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Project Assigned: RestApiProject -> RV Coding Challenge

Database Server Choice: Microsoft SQL Server 2012

Back-End/Server Side Programming Language: PHP

Message Communication Medium to and from Client: JSON

Important Note: Please See Project Documents folder for the following:

- Derrick Ward Project Details.docx
- Derrick Ward Project Details.pdf
- Derrick Ward_DB_Diagram_RV_Project.pdf

Web Service's Endpoints:

- Get Request: /state/{state}/cities
 - Example Request: <http://<server>/state/AK/cities>
 - Purpose: Get a list of all cities in a state
- Get Request: /user/{user}/visits
 - Example Request: <http://<server>/user/firstname/lastname/visits>
 - Purpose: Get a list of cities user has visited
- Get Request: /user/{user}/visits/states
 - Example Request: <http://<server>/user/firstname/lastname/visits/states>
 - Purpose: Get a list of states user has visited
- Post Request: /user/{user}/visits
 - Example Request: <http://<server>/user/firstname/lastname/visits>
 - Content Type Supplied in Network Request: application/json
 - Example of Content Supplied, in Network Request: {"City": "Erie", "State": "PA"}
 - Purpose: Create a new visit for a user, to a particular city
- Delete Request: /user/{user}/visit/{visit}
 - Example Request: <http://<server>/user/firstname/lastname/visit/city>
 - Purpose: Remove improperly pinned visit for user

Error Handling:

- Improperly Formed Requests
 - Checked the network request path and the appropriate request method type for each request.
- Depending on communication endpoint, Checked for:
 - Blank City Name
 - Blank State Name
 - Blank First Name
 - Blank Last Name
- Fields of the JSON Message Returned to the Client:
 - ErrorCode
 - Values
 - 0 means no error
 - 1 means there was an error
 - Message
 - Value
 - String containing what went wrong with the request
 - Path Requested (only present on error)
 - Value
 - '>' delimited Path/Endpoint, the client tried to reach
 - Request Method Type (only present on error)
 - Value
 - Request Method Type Client used in making network request
 - Example: DELETE

Application Server Setup:

- Application Web Server used: Apache 2.4.9
 - Package Installed, containing server: WAMPSEVER 2.5 (32 bit version)
- PHP Version: 5.5.12
- Modifications made to both PHP 5.5.12 and Apache 2.4.9:
 - Httpd.conf (For Apache)
 - Enable the rewrite_module
 - Replace your httpd.conf with the one included in DW_RV_Project.zip/RedVenture/APACHE HTTPD CONF
 - Created an .htaccess file and save it in the “www” folder on Wamp
 - File is included in DW_RV_Project.zip
 - DW_RV_Project.zip/RedVenture/.htaccess
 - Place file in “www” Folder
 - Modified the php.ini file to include the following lines:
 - extension=php_sqlsrv_55_nts.dll
 - extension=php_sqlsrv_55_ts.dll
 - Added the following PHP DLL files to PHP:
 - php_sqlsrv_55_nts.dll
 - php_sqlsrv_55_ts.dll
 - Purpose: SQL Server 2012 Communication
 - DLL are included in DW_RV_Project.zip (DW_RV_Project.zip/RedVenture/PHP DLL Needed)
 - Place DLLs in wamp\bin\php\php5.5.12\ext\
- PHP Scripts Should all be in the same directory (\wamp\www\RedVenture\):
 - Move RedVenture folder (after unzipping DW_RV_Project.zip) into www/RedVenture/

Database Server Setup:

- Database Server used: SQL Server 2012
- Script to Create Database Tables and Schema
 - CreationScript.sql
- Script to Drop Tables:
 - DropTables.sql
- Script to Load Dataset into Tables:
 - Insert Fresh Dataset.sql
- Script to Show all Database Tables and Contents
 - viewAllTables.sql
- Database Name Chosen:
 - RV_Coding_Challenge_Derrick
- Database Table Names and Schema:
 - Cities
 - Columns:
 - Id: Primary Key, Bigint, Not Null
 - City_name: varchar(100), Not Null
 - State_id: Foreign_Key, Bigint, Not Null
 - Status: varchar(100), Null
 - Latitude: Float, Null
 - Longitude: Float, Null
 - Datetimeadded: datetime, Not Null
 - Dateadded: date, Not Null
 - Lasttimeupdated: datetime, Not Null
 - Primary Keys
 - Id
 - Foreign Keys:
 - State_id: References Primary Key in State table
 - Indexes:
 - Unique, non-clustered index on (City_name, State_id)
 - Triggers:
 - On Lasttimeupdated column
 - Set to update this column to the current system time, when a specific row modified
 - States
 - Columns:
 - Id: Primary Key, Bigint, Not Null
 - State_name: varchar(100) Not Null
 - Abbreviation: varchar(2), Null
 - Datetimeadded: datetime, Not Null
 - Dateadded: date, Not Null

- Lasttimeupdated: datetime, Not Null
- Primary Keys
 - Id
- Foreign Keys:
 - None
- Indexes:
 - Unique, non-clustered index on (state_name)
- Triggers:
 - On Lasttimeupdated column
 - Set to update this column to the current system time, when a specific row modified
- Users
 - Columns:
 - Id: Primary Key, Bigint, Not Null
 - firstname: varchar(100) Not Null
 - lastname: varchar(100) Not Null
 - Datetimeadded: datetime, Not Null
 - Dateadded: date, Not Null
 - Lasttimeupdated: datetime, Not Null
 - Primary Keys
 - Id
 - Foreign Keys:
 - None
 - Indexes:
 - Unique, non-clustered index on (firstname, lastname)
 - Triggers:
 - On Lasttimeupdated column
 - Set to update this column to the current system time, when a specific row modified
- Visits
 - Columns:
 - Id: Primary Key, Bigint, Not Null
 - User_id: Foreign_Key, Bigint, Not Null
 - State_id: Foreign_Key, Bigint, Not Null
 - City_id: Foreign_Key, Bigint, Not Null
 - Datetimeadded: datetime, Not Null
 - Dateadded: date, Not Null
 - Lasttimeupdated: datetime, Not Null
 - Primary Keys
 - Id
 - Foreign Keys:
 - User_id: References Primary Key in User table
 - State_id: References Primary Key in State table

- City_id: References Primary Key in City table
- Indexes:
 - Unique, non-clustered index on (user_id, state_id, city_id)
- Triggers:
 - On Lasttimeupdated column
 - Set to update this column to the current system time, when a specific row modified

PHP SCRIPTS:

- Files:
 - City.php
 - Purpose: Model for City Objects
 - State.php
 - Purpose: Model for State Objects
 - User.php
 - Purpose: Model for User Objects
 - Endpoint.php
 - Purpose: Router/Controller, Operations Management (Complete Requested Tasks)
 - Dbconnection.php
 - Purpose: Contains helper function and Database Connection Information
 - InvalidEndpointOrRequest.php
 - Purpose: Thrown when client is trying to reach an Endpoint that does not exist or tries to access an endpoint with the incorrect Request Method Type
 - DatabaseDisconnectException.php
 - Purpose: Thrown when the Database connection to the Database Server is not present during the Object Creation of Data Models (User, City, State)
 - NullArgumentSuppliedforNonNullField.php
 - Purpose: Thrown when client supplies a blank or null value for a field that must be populated
 - OperationFailedException.php
 - Purpose: Thrown when Operations such as the following fail:
 - Deleting a Visit
 - Creating a Visit