

Project Report

Product Name	Applied Degree in Software Engineering (BDSE)
Qualification Name	Applied Degree in Software Engineering
Product Name	Front End Web Development
Module Name (BDSE)	Front End Web Development

Learner name	Assessor name	
I PUTU ANTA MAJA DITHA		
Date issued	Completion date	Submitted on
17 th February 2023	21 th February 2023	

Project title	Development of ABC Learning Center Website
----------------------	---


Learner declaration	
I certify that the work submitted for this assignment is my own and research sources are fully acknowledged.	
	
Student signature: I Putu Anta Maja Ditha	Date:

Table of Contents

1. Information Architecture.....	4
2. Wireframes.....	7
3. Storyboard.	17
4. Implementation.	19
5. Testing.	31
6. Develop jQuery Menus & Tabs.	36
References.....	38

Development of ABC Learning Center Website

Purpose of this project

Purpose of this project

To demonstrate your capabilities in the following areas:

- Plan a Website & Develop branding, wireframes, information architecture & storyboard.
- Develop a website using HTML, CSS & Javascript.
- Develop jQuery Menus & Tabs
- Execute the test cases and validate the website meets the design requirements.

Submission Format

1. Website screenshot in word document
2. Source code

Project Brief & Guidance

Scenario:

You have been approached by 'ABC Learning Center' as a website developer to develop a company portfolio website for their institute. 'ABC Learning Center' is an IT Training institute that conducts courses like 'Programming in Java', 'Programming in .Net', 'Microsoft Office', 'HTML' etc. They want to design a website which can be used for providing information about their courses to students.

You will be required to design and develop this website using HTML, JavaScript, and CSS.

You will be required to design following pages for the website –

1. Common Content
 - a. Header
 - b. Footer
 - c. Navigation
2. Home Page
3. About Us Page / Profile Page
4. Contact Us Page (Develop 1 Html page)
5. Course Details Page (Develop 2 pages, 1 for each course)
6. Course Schedule Page (Develop 2 pages, 1 for each course)
7. Sitemap Page (Develop 1 HTML page)
8. Privacy Policy Page (Develop 1 HTML page)

The website that you have developed needs to be tested by you and final sign-off should be taken from 'ABC Learning Center' (Mentor) before hosting it on their web server.

1. Information Architecture.

Information Architecture is the process of organizing, labelling, and structuring usually used in a digital content in a way to make it easy to find and understand.

We need to create a well-built Information Architecture to help maintain visitor to stay in the web, and boost website SEO because it's easy to use and remember, meaning the web will show on the top page of the search engine.

Information Architecture has a concept of attributes. Attributes are used to describe something for example, an animal by their shape, color, characteristics, behaviour and many more. Information Architecture can have attributes that describe packages or objects within the package, package means text, video, image or anything similar. These attributes can be divided into physical attributes like a number of words within a paragraph and abstract attributes such as context within a text. To make Information Architecture become more efficient attributes should always be applied to the contents, and might also include logic on how attributes relate to each other.

How to design Information Architecture:

1. Define user goals

The first step to make Information Architecture is defining user goals, by doing this will help us to conceive what will be in our top level pages and you want users to do.

2. Group content

Next step once we have our main page is start grouping content within the page and organize it.

