (minutes)	20
Idle Time-out Action	Terminate

Identity
[identityType, username, password] Configures the application pool to run as built-in account, i.e. Application Pool Identity (recommended), Network Service, Local System, Local Service, or as a specific user identity.



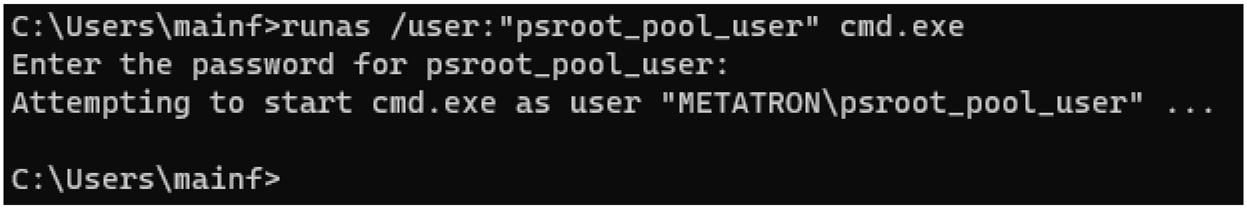
○ Built-in account:
ApplicationPoolIdentity

● Custom account:
psroot_pool_user

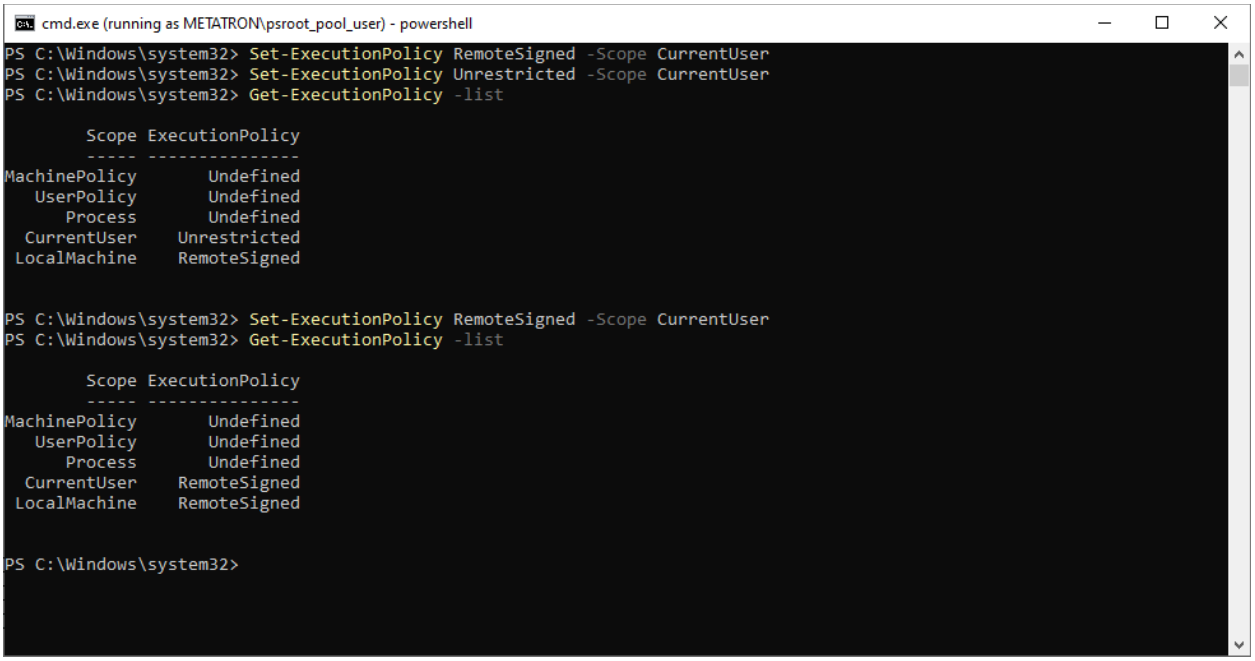
To change the execution policy for this user, logon through CMD with RUNAS.
Setting scope Current User to RemoteSigned. You can test with Unrestricted.
Restart IIS and Recycle your application pool.

```
>Powershell
>runas /user:”psroot_pool_user” cmd.exe
```

Enter the password of the user.



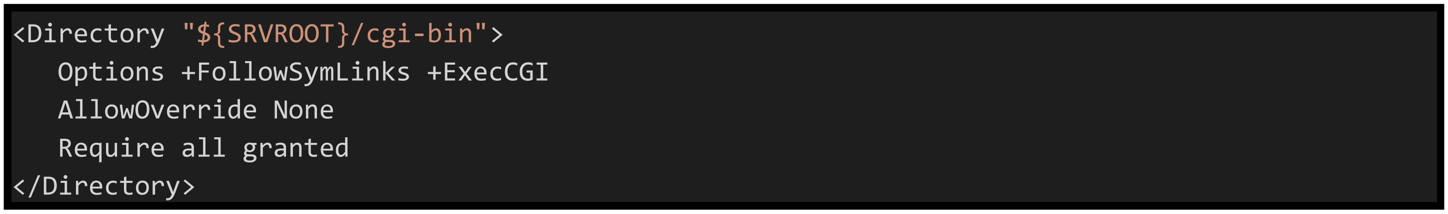
```
C:\Users\mainf>runas /user:"psroot_pool_user" cmd.exe
Enter the password for psroot_pool_user:
Attempting to start cmd.exe as user "METATRON\psroot_pool_user" ...

C:\Users\mainf>
```



```
PS C:\Windows\system32> Set-ExecutionPolicy RemoteSigned -Scope CurrentUser
PS C:\Windows\system32> Set-ExecutionPolicy Unrestricted -Scope CurrentUser
PS C:\Windows\system32> Get-ExecutionPolicy -list

        Scope ExecutionPolicy
        ----- ---------------
MachinePolicy       Undefined
   UserPolicy       Undefined
      Process       Undefined
  CurrentUser    Unrestricted
 LocalMachine    RemoteSigned


PS C:\Windows\system32> Set-ExecutionPolicy RemoteSigned -Scope CurrentUser
PS C:\Windows\system32> Get-ExecutionPolicy -list

        Scope ExecutionPolicy
        ----- ---------------
MachinePolicy       Undefined
   UserPolicy       Undefined
      Process       Undefined
  CurrentUser    RemoteSigned
 LocalMachine    RemoteSigned


PS C:\Windows\system32>
```

