

COMP2011: WEB APPLICATION DEVELOPMENT

COURSEWORK 2

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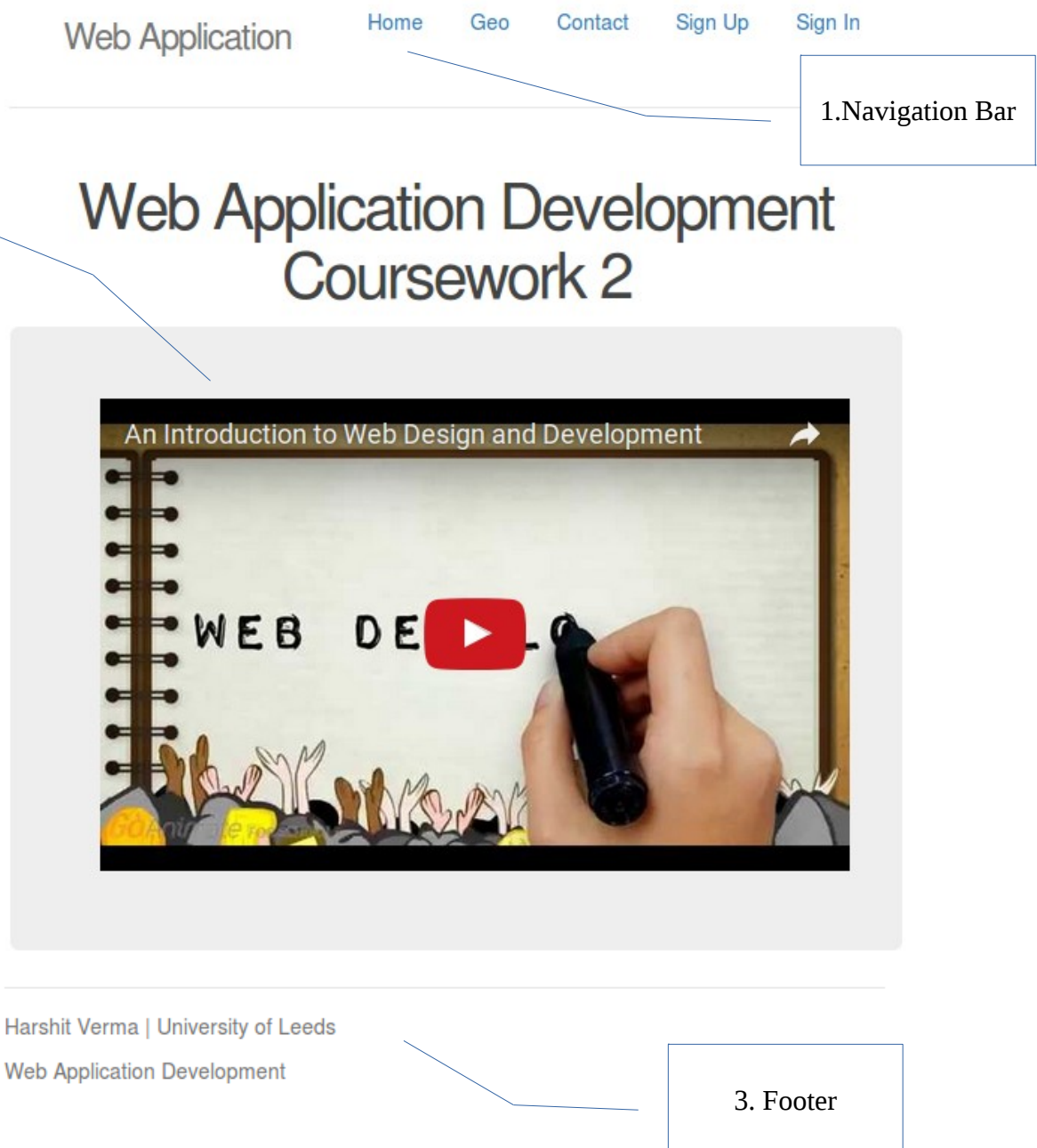
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DESIGN

- Layout of the home.html



Justification for design choice for home.html

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the page (Home Page):

This portion of the web page includes the information about the web page or about the coursework.

