Building Web Applications using MySQL and PHP (W1)

Final Marked Assignment (FMA)

Introduction

The FMA, which carries 75% of the total marks for this module, requires you to develop a simple online photo gallery application using PHP and MySQL.

The FMA deliverables need to be completed and submitted electronically in the assignment dropbox in Moodle by the appropriate deadline for your class.

Completing the FMA

You should work on your FMA both during and after the classes. Begin your work early, as the FMA is a substantial task that requires much planning and effort to complete satisfactorily.

Getting support

Support tutorials are usually available up to 2 weeks before the FMA deadline, depending on tutor availability. These sessions allow you to discuss plans, completed work or any problems you are experiencing in completing the FMA with your tutor in private, on a one-to-one basis. To check tutor availability and arrange a tutorial please contact your tutor by email or request an appointment in class.

FMA Specifications

Your Task

The photo gallery application should include the following aspects:

1. Each image is associated with a textual title and description.
2. The default application home page displays thumbnails of all the images that have been uploaded. Thumbnails must measure no larger than 150px by 150px, and the aspect ratio of the images must be maintained. Each thumbnail is presented with the image title.
3. Each thumbnail image links to a larger version of the image. An image no larger than 600px by 600px should be displayed, followed by the image title and description. Clicking on the large image should take the user back to the thumbnail page. Image aspect ratio must be maintained. Uploaded images should be reduced in size to measure no larger than 600 pixels in either width or height, but should never be enlarged if they are smaller than this size to begin with.
4. Any user can upload their own images to be included in the gallery. Only valid JPEG images should be accepted. Your application will be tested using a set of *benchmark images* that can be downloaded as a zip file from Moodle.
5. The application will include a simple JSON web service that can be used to retrieve the title, description, filename, width and height of the large version of any image that has been uploaded to the application. The data should be returned from the service as a JSON object. You should provide the URL of this web service in your application's readme.txt file as well as a description of any parameters that should be passed to it.
6. The application should be built with portability in mind so it can easily be deployed to alternative environments and/or locales. Your application should also be built with future modifications to the HTML that it generates in mind.
7. Feel free to style your solution with CSS as you wish, although any such styling does not gain you extra credit. All (X)HTML should validate to the specified DOCTYPE.

In addition to building the application described above, you are required to write a brief report describing the measures you have undertaken to protect the integrity of the data stored in your application should failures occur during the uploading or saving of images and image meta-data. In your report, you should also describe any failure points that have not been addressed.

Any deviation from these instructions must be agreed with your tutor.

Working towards a Solution - Some Hints!

- Consider how you are going to store your image data. Meta-data like titles and descriptions are usually stored in a structured database. Image files are usually stored as files on the file system.
- Thumbnails can either be generated once during the image upload process, or generated from the larger image and streamed directly to the browser by PHP. Consider the advantages and dis-advantages of each approach, and decide which you will take.
- Consider the failure points and other issues that may arise while multiple users are uploading files to the system and devise a strategy to ensure that they cannot adversely affect the integrity of the data stored in your application.

Deliverables for submission

You must submit the following deliverables in the Assignment Dropbox in Moodle by the stated FMA submission deadline for your class (replacing *username* with your actual ITS username):

1. A zip file containing all your PHP source files, your application's readme.txt and any MySQL table creation source files saved as **username_w1fma.zip**.

   Note: if you fail to submit a zip file containing all your source code then your work cannot be marked and you will be awarded 0% for this component.

2. Your learning/development log, saved as **username_w1fma.doc**. This should be a **brief** log of any problems you encountered during your work and how you solved them. It should also include your report on the application failure points.

FMA Solution

You must also deploy your solution in your BBK personal web space on the following URL:

http://titan.dcs.bbk.ac.uk/~username/w1fma/index.php

You should also include the full address of your application's home page in your readme.txt file. The readme.txt file should also contain full instructions describing how to deploy your application.

Getting feedback

Feedback on the marked FMA can be downloaded from Moodle and will normally be returned to you within 6-8 weeks of submission.

Backing up files

Always keep a back-up copy of all work submitted for assessment in case of unforeseen submission problems.

Plagiarism

Plagiarism, which is claiming the work of others as your own, is a serious offence and can result in your exclusion from all colleges of the University of London. You should be aware that we use a range of automated tools to spot potential plagiarism in work submitted for assessment. Providing you clearly reference work done by others that you have included in your FMA you will not be penalised.

Criteria for Assessment

You will gain maximum credit for a solution that uses solely your own original code. If you have used any code that is not your own in your solution, or have used other's work as a reference to develop your own code, the source should be fully referenced in code comments and in your learning log (see note about plagiarism above).

The criteria below show the proportion of the marks (out of 100%) that will be awarded for each component of the assignment:

1. **Thumbnail Display (14%):** Page displaying all thumbnail images with their titles.
2. **Single Image Display (14%):** Appropriately sized single image displayed with title and description.
3. **Image Upload (32%):** Input validated; Image processed; Failure points contained.
4. **Web Service (10%):** Well-formed JSON data; All required data present and correct.
5. **Application Design & Coding Style (20%):** Separation of concerns; Portability; Documentation; Well commented, readable PHP and SQL sources.
6. **Learning Log (10%):** Concise, clear description of problems encountered; Failure points identified and error handling strategy clearly described.

Note: No marks will be awarded for the following:

- The use of functions marked as *deprecated* in the PHP manual
- The use of non-PHP/MySQL technologies to achieve the required functionality
- Code which suppresses PHP error messages or attempts to alter PHP's configuration in order to suppress error messages.