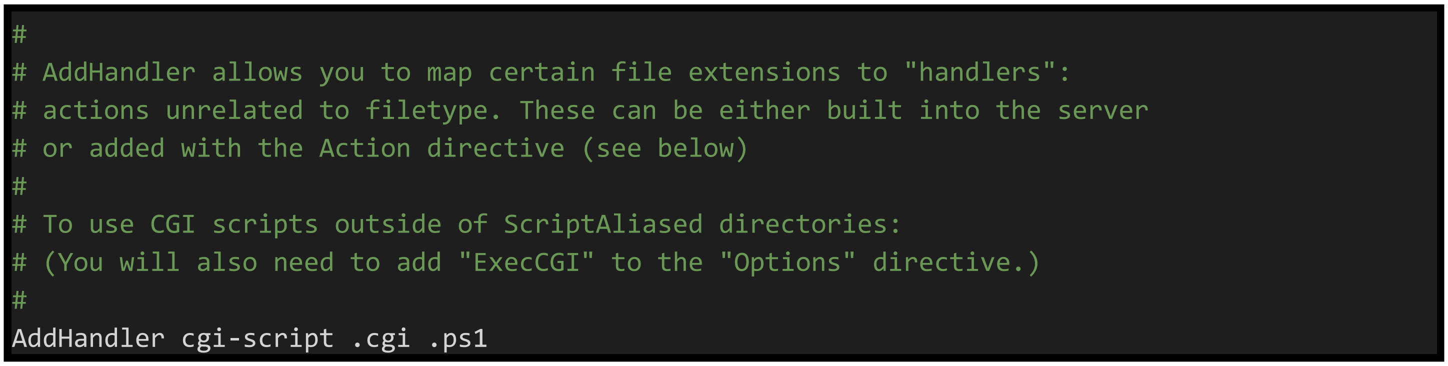
Setup Apache

In the installation folder or tour Apache, open “httpd.conf” configuration file under the “conf” folder. Ensure this section in the file looks like this:



```
<Directory "${SRVROOT}/cgi-bin">
   Options +FollowSymLinks +ExecCGI
   AllowOverride None
   Require all granted
</Directory>
```

Then find “AddHandler”, uncomment if needed, and add “.ps1” to the end of that line



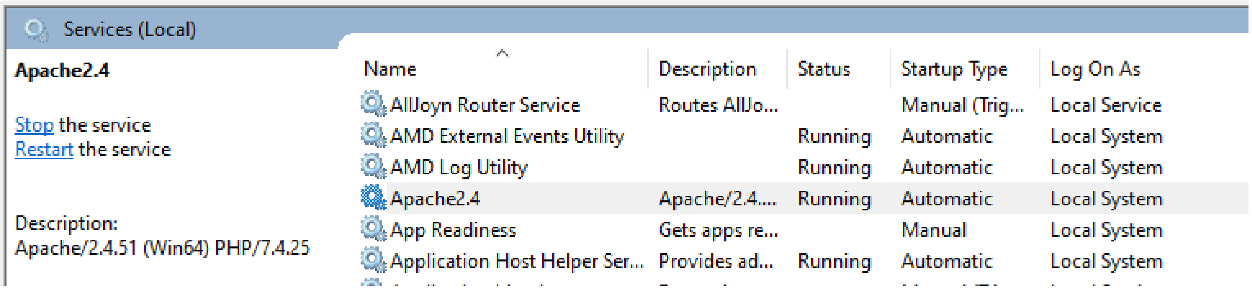
```
#
# AddHandler allows you to map certain file extensions to "handlers":
# actions unrelated to filetype. These can be either built into the server
# or added with the Action directive (see below)
#
# To use CGI scripts outside of ScriptAliased directories:
# (You will also need to add "ExecCGI" to the "Options" directive.)
#
AddHandler cgi-script .cgi .ps1
```

They add index.ps1 to this section, which informs Apache which file to look for on a directory call:

```
<IfModule dir_module>
   DirectoryIndex index.ps1 index.cgi index.html
</IfModule>
```

Save the file.

Restart the Apache server, either in Windows Services, or command line.



Apache2.4

Stop the service
Restart the service

Description:
Apache/2.4.51 (Win64) PHP/7.4.25

Name	Description	Status	Startup Type	Log On As
AllJoyn Router Service	Routes AllJo...		Manual (Trig...	Local Service
AMD External Events Utility		Running	Automatic	Local System
AMD Log Utility		Running	Automatic	Local System
Apache2.4	Apache/2.4....	Running	Automatic	Local System
App Readiness	Gets apps re...		Manual	Local System
Application Host Helper Ser...	Provides ad...	Running	Automatic	Local System

OR cmd:
> net stop Apache2.4
> net start Apache2.4
To start Apache 2.4 web server on Linux, enter:
/etc/init.d/apache2 start
OR sudo /etc/init.d/apache2 start
OR sudo service apache2 start.