In this portion, I have included the video with proper heading which provides the full information about the content.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The video is a good example of memory aid.

3. Footer :

In footer section I entered some basic information as this is another common appearance element of most websites. This makes it look professional. I used the same black, grey and white colors according to my design.

- **Layout of the location.html**

Web Application

Home

Geo

Contact

Sign Up

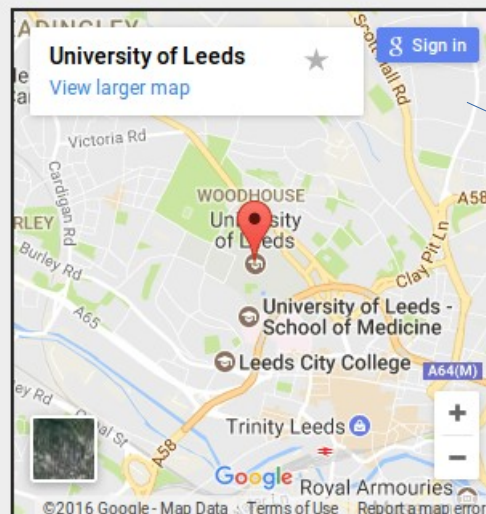
Sign In

1. Navigation Bar

GeoLocation

2. Top Landing
Portion of the
Page.

Geolocation is the identification of the real-world geographic location of an object, such as a radar source, mobile phone or Internet-connected computer terminal. In its simplest form geolocation involves the generation of a set of geographic coordinates and is closely related to the use of positioning systems, but its usefulness is enhanced by the use of these coordinates to determine a meaningful location, such as a street address.



Google Map
With Sign in
Feature.

Show my location

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3. Footer

Justification for design choice for location.html

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the page (Geo Location):

This portion of the web page includes the information about Geo location and user can easily check the location by clicking the button. It also provides latitude and longitude of the location. Color scheme of the 'show my location' button is appropriate according to the web site. I used the Google API map system for the geo location which includes sign-in feature. User can sign in through their Gmail account for the location. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

3. Footer :

In footer section I entered some basic information as this is another common appearance element of most websites. This makes it look professional. I used the same black, grey and white colors according to my design.

- **Layout of the contact.html**

Web Application Home Geo Contact Sign Up Sign In

1. Navigation Bar

2. Top Landing Portion of the Page.

Contact

Name

Email

Subject

Message

Send

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3. Footer

Justification for design choice for location.html

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the page (Contact):

I included the contact portion in the web page which allows users to interact with the admin if they have any problems. It makes the website more appealing and professional. I also used the hovering system for empty boxes and buttons. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

3. Footer :

In the footer section I entered some basic information as this is another common appearance element of most websites. This makes it look professional. I used the same black, grey and white colors according to my design.

- **Layout of the Sign up.html**

Web Application Home Geo Contact Sign Up Sign In

1. Navigation Bar

Sign up

First name

Last name

Email

Password

Create account

2. Top Landing Portion of the Page.

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3. Footer

Justification for design choice for signUp.html

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font

color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the page (Sign Up page) :

This portion of the web page allows the first time user to register for the website and go to the main page of the website. I provided the basic things for the registration like first name, lastname, email address and password.

I have also added some other features like- email address is already in use, wrong passwords which provides the professionalism to this website.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

3. Footer :

Same as all other web pages in the website. Keeps the consistency throughout the whole website. Consistency keeps the professional manner.

- **Layout of the signIn.html**

Web Application

Home Geo Contact Sign Up Sign In

1. Navigation Bar

2. Top Landing Portion of the Page.

Sign In

Email

Password

Sign In

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Web Application Development

3. Footer

Justification for design choice for signUp.html

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the page (Sign Up page) :

This portion of the web page allows the users to log in for the web site. Log in section will only work if users are already registered otherwise they can't log in. I provided the basic thing for the sign in like email address and password.