3. Sort by usefulness/priority

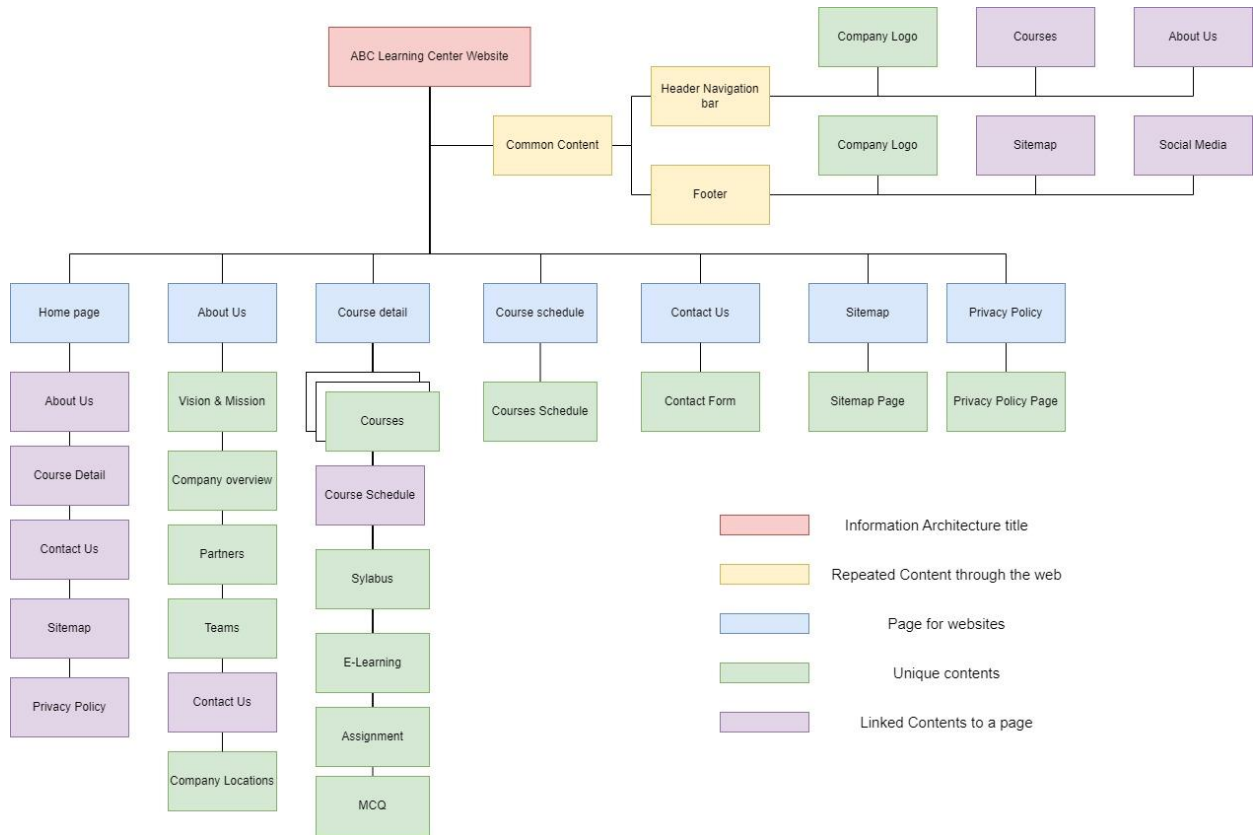
The next part is deciding priority for each page and content this will help the users find main content easily

Creating a well thought Information Architecture can have many benefits:

- Information Architecture makes it easier for the user to find the information about the product leading a better User Experience.
- Information Architecture helps to organize information logically making user easier to understand and remember.
- Information Architecture can give a general overview of a product, this provides us a big picture of the product so we can easily manage and update the content of the product.
- A well created Information Architecture helps translate plan into work easier, helps identify missing content in the product.

Development of ABC Learning Center Website

Based on the Scenario Given, the Information Architecture and explanation below:



Picture 1 ABC Learning Center Website Information Architecture

Content	Description
Common Content	Common Content is a content that can be seen commonly in the any page in the website, this includes Header and Footer.
Header	Header is a common content, it contains Company's logo, About Us and Account Management content page inside it.
Footer	Footer is a common content, it contains Company's Logo, Sitemap and Privacy Policy content page inside it.
Company Logo	The company logo will be an image that can be clicked, and when the logo is clicked it redirect user to homepage.
Homepage	The homepage is the page that user will visit the first time they visit the website, it contains many main features that are linked to many pages
About Us	About Us content used to tell the user all about the company, it contains Vision & Mission, Company Overview, Company History, partners, teams, Company Awards, Contact Us Pages, Company Locations and embedded google maps to show where the main Company located at.
Courses	Courses content include courses, syllabus, course schedule, e-learning, assignment.
Contact Us	Contact Us allow users to contact company through email and whatsapp.