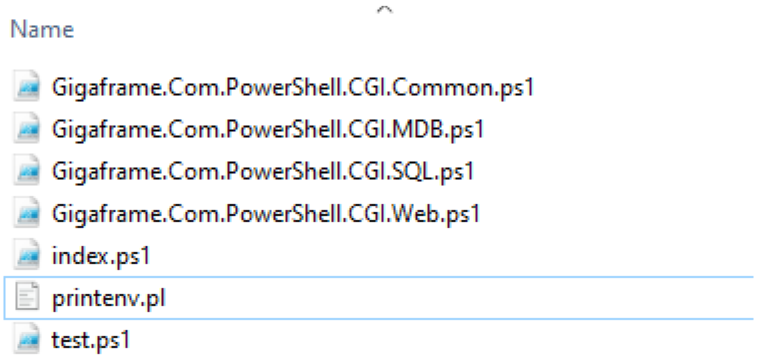
Next develop your first Powershell .ps1 script, save it into your psroot folder mapped in IIS or the cgi-bin used by Apache server.

For Apache CGI, the first line tells Apache engine where to find the executable to handle the processing of the file.

```
#!D:\dev\psroot\Gigaframe.Com.Powershell.CGI\Gigaframe.Com.Powershell.CGI.exe
<#HEADER#>
Write-Host("Content-Type: text/html");
Write-Host("");
<#HTML#>
Write-Host("<html>");
Write-Host("<body>");
Write-Host("Hello World!");
Write-Host("</body>");
Write-Host("</html>");
```

Demo PowerShell Web App

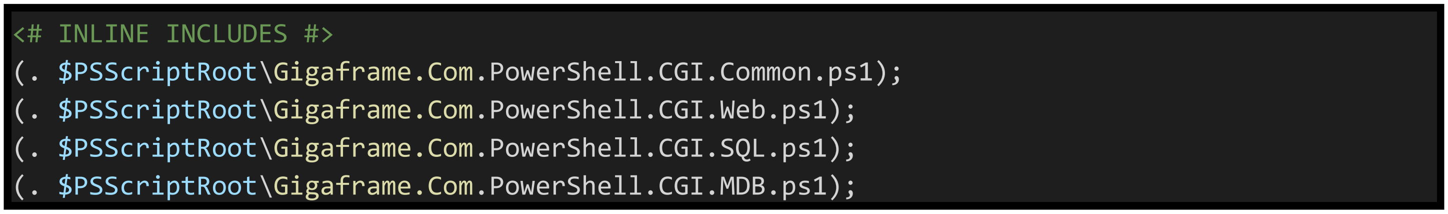
This software provides a demo PowerShell web app (index.ps1) that includes some very simple yet important script libraries to inline include with your web ps1 apps. This script libraries provide a set of methods and pre-processing web code to help develop PowerShell web apps like traditional web apps using different frameworks and languages. They are located in the psroot folder.



Name

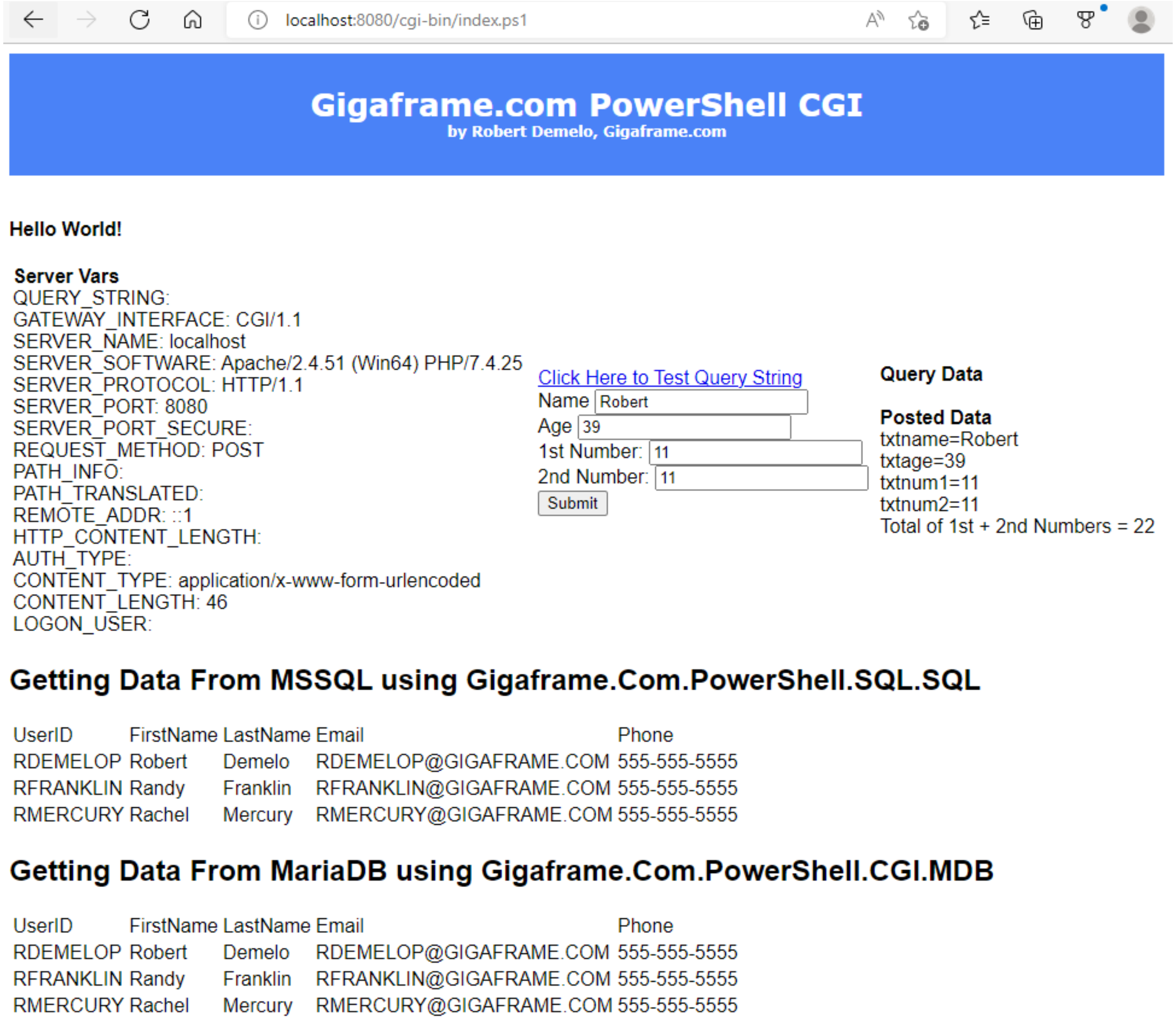
Gigaframe.Com.PowerShell.CGI.Common.ps1
Gigaframe.Com.PowerShell.CGI.MDB.ps1
Gigaframe.Com.PowerShell.CGI.SQL.ps1
Gigaframe.Com.PowerShell.CGI.Web.ps1
index.ps1
printenv.pl
test.ps1