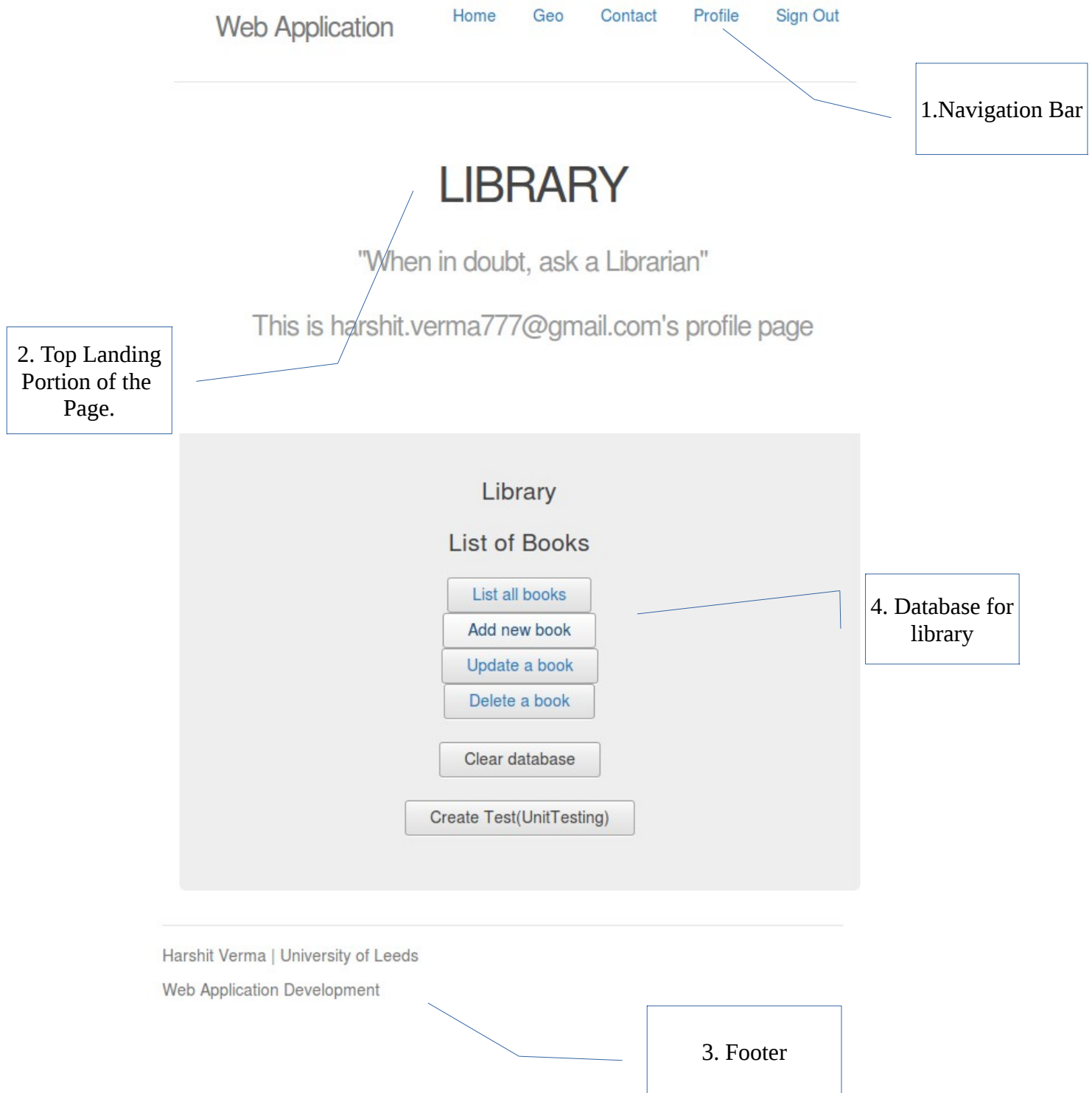
I have also added some other features like- if email address and password is wrong then it will show the error message. This provides the professionalism to this website.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

3. Footer :

Same as all other web pages in the website. Keeps the consistency throughout the whole website. Consistency keeps the professional manner.