Development of ABC Learning Center Website

Sitemap	Sitemap contains link of topic and things which is on the web.
Privacy Policy	Contains a link that will direct into company's Privacy Policy.
Vision & mission	Contains a statement details about where the companies aspires to go and defines company's business, objectives, and how the companies will achieve it.
Company Overview	Provides an overview about the company, students graduated, achievements, courses, many more
Partners	Contains any other companies partnered up with the company.
Teams	Provides brief information about Staff at the company.
Courses	Contain many course that is available in the website.
Syllabus	Contains a roadmap or an outline of a course.
Courses schedule	Contains a schedule detail for each courses.
e-learning	Contains all learning materials needed to learn and complete the course for learners.
Assignment	Contains set of questions related to e-learning to evaluate the knowledge of the learners.
MCQ	Multiple Choice Question to Evaluate learners during Course.
Contact form	A form to contact customer service can be used for asking questions and give feedback to the company.
Sitemap page	A page contains all related topics and site in the website.
Privacy policy page	A page contains company's privacy policy.
Social Media	List of Company's social media

On the ABC Learning Center Website Information Architecture image, there is few level of priority, the level is already sorted from the highest priority starting from Homepage to Privacy Policy respectively and element below it represents content that will be inside the respective page. The line on the picture describe has-a relations.

2. Wireframes.

Wireframe is a two dimensional visual representation or a skeletal frame of a digital product's interface such as website or a mobile application. Its usually focused on creating space allocation, content prioritization, functionality, and behavior. For these reasons wireframe usually doesn't have any graphics, color, and styling.

Wireframe can be created using many kinds of tools, including pencil and paper, design software, or specialized application for wireframing and prototyping, the detail and complexity of a wireframe will differ based on the needs of the project, but usually wireframe will be kept simple and focusing on the only main element such as layout, structure, functionality of the page or screen.

Wireframe process tends to take place during early phase of the product life cycle this is a crucial step in the design process as the allow developers, designers, and stakeholders to experiment with many concept of design and plan user experience and flow of the product, this phase also helps detects potential issue before moving into the next phase and wasting resources. Wireframe is used to communicate between user, designer, and stakeholder. It can take feedback from users, make a discussion with the stakeholders, and ideas from designer.

There are three types of wireframes, what distinguish them are the amount of detail they have:

1. Low fidelity wireframes
Is a basic visual representation and usually are a design starting point, tend to have rough contents created without any sense of scale.
2. High fidelity wireframes
The most commonly used. This type of wireframes feature more accurate visual of the layout the detail if focused on specific components and features are clearly differentiated from each other.

Wireframes serves three purposes:

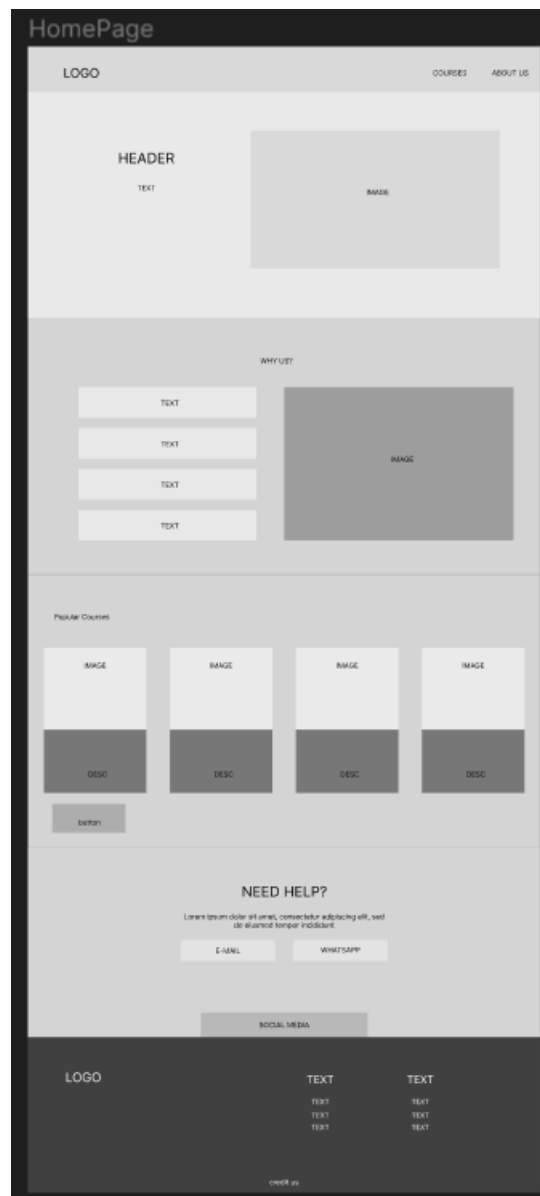
- Wireframes keep the concept user-focused
Doing user testing during early wireframing phase allows designer to have honest feedback and identify key-pain points that can help develop the product.
- Wireframe clarify and define website features
By wireframing specifics feature on the product will help the user to understand how it will function in general also allow to visualize how the wireframe work together and removing some parts if its doesn't quite connected with the rest of the page's elements.
- Wireframes are quick and cheap to create
Wireframes are quick and cheap to create, even if you only have pen and paper you can quickly make a wireframe without spending money, there are also many free digital tools to make wireframe.