Inline script libraries included:



```
<# INLINE INCLUDES #>
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.Common.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.Web.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.SQL.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.MDB.ps1);
```

The supplied psroot folder contain an index.ps1 file with functionality used in web applications, such as Server Variables, GET and POST handling functions, and database access to MSSQL and MDB



Gigaframe.com PowerShell CGI
by Robert Demelo, Gigaframe.com

Hello World!

Server Vars
QUERY_STRING:
GATEWAY_INTERFACE: CGI/1.1
SERVER_NAME: localhost
SERVER_SOFTWARE: Apache/2.4.51 (Win64) PHP/7.4.25
SERVER_PROTOCOL: HTTP/1.1
SERVER_PORT: 8080
SERVER_PORT_SECURE:
REQUEST_METHOD: POST
PATH_INFO:
PATH_TRANSLATED:
REMOTE_ADDR: ::1
HTTP_CONTENT_LENGTH:
AUTH_TYPE:
CONTENT_TYPE: application/x-www-form-urlencoded
CONTENT_LENGTH: 46
LOGON_USER:

Click Here to Test Query String
Name: Robert
Age: 39
1st Number: 11
2nd Number: 11
Submit

Query Data

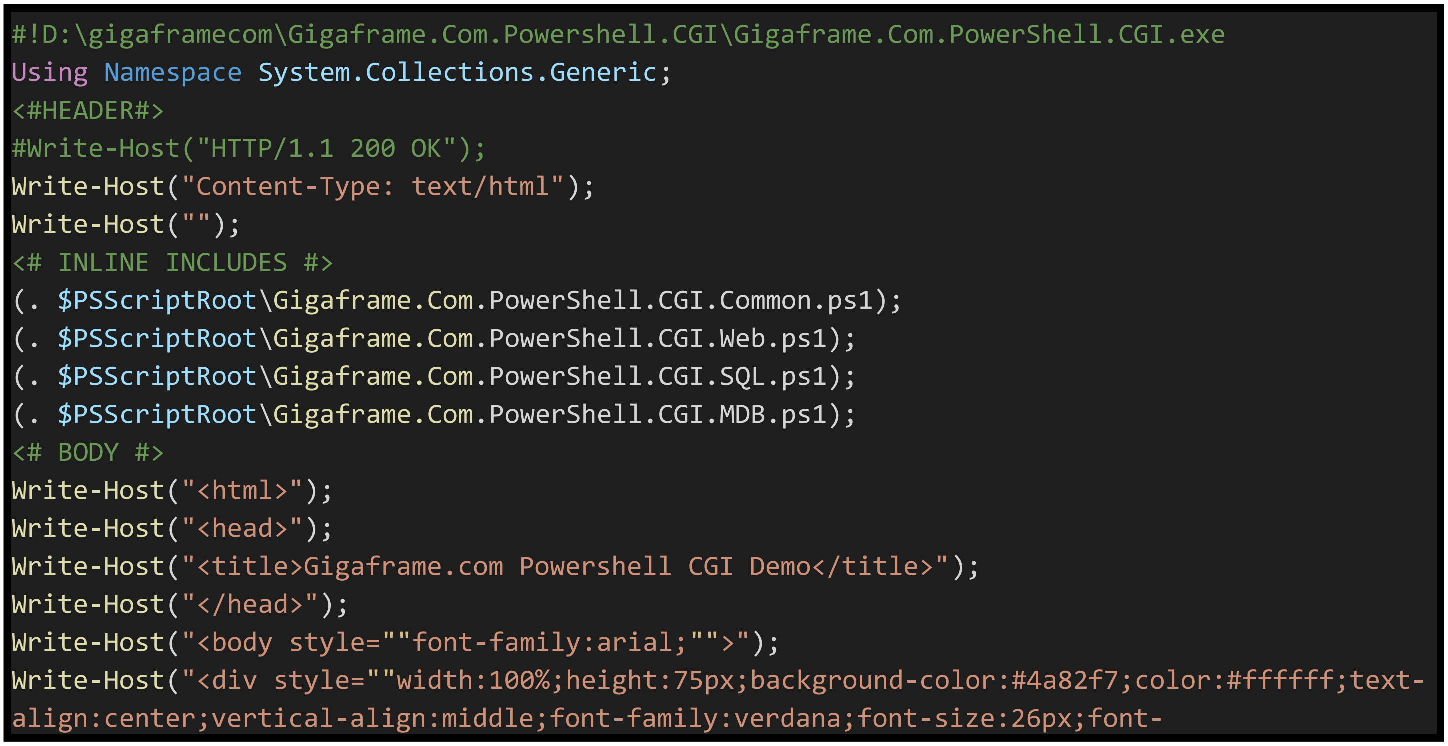
Posted Data
txtname=Robert
txtage=39
txtnum1=11
txtnum2=11
Total of 1st + 2nd Numbers = 22

