Homework Assignment

Create a working proof of concept of one of the following applications which meets all of the minimum requirements. You can use many different programming languages to complete the assignment, but the majority of the code-base should not exceed these languages (** Please seek approval to use another language not on the list below **):

- HTML / CSS
- JavaScript
- PHP
- Python
- C#

The application should be sent with the following:

- All of the source code required for running and/or building the application
- A completed binary of the application (if applicable)
- Any required database files (if applicable)

Each application **requires** a **README**. Please ensure the **README** includes the following components:

- Which application you choose to develop and **why**
- How to **use/test** the provided application
- What Operating System (+ service pack) and libraries are required
- Any **design decisions or behavioral clarifications** that illustrate how your program functions and why
- If you use any external libraries or code-snippets, **you must** provide the following information for each (**credit must be given to others**):
    - Name
    - Version
    - Purpose
    - License
    - Website(s)
- What tools/libraries (and versions) are necessary to use and test your application

Note: Please ensure any database used will be easy for us to set up and use, and is documented in the **README** (self contained databases like SQLite and LevelDB are far easier to setup than MySQL, PostgreSQL, or other hosted databases).

*Please create **ONE (1)** of the following applications:*

Postcard Creator

Create a web application that takes image input from the user (e.g. drag and drop, file upload, web camera, etc.), modifies the image, and sends it as an email to a specified recipient.

Minimum Requirements

- Captures image data from the user (preferably from a webcam)
- Modifies the image data to contain a message (preferably using HTML canvas)
    - This must be done on-screen.
- The APP sends an email containing the modified image as an attachment
- On-screen instructions / help
- Graceful error handling

Bonus Points

- Support of multiple browsers
- History of previously sent images
- Full unit tests
- Integration test procedures
- Capture multiple images and create a gif
- Geotag images

Twitter App

Create a web application that interacts with Twitter and displays the tweets for a specified Twitter user or search term, optionally filtered by location. Please see Twitter's API for details (https://dev.twitter.com/).

Minimum Requirements

- Accepts a Twitter username, the number of tweets to display, a search term, and optionally a location string as input
- Displays the specified number of tweets for the specified Twitter user and/or the specified search term
- Displays useful error messages to the user (for example, if the username is not valid)

Bonus Points

- Ability to "drag and drop" cards to rearrange them on the page
- Ability to hide/remove cards from view
- Ability to login and post a tweet
- Accept multiple usernames
- Full unit tests
- Gets tweets from your current location using either the HTML5 geolocation API or by entering a location string

Authentication Server

Create a web application that securely authenticates people with a username and password. The server should then establish an active session with the client by returning a cookie.

Minimum Requirements

- Establishes an active session through the use of cookies upon successful login
- Returns a JWT (JSON Web Token) in the response
- Provides a way to validate the JWT on server
- Provides a way to logout in order to destroy the cookie and session

Bonus Points

- Implement two-factor authentication
- Store user information in a self contained database (e.g. SQLite, LevelDB, etc.)
- User account creation
- A client web page that uses the authentication service
- Full unit tests