- **Layout of the profile.html**



Justification for design choice for profile.html

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font

color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the page (profile.html page) :

This portion shows the first page after Log in which is about the library database. It includes the buttons for the different categories like – list of all books, add new books, etc. I have also added the delete and create test button which is kind of unit test. This provides the professionalism to the web application.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

3. Footer :

Same as all other web pages in the website. Keeps the consistency throughout the whole website. Consistency keeps the professional manner.

4. Functions given on the page :

I provided the categories of the database on this page, which allows user to understand about the website. I have used the same colors for this section to maintain the consistency with my design theme.

- Layout of the profile.html(listBooks.html)

The screenshot shows a web application layout for a library profile page. The layout is divided into several sections, each labeled with a number and a description:

- 1. Navigation Bar:** Located at the top, it contains the text "Web Application" and a list of links: "Home", "Geo", "Contact", "Profile", and "Sign Out".
- 2. Top Landing Portion of the Page:** This section contains the word "LIBRARY" in large, bold, black letters, followed by the quote "When in doubt, ask a Librarian" in a smaller, italicized font.
- 3. Footer:** Located at the bottom, it contains the text "Harshit Verma | University of Leeds" and "Web Application Development".
- 4. Functions:** This section contains a table titled "List all books" with three columns: "Code", "Name", and "Year". The table lists three books: "Computer Architecture" (Code: 12345, Year: 2000), "Harry Potter" (Code: 21547, Year: 1999), and "Introduction to Mathematics" (Code: 64874, Year: 2008). Below the table is a blue button labeled "Back".

The table data is as follows:

Code	Name	Year
12345	Computer Architecture	2000
21547	Harry Potter	1999
64874	Introduction to Mathematics	2008

Justification for design choice for profile.html(listBooks.html)

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font

color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the profile.html(listBooks.html) :

After getting logged in, user can go through all categories to create database according to their choices. Here, user can see the list of all books.

I have added the 'Back' button to go previous page i.e profile.html. This provides the professionalism to the web application.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

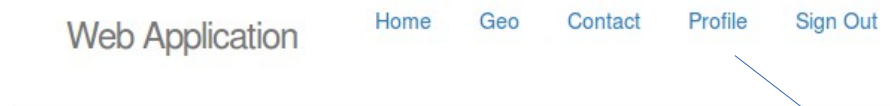
3. Footer :

Same as all other web pages in the website. Keeps the consistency throughout the whole website. Consistency keeps the professional manner.

4. Functions given on the page :

I provided the List of Books category to see the previous saved books of the users which allows users to keep track of their library. I have used the same colors for this section to maintain the consistency with my design theme.

- Layout of the profile.html(createBook.html)



1. Navigation Bar

LIBRARY

"When in doubt, ask a Librarian"

Create a new book record

Code:

Name:

Year:

Save

Back

4. Functions

3. Footer

Justification for design choice for profile.html(createBook.html)

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font

color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the profile.html(createBook.html) :

After getting logged in, user can go through all categories to create database according to their choices. Here, user can create new book records and add to the previous list..

I have added the 'Back' button to go previous page i.e profile.html. This provides the professionalism to the web application.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

3. Footer :

Same as all other web pages in the website. Keeps the consistency throughout the whole website. Consistency keeps the professional manner.

4. Functions given on the page :

I provided the create new record function which allow users to add more books in library. I have used the same colors for this section to maintain the consistency with my design theme.

Justification for design choice for profile.html(updateBook.html)

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font

color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

2. Top Landing Portion of the profile.html(updateBook.html) :

After getting logged in, user can go through all categories to create database according to their choices. Here, user can update the previous book records which allow user to change the records according to their choice and according to time.

I have added the 'Back' button to go previous page i.e profile.html. This provides the professionalism to the web application.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

Top Landing Portion of the profile.html(deleteBook.html) :

After getting logged in, user can go through all categories to create database according to their choices. Here, user can delete the previous book records or current ones which allow user to change the records according to their choice and according to time.