Getting Data From MSSQL using Gigaframe.Com.PowerShell.SQL.SQL

UserID	FirstName	LastName	Email	Phone
RDEMELOP	Robert	Demelo	RDEMELOP@GIGAFRAME.COM	555-555-5555
RFRANKLIN	Randy	Franklin	RFRANKLIN@GIGAFRAME.COM	555-555-5555
RMERCURY	Rachel	Mercury	RMERCURY@GIGAFRAME.COM	555-555-5555

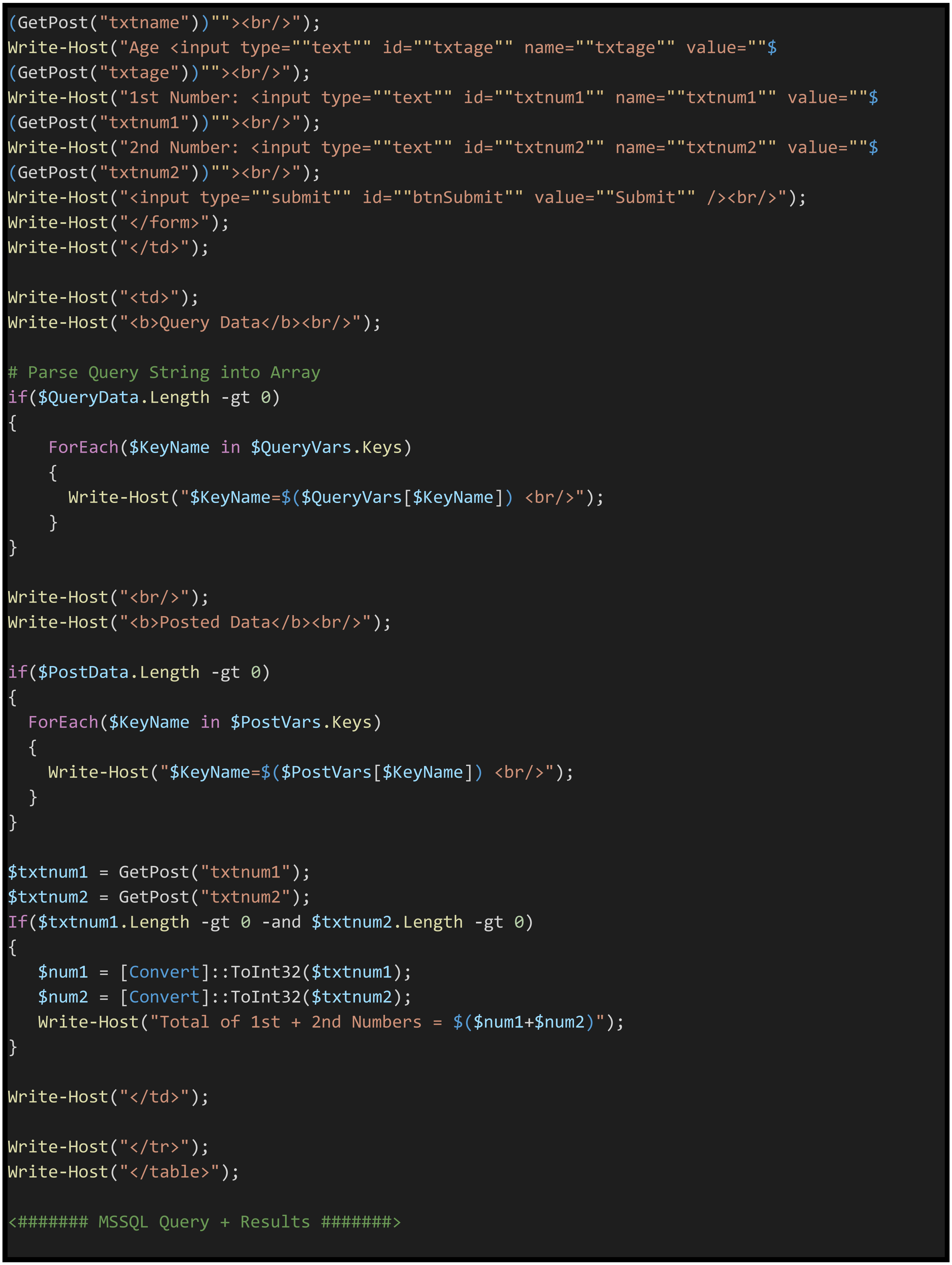
Getting Data From MariaDB using Gigaframe.Com.PowerShell.CGI.MDB

UserID	FirstName	LastName	Email	Phone
RDEMELOP	Robert	Demelo	RDEMELOP@GIGAFRAME.COM	555-555-5555
RFRANKLIN	Randy	Franklin	RFRANKLIN@GIGAFRAME.COM	555-555-5555
RMERCURY	Rachel	Mercury	RMERCURY@GIGAFRAME.COM	555-555-5555