Benefits of using wireframe:

- Provides visual representation that can be used to review with client.
- Ensuring the functionality and the content is positioned correctly based on user and business needs.
- Can be used to communicate between designers, users, and developers.
- Clarify consistent ways to display information in user interface.
- Sort more prioritized contents.
- Update and remove any features without wasting resources.

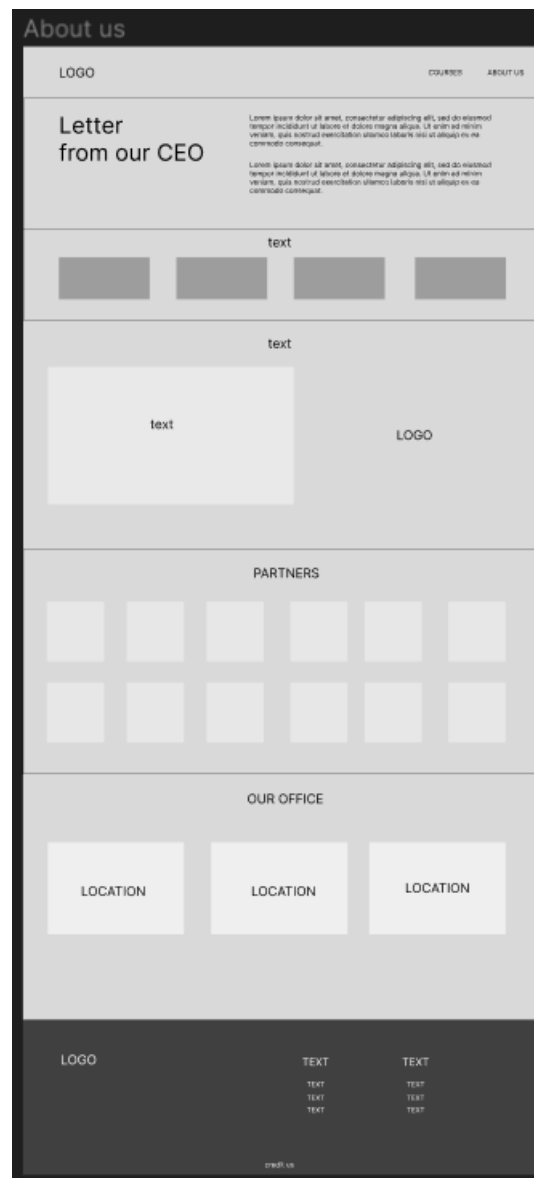
Based on the scenario given, after we make the Information Architecture, the wireframe would be below:

Development of ABC Learning Center Website



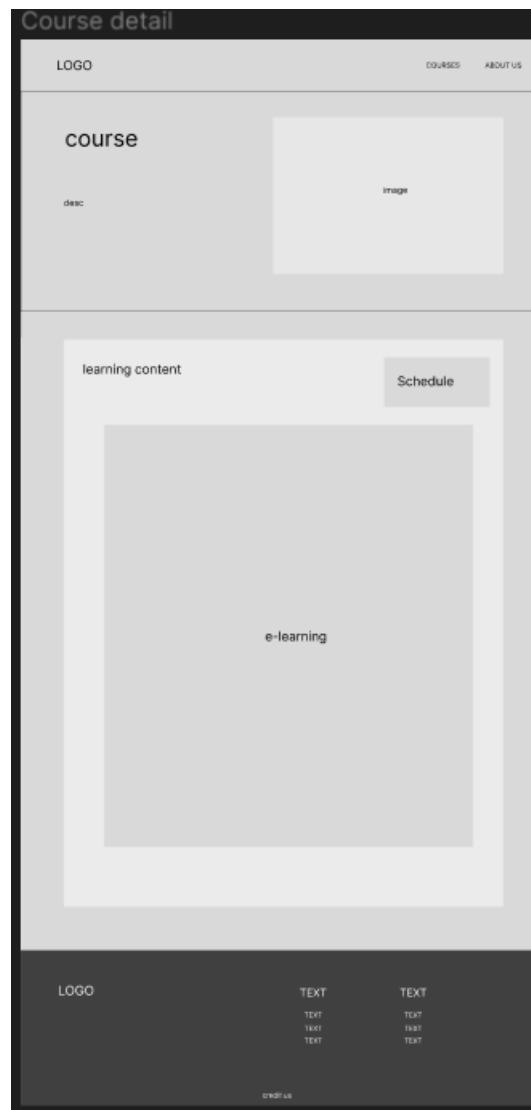
Gambar 2. 1 Homepage Wireframe

A homepage is where the user will landed the first time they visit the website. The homepage usually contain all main features needed, in this case the main features in this wireframe are About Us, Course Details & Schedule, Contact Us, Sitemap, Privacy Policy page. Additional features added on this wireframe is logo on the navigation bar, header banner, about the company, social media contact, and sitemap on the footer.



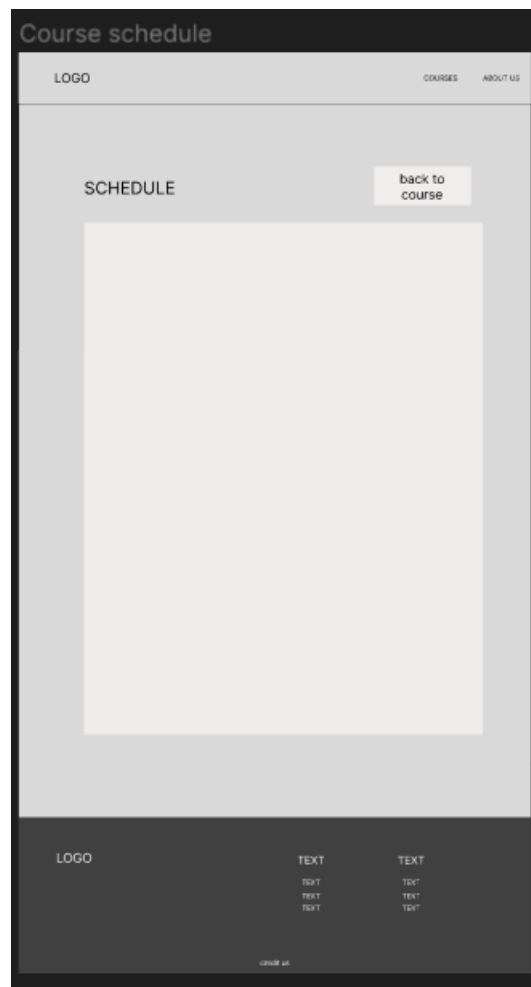
Gambar 2. 2 About Us page wireframe

An about us page wireframe can be found on the link in the navigation bar and can be clicked to get to this page. is used to tell the user all about the company, starting from the company vision & mission, company overview, history of the company, all company's partners, and embedded google maps to tell the user where the company located at.



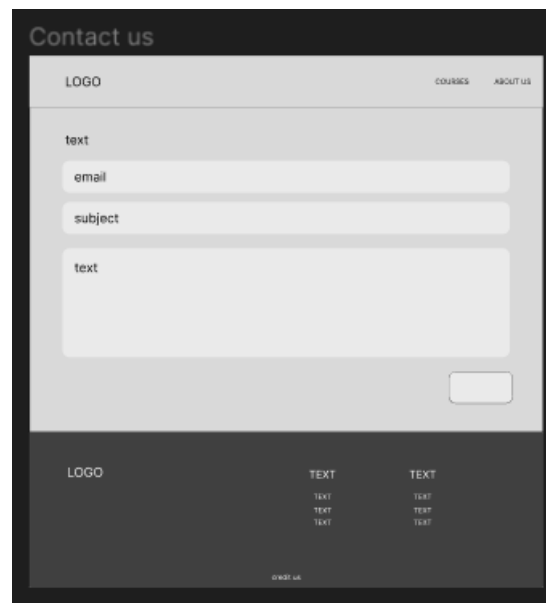
Gambar 2. 3 Course Details wireframe

The course detail page can be found through homepage in the main content. This page is used to give a detailed information to the visitor about the course that is available on the website. Its contains many features such as course description banner, learning content is where the user will learn and will have many types of contents such as text, videos, slides, assignment, and side navigation is to track the current learning content and will tell the user what they will learn after finishing the current learning content.