I have added the 'Back' button to go previous page i.e profile.html. This provides the professionalism to the web application.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

3. Footer :

Same as all other web pages in the website. Keeps the consistency throughout the whole website. Consistency keeps the professional manner.

Justification for design choice for profile.html(deleteBook.html)

1. Navigation Bar:

I used horizontal navigation bar style as it looks modern and interactive due to being collapsible. This allows the users to interact with the site and to view the pages without the navbar overlapping the content. I used white background and black and blue font

color. I also used the hovering system for navigation bar. The colors I used were black, grey, blue and white as there is contrast so it is visually appealing as well as it being simplistic suiting my design. The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected. The navbar has all the multiple pages so that the users can navigate easily.

Top Landing Portion of the profile.html(deleteBook.html) :

After getting logged in, user can go through all categories to create database according to their choices. Here, user can delete the previous book records or current ones which allow user to change the records according to their choice and according to time.

I have added the 'Back' button to go previous page i.e. profile.html. This provides the professionalism to the web application.

The colors are used across the site and are consistent with my design theme. The fonts are large and easy to read as well as being spaced out so it can easily be selected.

3. Footer :

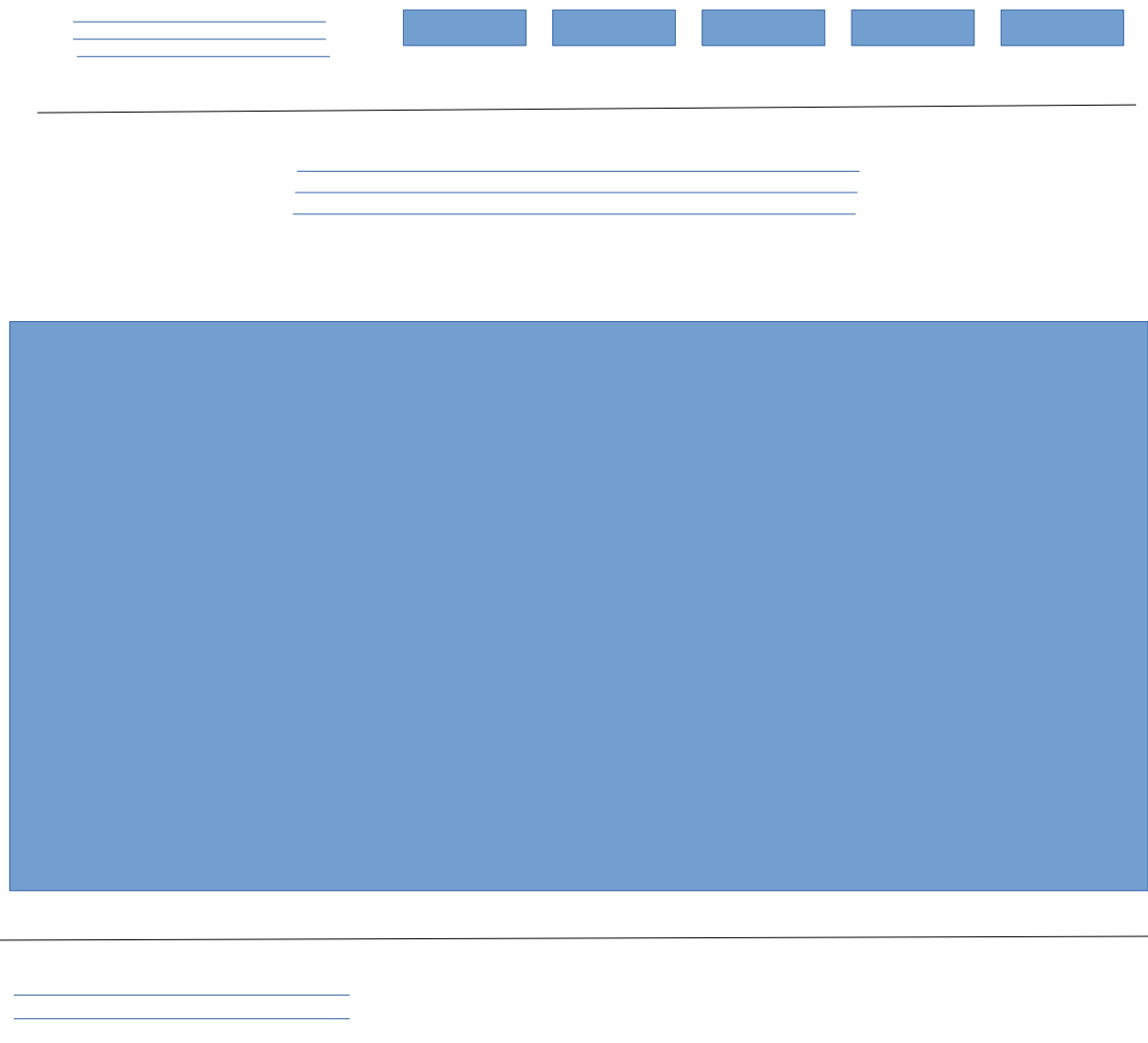
Same as all other web pages in the website. Keeps the consistency throughout the whole website. Consistency keeps the professional manner.