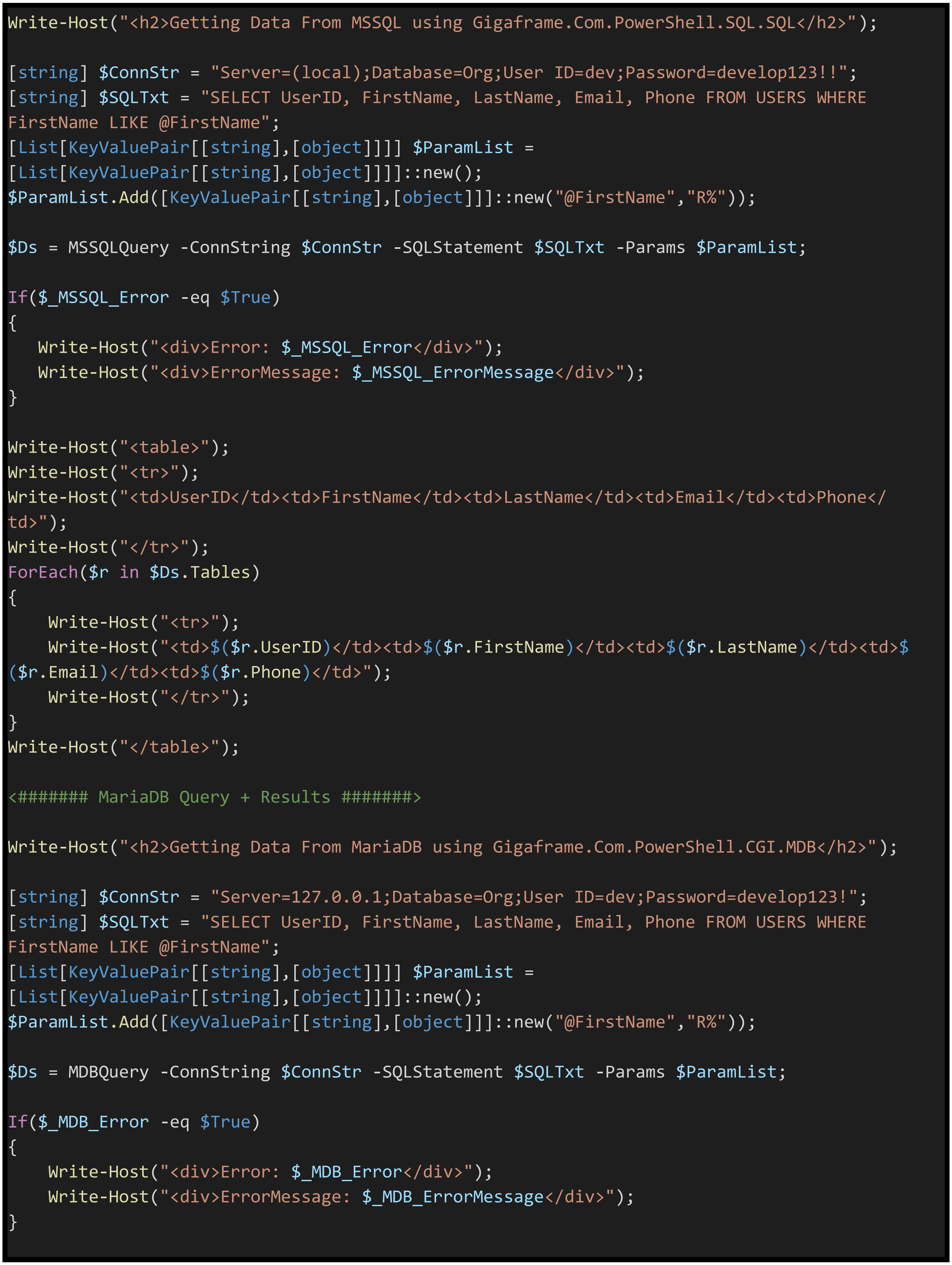


```
#!D:\gigaframecom\Gigaframe.Com.Powershell.CGI\Gigaframe.Com.PowerShell.CGI.exe
Using Namespace System.Collections.Generic;
<#HEADER#>
#Write-Host("HTTP/1.1 200 OK");
Write-Host("Content-Type: text/html");
Write-Host("");
<# INLINE INCLUDES #>
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.Common.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.Web.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.SQL.ps1);
(. $PSScriptRoot\Gigaframe.Com.PowerShell.CGI.MDB.ps1);
<# BODY #>
Write-Host("<html>");
Write-Host("<head>");
Write-Host("<title>Gigaframe.com Powershell CGI Demo</title>");
Write-Host("</head>");
Write-Host("<body style=""font-family:arial;"">");
Write-Host("<div style=""width:100%;height:75px;background-color:#4a82f7;color:#ffffff;text-
align:center;vertical-align:middle;font-family:verdana;font-size:26px;font-
```

```
weight:bold;border-color:#0f3585;padding-top:26px;"">");
Write-Host("Gigaframe.com PowerShell CGI");
Write-Host("<br/><span style=""font-size:12px;"">by Robert Demelo, Gigaframe.com</span>");
Write-Host("</div>");
Write-Host("<br/><br/>");
Write-Host("<b>Hello World!</b><br/><br/>");

Write-Host("<table style=""width:100%"">");
Write-Host("<tr>");

Write-Host("<td>");
Write-Host("<b>Server Vars</b><br/>");
Write-Host("QUERY_STRING: " + $QueryData + "<br/>");
Write-Host("GATEWAY_INTERFACE: " +
[System.Environment]::GetEnvironmentVariable("GATEWAY_INTERFACE") + "<br/>");
Write-Host("SERVER_NAME: " + [System.Environment]::GetEnvironmentVariable("SERVER_NAME") +
"<br/>");
Write-Host("SERVER_SOFTWARE: " +
[System.Environment]::GetEnvironmentVariable("SERVER_SOFTWARE") + "<br/>");
Write-Host("SERVER_PROTOCOL: " +
[System.Environment]::GetEnvironmentVariable("SERVER_PROTOCOL") + "<br/>");
Write-Host("SERVER_PORT: " + [System.Environment]::GetEnvironmentVariable("SERVER_PORT") +
"<br/>");
Write-Host("SERVER_PORT_SECURE: " +
[System.Environment]::GetEnvironmentVariable("SERVER_PORT_SECURE") + "<br/>");
Write-Host("REQUEST_METHOD: " +
[System.Environment]::GetEnvironmentVariable("REQUEST_METHOD") + "<br/>");
Write-Host("PATH_INFO: " + [System.Environment]::GetEnvironmentVariable("PATH_INFO") +
"<br/>");
Write-Host("PATH_TRANSLATED: " +
[System.Environment]::GetEnvironmentVariable("PATH_TRANSLATED") + "<br/>");
Write-Host("REMOTE_ADDR: " + [System.Environment]::GetEnvironmentVariable("REMOTE_ADDR") +
"<br/>");
Write-Host("HTTP_CONTENT_LENGTH: " +
[System.Environment]::GetEnvironmentVariable("HTTP_CONTENT_LENGTH") + "<br/>");
Write-Host("AUTH_TYPE: " + [System.Environment]::GetEnvironmentVariable("AUTH_TYPE") +
"<br/>");
Write-Host("CONTENT_TYPE: " + [System.Environment]::GetEnvironmentVariable("CONTENT_TYPE") +
"<br/>");
Write-Host("CONTENT_LENGTH: " +
[System.Environment]::GetEnvironmentVariable("CONTENT_LENGTH") + "<br/>");
Write-Host("LOGON_USER: " + [System.Environment]::GetEnvironmentVariable("LOGON_USER") +
"<br/>");
Write-Host("</td>");

Write-Host("<td>");
Write-Host("<a href=""?param1=Robert&param2=Developer"">Click Here to Test Query
String</a>");
Write-Host("<form action=""index.ps1"" method=""post"">");
Write-Host("Name <input type=""text"" id=""txtname"" name=""txtname"" value=""$
```



```
(GetPost("txtname"))""><br/>");
Write-Host("Age <input type=""text"" id=""txtage"" name=""txtage"" value=""$
(GetPost("txtage"))""><br/>");
Write-Host("1st Number: <input type=""text"" id=""txtnum1"" name=""txtnum1"" value=""$
(GetPost("txtnum1"))""><br/>");
Write-Host("2nd Number: <input type=""text"" id=""txtnum2"" name=""txtnum2"" value=""$
(GetPost("txtnum2"))""><br/>");
Write-Host("<input type=""submit"" id=""btnSubmit"" value=""Submit"" /><br/>");
Write-Host("</form>");
Write-Host("</td>");

Write-Host("<td>");
Write-Host("<b>Query Data</b><br/>");

# Parse Query String into Array
if($QueryData.Length -gt 0)
{
    ForEach($KeyName in $QueryVars.Keys)
    {
      Write-Host("$KeyName=$($QueryVars[$KeyName]) <br/>");
    }
}

Write-Host("<br/>");
Write-Host("<b>Posted Data</b><br/>");

if($PostData.Length -gt 0)
{
  ForEach($KeyName in $PostVars.Keys)
  {
    Write-Host("$KeyName=$($PostVars[$KeyName]) <br/>");
  }
}

$txtnum1 = GetPost("txtnum1");
$txtnum2 = GetPost("txtnum2");
If($txtnum1.Length -gt 0 -and $txtnum2.Length -gt 0)
{
   $num1 = [Convert]::ToInt32($txtnum1);
   $num2 = [Convert]::ToInt32($txtnum2);
   Write-Host("Total of 1st + 2nd Numbers = $($num1+$num2)");
}

Write-Host("</td>");

Write-Host("</tr>");
Write-Host("</table>");

<####### MSSQL Query + Results #######>
```

