CIS 3342 Term Project – Part 3  
Cloud Management

The final portion of the term project involves implementing the cloud management aspect of this application where the user will manage their cloud storage, pay for larger storage limits, and access their files. This part of the project will also implement the cloud management aspect for administrators who can manage accounts, the cloud, and view logs of transactions.

**1. Requirements for Cloud Users:**

* 1. [**Cloud**](http://cis-iis1.temple.edu/cis342/Lectures/Unit3/TermProject/TermProjectRequirements.htm#Step4) **Storage display, file download, and modification**

The cloud user must be able to view their entire cloud with all files and file data including an image that represents the type of file. The application must allow the cloud user the ability to download files, delete files, upload newer versions of a file, and clear the entire storage.  
  
Note: you will need to create an object that represents the cloud user’s cloud storage and account information. This object will be an in RAM data structure that contains the cloud user’s account information, and, most importantly, their cloud. This object will not contain the actual file contents, but it will contain information regarding the file and its organization (folder structure/path). The reason the file contents will not be part of this object is due to efficiency. If the user’s cloud contained 50GBs of files, then the object would be extremely large and require a massive data transfer when communicating with the web application server, web service server, and database server. This is the reason the Cloud Storage object will only contain meta-data and be significantly smaller and easier to manage.

* 1. [**Cloud**](http://cis-iis1.temple.edu/cis342/Lectures/Unit3/TermProject/TermProjectRequirements.htm#Step4) **Storage Synchronization**

The cloud user must be able to synchronize their storage at any time. This operation simply involves updating the database to reflect changes made to the in RAM data structure representing the cloud user’s storage (Cloud Storage object).

* 1. **Cloud Storage File Restore**

The application must allow the cloud user the ability to restore deleted files and older versions of files. The cloud user should be able to view their trash bin and restore deleted files. Additionally, the application must allow the user to view older versions of files and be restore them. For example, the cloud user sees three versions of a particular file and decides to restore the file to the original (first) version that was uploaded. This utility should be part of a separate ASPX page and not part of the normal set of operations.

* 1. **Log Cloud Operations**Record the cloud user’s operations in your database. Each time the user makes a change to their cloud storage, the database must store a record of the change.
  2. [**Log-out**](http://cis-iis1.temple.edu/cis342/Lectures/Unit3/TermProject/TermProjectRequirements.htm#Step6) **(end the session)**

Terminate the session. Use the Global.asax to write the Cloud Storage object to the database using [serialization.](http://cis-iis1.temple.edu/cis342/Lectures/Unit2/Serialization/Serial1.htm) You need to store the Cloud Storage object, which is used to represent the cloud user’s storage in a single field inside your database. Additionally, you need to synchronize the Cloud Storage object’s changes with the physical storage in the database, so they both represent the most current state of the user’s cloud.   
  
You need to use a stored procedure to write the binary data to the database.

* 1. **Login Modification**  
     You need to modify the login page so that it reloads the Cloud Storage object from the serialized data stored in the database upon a successful login. After the user logins in to you application, the user’s Cloud Storage should be in the same state as it was when they logged out last session. If the data doesn’t exist in the database (DBNull), then you should create an empty object.  
       
     You need to use a stored procedure to read the binary data from the database.
  2. **Increase Storage Limits**  
     One of the main aspects of the Cloud Storage Site is to make money. The application must allow the user to view pricing plans and purchase more storage. The application must step the user through the purchase procedure and charge the customer. You can use a third-party payment gateway for extra credit or utilize your credit-card web service. The extra credit requires you to choose a payment gateway (one that provides testing for developers), and get it approved by me. If approved by me, implement this payment gateway into your project.