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Justification for design choice for signout.html

It allow users to sign out the from the website.
User can also start their website where they left off; if they don't sign out.

WIRE-FRAME MODEL



EVALUATION OF IMPLEMENTATION

TEST PLANS :

S.NO	TEST	EXPECTED	ACTUAL
1.	Test for all html pages	All html pages should work properly. All pages should display correct contents.	All pages are working as they should.
2.	Test CSS3 features and files	All CSS3 files and features should implement properly like – hover, button, font etc.	All CSS3 files and features are working properly as they should.
3.	Test JavaScript files and functions.	All JavaScript functions should work correctly like callback etc.	All JavaScript files and functions are working properly as they should.
4.	Test for links	All links should work properly and there should no dead links in the web pages.	All links are working properly as they should and there are no dead links are present in web pages.
5.	Test for navigation bar	Every navigation bar should connect to different pages and and from every page user should be able to navigate to every other page of the website.	Navigation bar is working properly as it should.
6.	Test for text being displayed correctly	All displayed text and inputs should be in proper alignment, colour,font and size.	Text of the every content section of web pages are displayed properly.
7.	Test for each and every section of the web pages to display the correct background colours/image	The correct CSS3 background colours to be displayed correctly in each section of the web pages.	Background colours and images are working properly as they should.
8.	Test for Sign In section on the web page	Sign In section of the web page should work properly. It should shows wrong user name/password when user enters incorrect user name or password.	Sign in section is working properly as it should. It is linking to the page when user enters correct user name/password and it shows incorrect user name / password when user enters wrong data.
9.	Test for Sign Up section on the web page	Sign up section of the web page should work properly. It should shows incorrect email id when user enters wrong email id for registration.	Sign up section of the web page is working properly as it should.

10.	Test for Bootstrap	All Bootstrap functions and forms should work properly like for table, button , column and ow of web pages etc.	All Bootstrap function and forms are working properly as they should.
11.	Test for database files	It should create database correctly for the web application.	It is creating databases correctly for the web application.
12.	Test for run.py file	It should run the whole database correctly.	It is running the whole databases correctly.
13.	Test for test.py file	It should test the databases if it worse in regards to my requirements or not.	It is working properly.
14.	Test the security section of the web page.	It should be secure website or web application.	It is working properly.
15.	Test for dynamic website	It should work for all browsers properly. It should be dynamic, if user is trying to minimize the web page it should not be collapsed the contents.	It is working properly and the website is dynamic. It is working for most of the browsers.
16.	Test for session	It should provide connection-oriented communication	It is working properly.

RECOMMENDATION (How to improve/impact the website)

I added these extra features to make the site as visually appealing as I could as well as being compatible with other devices other than the one I used to create it. These features add to professionalism and enhanced the website. The navigation system was much better as users could collapse the navbar to ensure content was not being overlapped. Even though I added more content I ensured the website theme was prevalent throughout.

