Criterion B: Analysis

Proposed solution:

Jeff Braithwaite and I considered the following option:

- A website hosted by a service with an advertisement & recruitment screen as the main page with a form to send messages, the main page also has a login that redirects to another private page which includes hyperlinks to various Google Services, such as Google Forms, Google Calendar, Google Contact, and Google Drive.

Requirement specification

IT system requirements

- Hardware:
    - A PC capable of running the latest version of Apache Web Server(Or a hosting service)
        - Dual 2GHz+ CPU
        - 2GB+ RAM
        - 80MB database space
        - 1GB disk space
        - (Source:http://www.web-site-scripts.com/knowledge-base/article/AA-00505/0/Web-server-requirements-hardware.html)
    - Monitor
    - Keyboard & Mice
    - Device(s) able to go online to access the webpage with various screen sizes
    - The computer I will be programming on: Windows/Unix PC (4.2GHz AMD FX™-8150 Eight-Core Processor, AMD R9 380X GDDR5 4GB VRAM, 8GB Single Channel DDR3 RAM, 240GB SSD, 3.1TB HDD(s)
- Software
    - Apache Web Server(Or hosting service)
    - Filezilla (FTP)
    - Operating system to install web browser on top of
    - Operating System I will be programming on Windows 10
    - IDE(s) to edit HTML, CSS, Javascript, Database
    - Web Browsers such as Chrome, Firefox, Edge, Opera
    - Mobirise website builder

System interaction

1. Javascript used must work with browsers;
2. PHP must be able to work with the webserver;
3. Login system must be able to link to the database to authenticate users;
4. Hyperlinks to within the website and to external Google Services links must redirect correctly;
5. The website must be displayed correctly on all devices and browsers;
6. The form email plugin functions together with the website;

Input/output requirements

Input requirements

During Setup

1. Organization details:
    a. Troop Name - Troop 1453
    b. Contact details (email and telephone number)
    c. type of activities offered, a brief description of the activities
    d. Scouts Logo
    e. About Us text
    f. Hyperlinks to Google Services
    g. Database
    h. Gmail permissions to Google Services

After Setup

2. Userform Login: Username, Password
3. Hyperlink Clicks & Redirections
4. Details entered to the Messaging Form

Output requirements

- The main webpage has recruitment information, contact information, and a login screen that redirects to private pages with hyperlinks
- Private web pages that include hyperlinks
- Buttons must show up under the correct user status eg. admin/user
- Messaging form, the email received after each form submission
- Hyperlinks redirecting to Google Services that include:
    1. Google Calendar - A list of all events and activities
    2. Google Sheets - List of material borrowed and by who
    3. Google Sheets - Material requests such as badges
    4. Google Sheets - Duty Rosters
    5. Google Contacts - Contact Information
    6. Forms - Sign-up sheet for recruitment
    7. Shared Google Folder - Event Photos

Processing

- User signup & account creation
- User login & account verification
- Page redirection with hyperlinks
- User status verification eg. admin/user
- Form invalid input detection, and sent to the email

Security

- Since the database will contain students' personal details, the user login has to be created in a secure fashion.
- A method of granting permission to certain individuals only is necessary
- The redirection link that will have Google Services (excluding the Google Forms Sign-Up sheet) must have Gmail permissions to access the services.
- Regular backup to the webserver during the development phase
- The completed product will be backed up in case the production version becomes unavailable

Specific performance criteria (Criterion D test plan)

To test if the website meets Mr Braithwaite's requirements:

a) There will be a page titled "TROOP 1453 SERVICES" that has hyperlinks to Google Services such as Google Drive, Google Docs, Google Sheets, Google Forms

b) There will be a page titled "TROOP 1453 HOME" that has a messaging form and brief information about the troop

c) Forms are able to detect invalid input

d) Forms can send inputted data to the client

e) The solution can be used long-term, without much maintenance

f) The website is structurally consistent, across pages and multiple browsers.

g) Google Services hyperlinks cannot be accessed without being a member.

h) The database must be secure against unauthorized access, as there are privacy concerns over the hyperlinks that would have access to images/data. (Having a user-login system)

i) When a new user is created, they cannot log in without being verified by the user, and a new field is added to the admin page with the user and a checkbox to be verified

j) Admin can successfully verify a user and the user can successfully access the webpage after.

k) The webpage can be used cross-platform, on pc, laptop, mobile devices.

l) The website adapts to different screen/window sizes.

Justification of chosen solution

A website will suffice for Mr Brethwaite's problems, so long as that there is security against privacy concerns.

Continuing with Facebook was not practical. The platform was abandoned, and maintenance was a major issue, for both recruitment and information sharing. WhatsApp was used to share dates and plans but as messages populated and more people joined, it was more difficult to trace an older message and locate the link. A centralized platform, in this case, a website would be a better solution and it would have Google Services that serviced tasks that used to be done across different platforms and apps. This will allow a centralized location where scouts can access all available shared documents and provides an easier and more convenient service.

The solution would be compatible with Mr Braithwaite as anybody who can have access to an up-to-date browser can browse my website, without the need of installing any 3rd party software.

Only concern is to learn how to make a login system to the private page and access the hyperlinks. I should be able to learn that part within the time limit, using MOOCS and YouTube videos, alongside existing knowledge from ITGS classes.

A BSA logo will be used on the main page and a few photos to make the page easier to the eye, otherwise, no other existing data is needed.

The solution is free for both the client and me, as will be written in Visual Studio Code, a free program and website will be hosted by my school.

Addressing the client's privacy concerns, the website will have pages that can be accessed without login for recruitment but the rest will be protected with a user login. In case of a database leak, hyperlinks would not be accessible to the attacker as the Google Service possesses access only given to certain individuals. For admins, training for the use of the authentication system can be minimal, as they just need an admin account and as they log in they are faced with the admin page which lists all the new users waiting for verification.

If there is an edit that the client wishes to be made to the website in the future after I'm done, I can communicate with their webmaster and give him details.

Word Count: 379