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**Date:** 3/27/16

**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: WAMPSERVER 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