I will add more jQuery and JavaScript elements. This would make the site more dynamic. I would add more proper colour to make it more appealing and visually enhanced. I would add some other extra features for to do list to make it more advance and keep it interesting and interactive. I would also add more contents and include more features where the user is more engaged.

Another recommendation would be assessed the website and get some feedback from some users before I finalise the site thus I am able to get the users input and implement solutions or tackle any confusion caused.

SECURITY

Description of Potential Security

Web Application Security is a branch of information security i.e. it prevent the web application from unauthorized access. Web application security draws on the principles of application security but applies them specifically to internet and web systems.

The SQL Server Database Engine security functionality includes highly granular authentication, authorization, and validation mechanisms; strong encryption; security context switching and impersonation; and integrated key management.

These decisions include:

1. What actions those users should be allowed to take on the data.
2. Whether authorization to data should be centrally controlled or locally controlled.
3. How tightly controlled access to those systems should be. For example, should a user password be required when a conversation is started by a remote user?
4. If special precautions should be taken because multiple systems are being linked.

Mitigated to remove/reduce security issues impact

There are various number of solutions to protect the web applications, websites and web servers and we can implement those high level solutions while designing, building and testing secure web applications. These high level solutions are:

Firewalls : Web application firewalls provide protection at the application layer. It is firewall type of protection for web application.

Web Application Security Scanner: It scans the potential security vulnerabilities in the web application. It communicates with a web application through the web front-end.

Fuzzing: It is software testing technique which is used for input testing.

White Box: It is a method to test software that tests internal structures and workings of a web application.

Demonstration an understanding of handling requests

Understanding the handling of request and response data when you make a request to an API proxy, you can pass any or all of the following information, depending on the way the API proxy is configured:

- Request headers
- Query params
- Form data
- Resource URIs

By default, all data in a request is passed unchanged from the ProxyEndpoint to the TargetEndpoint. Therefore, when the TargetEndpoint makes the request to the backend server, all information in the original request is passed to the backend service. The same is true for the response received by Edge from the backend service. By default, all data received in the response is passed unchanged to the app that originated the request.

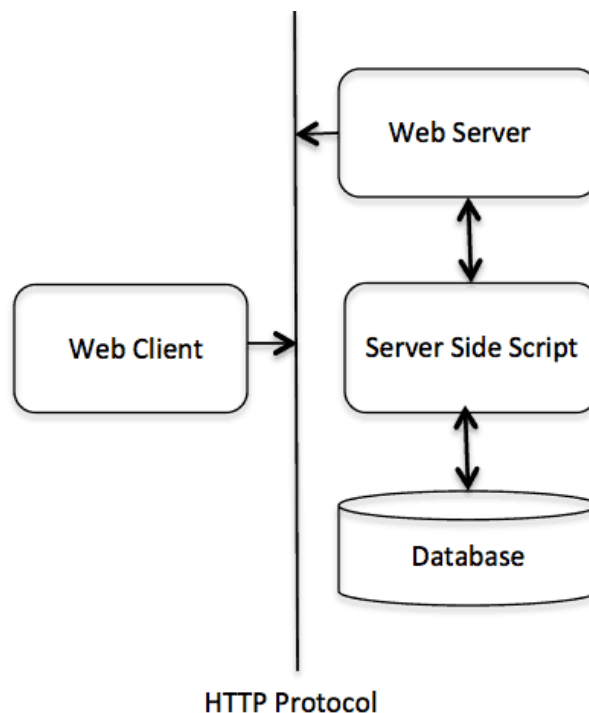
Demonstration of an awareness of the main features of HTTP

The Hypertext Transfer Protocol (HTTP) is an application-level protocol for distributed, collaborative, hypermedia information systems. Basically, HTTP is a TCP/IP based communication protocol, that is used to deliver data (HTML files, image files, query results, etc.) on the World Wide Web. The default port is TCP 80, but other ports can be used as well. It provides a standardized way for computers to communicate with each other. HTTP specification specifies how clients' request data will be constructed and sent to the server, and how the servers respond to these requests.