1. **Requirements for Cloud Administrators**The application will also be used by cloud administrators who have a different view of the cloud and a different set of capabilities. There are two types of administrators for the cloud: normal administrators, and super-admins, which will be responsible for overseeing administrators.
   1. [**Cloud**](http://cis-iis1.temple.edu/cis342/Lectures/Unit3/TermProject/TermProjectRequirements.htm#Step4) **Administrator Account Management**Cloud administrators must be able to view, delete, modify, and deactivate cloud user accounts. Cloud administrators will need to be able to reset passwords for the accounts. In addition, cloud administrators are able to view the cloud users’ files. The application must record all administrator operations as a log and store it in the database.
   2. **Cloud Super-Admins**   
      The Cloud Super-Administrators are able to manage other administrator accounts. Unfortunately, the normal cloud administrators have a level of access that can violate the privacy of the cloud users. This means the cloud administrators are able to view the cloud users’ files. The application logs all admin operations, so that super-admins can view these logs. The application must allow the super-admins the ability to view logs based on a specific admin, or view logs based on a certain period (last 30 days, past 24 hours, etc…) for all admins.
   3. **Tech Support Help**  
      The application must allow the cloud users to get help from cloud administrators. This functionality can be implement as a question/answer forum or a live private-chat with the administrators. The forum would allow users to post questions and receive answers from the cloud administrators. A real-time private chat with administrators is another possible implementation. You will need to add this functionality into both the cloud user and administrator parts of the application.
2. **Additional Requirements**This project requires implementing all the concepts learned in class.
   1. **Utilize AJAX**  
      The web application must make use of AJAX to implement a more responsive web application. You need to come up with a creative way to add this to your web application. You must use it in a different way than the class examples discussed in class.
   2. **Custom User Control**The web application must utilize 2 Custom User Controls (ASCX) and it must be different from the class examples.
   3. **CSS Styling**The web application must use CSS to make your site look professional. You must write the CSS yourself and not use utilities like BootStrap.
3. **Design**

Points will be awarded for various aspects of design which include:

(1) Most effective implementation of the [step](http://cis-iis1.temple.edu/cis342/Lectures/Unit3/TermProject/TermProjectRequirements.htm#SixSteps)s.

[[(2) Good navigation among pages. Requiring the user to use the Browser Back and Forward buttons is extremely poor design. On each page, the users of the application should have every logical option of moving around the site.](#SixSteps)](http://cis-iis1.temple.edu/cis342/Lectures/Unit3/TermProject/TermProjectRequirements.htm#SixSteps)

[[(3) Appropriate Client-side and Server-side validation, with precedence being given to server-side wherever possible.](#SixSteps)](http://cis-iis1.temple.edu/cis342/Lectures/Unit3/TermProject/TermProjectRequirements.htm#SixSteps) You aren’t required to write client-side JavaScript. The application should make use of custom validation controls that are processed on the client-side, and you must implement server-side validation, too.

[[(4) Good placement and sizing of labels and controls. For example, you should not place a control with absolute positioning underneath a dynamically populated list (gridview, dropdownlist, etc.). When the control expands, it may cover the control. Another example is leaving extraneous controls on the screen. This occurs when you do not make proper use of visibility.](#SixSteps)](http://cis-iis1.temple.edu/cis342/Lectures/Unit3/TermProject/TermProjectRequirements.htm#SixSteps)

(5) Clear instructional labels regarding help the user perform tasks, and clear error messages.

(6) Good presentation of the web pages in regards to layout and alignments. Make use of CSS to style your pages.

(7) Equal work done by all members of the group. Members that cannot substantiate their work will not receive a grade on the project. If you are unable to answer questions or fix changes made to your application during a private meeting with me, you will receive a 0 on the project.

**Due:**  
See project posting under the Assignments section of Blackboard.

**Submission:**You need to publish your web application project to the cis-iis2 web server folder TermProject, upload zip file containing the solution with all your code to Blackboard, and provide a URL to your web application’s start page.

You need to zip the root folder for your solution into a single zip file and submit the assignment in Blackboard. To submit the assignment, you need to click the Assignment’s Title “Term Project” to view the submission form and upload the file.

**Make sure you properly submit your assignment and that it works. Programs that don’t run or don’t contain all the necessary files will not be graded and marked late.**

Please be sure to save your work periodically as you proceed and also back it up. You may want to store it on your flash drive. If you are going to zip an application in order to store it, BE SURE TO FIRST CLOSE Visual Studio. If you do store information on your flash drive be sure to copy it to a hard drive on your computer before working with the project.