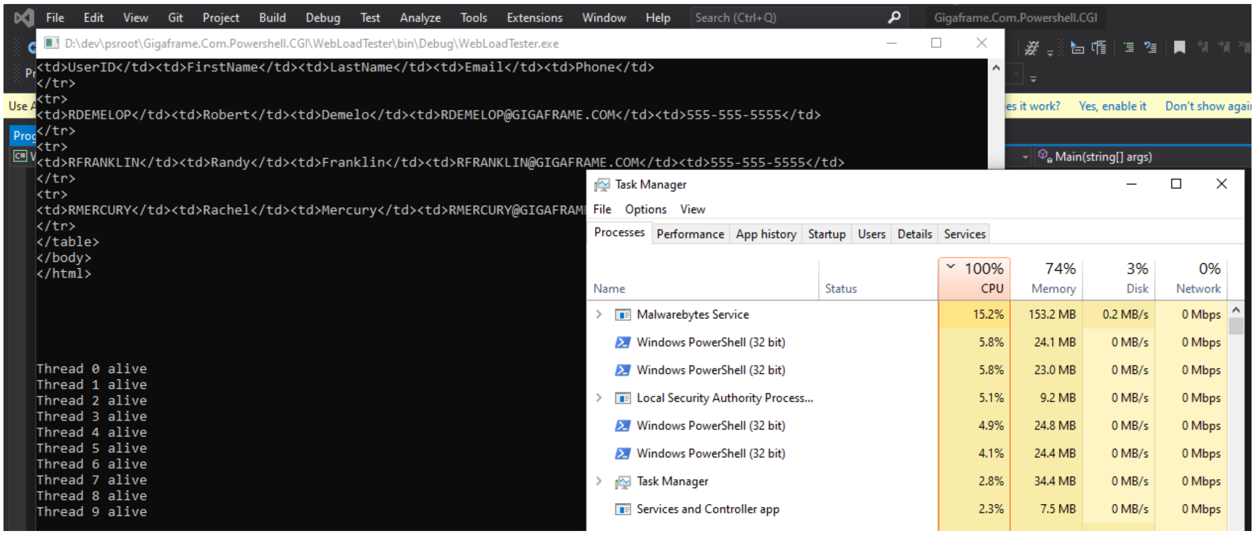


```
Write-Host("<h2>Getting Data From MSSQL using Gigaframe.Com.PowerShell.SQL.SQL</h2>");

[string] $ConnStr = "Server=(local);Database=Org;User ID=dev;Password=develop123!!";
[string] $SQLTxt = "SELECT UserID, FirstName, LastName, Email, Phone FROM USERS WHERE
FirstName LIKE @FirstName";
[List[KeyValuePair[[string],[object]]]] $ParamList =
[List[KeyValuePair[[string],[object]]]]::new();
$ParamList.Add([KeyValuePair[[string],[object]]]::new("@FirstName","R%"));

$Ds = MSSQLQuery -ConnString $ConnStr -SQLStatement $SQLTxt -Params $ParamList;

If($_MSSQL_Error -eq $True)
{
   Write-Host("<div>Error: $_MSSQL_Error</div>");
   Write-Host("<div>ErrorMessage: $_MSSQL_ErrorMessage</div>");
}

Write-Host("<table>");
Write-Host("<tr>");
Write-Host("<td>UserID</td><td>FirstName</td><td>LastName</td><td>Email</td><td>Phone</
td>");
Write-Host("</tr>");
ForEach($r in $Ds.Tables)
{
    Write-Host("<tr>");
    Write-Host("<td>$($r.UserID)</td><td>$($r.FirstName)</td><td>$($r.LastName)</td><td>$
($r.Email)</td><td>$($r.Phone)</td>");
    Write-Host("</tr>");
}
Write-Host("</table>");

<####### MariaDB Query + Results #######>

Write-Host("<h2>Getting Data From MariaDB using Gigaframe.Com.PowerShell.CGI.MDB</h2>");

[string] $ConnStr = "Server=127.0.0.1;Database=Org;User ID=dev;Password=develop123!";
[string] $SQLTxt = "SELECT UserID, FirstName, LastName, Email, Phone FROM USERS WHERE
FirstName LIKE @FirstName";
[List[KeyValuePair[[string],[object]]]] $ParamList =
[List[KeyValuePair[[string],[object]]]]::new();
$ParamList.Add([KeyValuePair[[string],[object]]]::new("@FirstName","R%"));

$Ds = MDBQuery -ConnString $ConnStr -SQLStatement $SQLTxt -Params $ParamList;

If($_MDB_Error -eq $True)
{
    Write-Host("<div>Error: $_MDB_Error</div>");
    Write-Host("<div>ErrorMessage: $_MDB_ErrorMessage</div>");
}
```

```
Write-Host("<table>");
Write-Host("<tr>");
Write-Host("<td>UserID</td><td>FirstName</td><td>LastName</td><td>Email</td><td>Phone</
td>");
Write-Host("</tr>");
ForEach($r in $Ds.Tables)
{
    Write-Host("<tr>");
    Write-Host("<td>$($r.UserID)</td><td>$($r.FirstName)</td><td>$($r.LastName)</td><td>$
($r.Email)</td><td>$($r.Phone)</td>");
    Write-Host("</tr>");
}
Write-Host("</table>");

Write-Host("</body>");
Write-Host("</html>");
```