Gambar 2. 4 Course Schedule Wireframe

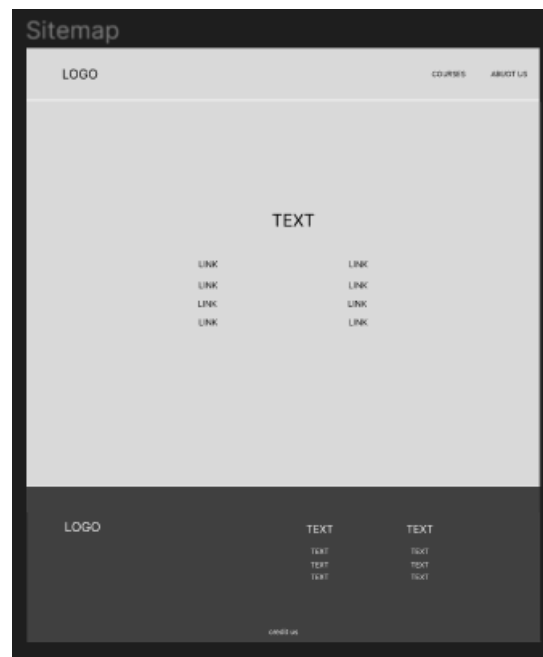
The course schedule page can be found through the course detail pages, it is located at side navigation this page will embed learning calendar and is used to tell the user about important timeline on the learning by the company.



Gambar 2. 5 Contact Us Wireframe

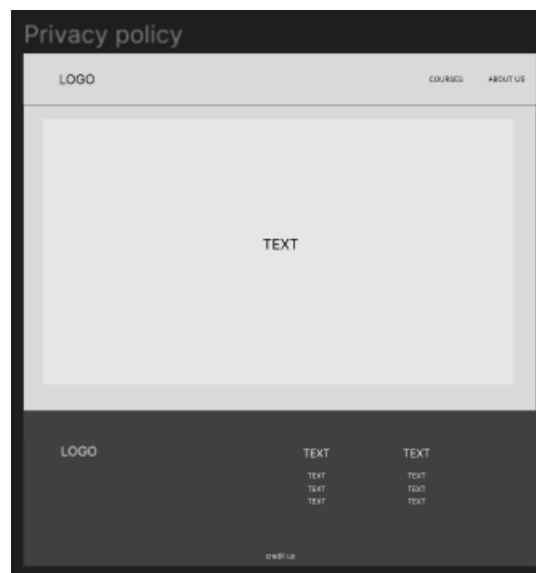
The contact us page can be found through homepage on the main content near the footer. The contact us feature have many ways for the user to contact the company, by email, whatsapp, or any other social media that is listed on the page, this wireframe is only for when the visitor want to contact the company by email, if the user choose other social media they will be redirected to company's social media page. This page can be used to take any question asked, critics and feedback from the user.