Main Features: Hypertext Transfer Protocol is connectionless i.e when browser initiates a request, client disconnects from the server and waits for response. After while, server process the request, connect with the client and send a response back.

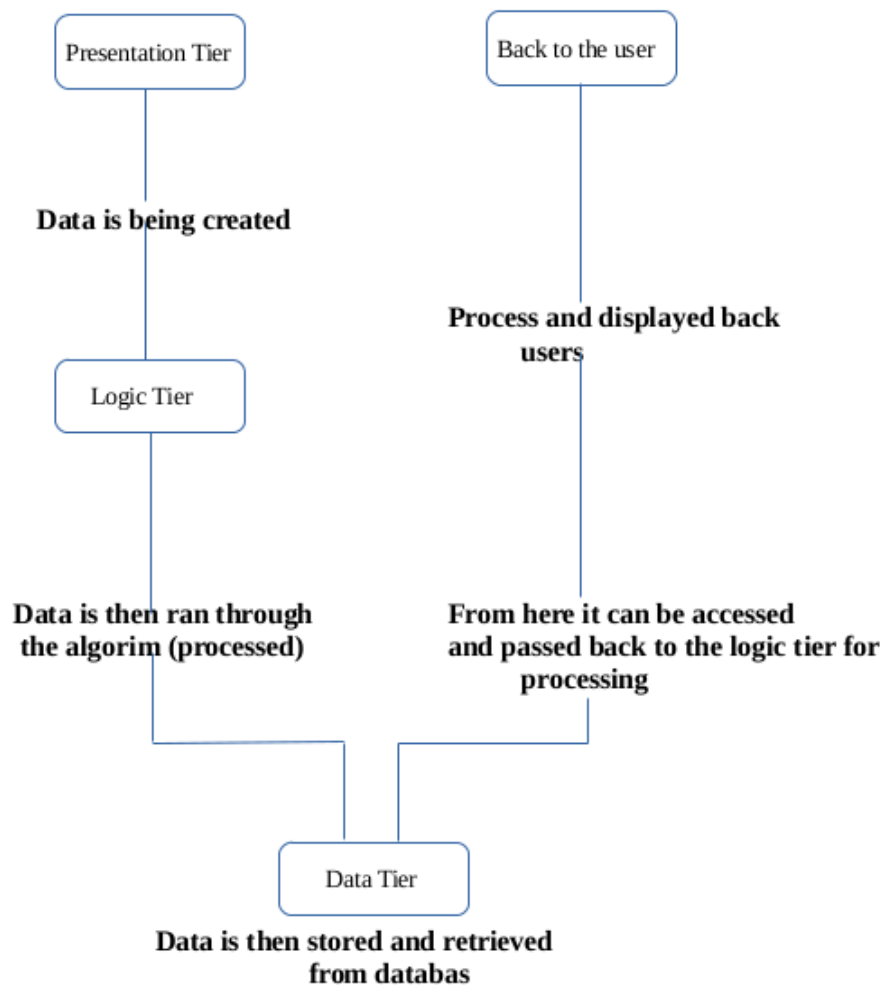
HTTP is stateless protocol. Server and client are aware during present request that's why both client and server can not retain the information when various requests are initiating across the web sites/web pages.

HTTP can send any type of data as long as server and client knows to handle the data content. It makes HTTP independent protocol.



3 – TIER ARCHITECTURE

The presentation tier allows the front end of the application to be used, this is where the user would select what to store inside the database, and then would be sent to the logical tier, this is where the end of the program is taken into action and then the data is sent to the data tier where it is interpreted and used within the database and stored. For example of these three tiers combined this would be the user makein a note and then the software runs built into the database and it is then sent and stored into the database side for the user to then decide what happens and how long it remains there.



Three-Tier Architecture

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REFERENCES

- www.w3schools.com/
 - <http://flask.pocoo.org/>
 - <https://soc-dm.leeds.ac.uk/module/18/listing> (Dr. Sam Wilson)
 - <https://www.tutorialspoint.com>
 - https://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol
 - <https://www.codeproject.com/>
-