Multi-Threaded Load Testing

A load testing VS project is provided that you can customize to test.



```
<td>UserID</td><td>FirstName</td><td>LastName</td><td>Email</td><td>Phone</td>
</tr>
<tr>
<td>RDEMELOP</td><td>Robert</td><td>Demelo</td><td>RDEMELOP@GIGAFRAME.COM</td><td>555-555-5555</td>
</tr>
<tr>
<td>RFRANKLIN</td><td>Randy</td><td>Franklin</td><td>RFRANKLIN@GIGAFRAME.COM</td><td>555-555-5555</td>
</tr>
<tr>
<td>RMERCURY</td><td>Rachel</td><td>Mercury</td><td>RMERCURY@GIGAFRAM
</tr>
</table>
</body>
</html>




Thread 0 alive
Thread 1 alive
Thread 2 alive
Thread 3 alive
Thread 4 alive
Thread 5 alive
Thread 6 alive
Thread 7 alive
Thread 8 alive
Thread 9 alive
```

Name	Status	100% CPU	74% Memory	3% Disk	0% Network
Malwarebytes Service		15.2%	153.2 MB	0.2 MB/s	0 Mbps
Windows PowerShell (32 bit)		5.8%	24.1 MB	0 MB/s	0 Mbps
Windows PowerShell (32 bit)		5.8%	23.0 MB	0 MB/s	0 Mbps
Local Security Authority Process...		5.1%	9.2 MB	0 MB/s	0 Mbps
Windows PowerShell (32 bit)		4.9%	24.8 MB	0 MB/s	0 Mbps
Windows PowerShell (32 bit)		4.1%	24.4 MB	0 MB/s	0 Mbps
Task Manager		2.8%	34.4 MB	0 MB/s	0 Mbps
Services and Controller app		2.3%	7.5 MB	0 MB/s	0 Mbps

In the Demo PS1 web page script there is a section to read POSTED data and insert into MSSQL demo ORG database

```
<####### MSSQL Add Data #######>
$SAVEPRODUCT = $PostVars["SAVEPRODUCT"];
Write-Host("<div>Save POSTED data: $SAVEPRODUCT</div>");
If($SAVEPRODUCT -eq "YES") {
$DEVICEPRODUCTID = $PostVars["DEVICEPRODUCTID"];
$DEVICEID = $PostVars["DEVICEID"];
$PRODUCTVERSION = $PostVars["PRODUCTVERSION"];
[string] $ConnStr = "Server=(local);Database=Org;User ID=dev;Password=develop123!";
[string] $SQLTxt = "INSERT INTO DEVICEPRODUCTS
(DEVICEPRODUCTID,DEVICEID,PRODUCTNAME,PRODUCTVERSION,LASTUPDATE) VALUES
```

```
(@DEVICEPRODUCTID,@DEVICEID,@PRODUCTNAME,@PRODUCTVERSION,@LASTUPDATE)";
[List[KeyValuePair[[string],[object]]]] $ParamList =
[List[KeyValuePair[[string],[object]]]]::new();
$ParamList.Add([KeyValuePair[[string],[object]]]::new("@DEVICEPRODUCTID",$DEVICEPRODUCTID));
$ParamList.Add([KeyValuePair[[string],[object]]]::new("@DEVICEID",$DEVICEID));
$ParamList.Add([KeyValuePair[[string],[object]]]::new("@PRODUCTNAME",$DEVICEPRODUCTID));
$ParamList.Add([KeyValuePair[[string],[object]]]::new("@PRODUCTVERSION",$PRODUCTVERSION ));
```

Software: Gigaframe.Com.PowerShell.CGI

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