Development of ABC Learning Center Website



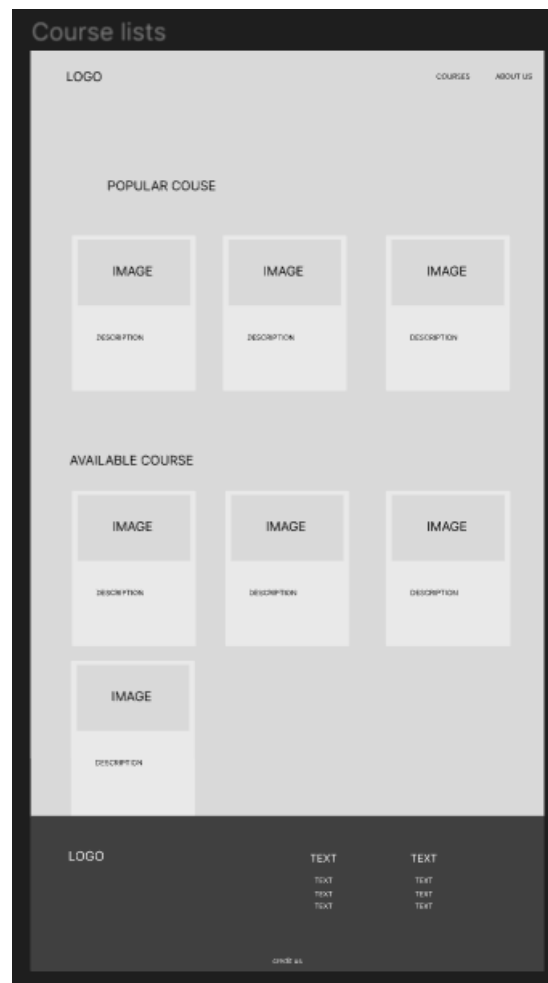
Gambar 2. 6 Sitemap Wireframe

The sitemap page can be found through footer that is available on all pages, it contains all related topics and features that is available on the website it is used to make the user find and navigate the topic they need easier.



Gambar 2. 7 Privacy Policy Wireframe

The Privacy policy page can be found through footer that is available through all the pages, it contains the company's privacy and policy statement to the user.





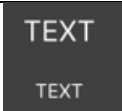
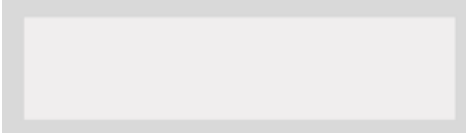


Gambar 2. 8 Login Page Wireframe

The Courses list page can be found on the header navigation that is available on the all pages, it contains the page for the user to search available course on the website.

Development of ABC Learning Center Website

On the wireframes above there is many common content such as

Content	Description
 A horizontal navigation bar with a light gray background. It contains the word "LOGO" on the left, and "ABOUT US" and "LOGIN" on the right, separated by a small gap.	This common content is navigation bar it can be found in all the pages available and is used for user to navigate the website.
 A dark gray footer area. It contains "LOGO" on the left, followed by three columns of "TEXT" in the center. At the bottom, it has "SITEMAP", "PRIVACY POLICY", and "credit us" on the right.	This common content is footer, it can be found in all the pages available and have many contents available such as sitemap, privacy policy page.
 A large gray rectangular placeholder for an image, centered within a white container.	This common content represents image on the particular feature.
 A light gray rectangular placeholder for a logo, centered within a white container.	This common content represents the logo of company and will be linked to the homepage so that when the user click the logo it will redirect user.
 A dark gray rectangular placeholder for text, centered within a white container.	This common content represents text on the website, it can be text, links, or even paragraph.
 A light gray rectangular placeholder for a blank feature, centered within a white container.	These blank feature on the wireframe represents certain feature on the page such as a form, button, or embedded feature.

3. Storyboard.

Website storyboard is a visual representation of the elements and sequences of a website and used to communicate the user experience and design of a website, usually include wireframes that shows the whole layout and structure of each pages.

A website storyboard can be created using many tools such as graphic design software, or specialized wireframing and prototyping app, we need to use website storyboard to establish a clear structure and relationships between page or elements.

The main purpose of website storyboard is to help designers, developers, and stakeholders to plan and discuss the user experience and design of a website, it provides a visual flow of a website and allow easy changes to be made to the structure, layout, and functionality of a website, a well build website storyboard also help to ensure all the team members are on the same page working to the same goals, and can save times by identifying potential problem during development.

Creating a website storyboard bring many benefits, such as:

- Outlining a design
- Defines each elements that need to go on each page
- Shows the navigational architecture and information flow to the team and demonstrate how the pages are to work together to provide a great user experience.

Website storyboard provide an abstract view or conceptual of a design website which allow us to see what is contained on the website and how it will organized, three types of storyboards are:

1. Presentation storyboard

Used to show a visual and solidify a design model for example an architectural sketch of a new home. On the final of this storyboard type the project management should have a clear concept framework from which to begin executing actual design, once it approved presentation storyboard can be used to create an execution plan.

2. Production storyboard

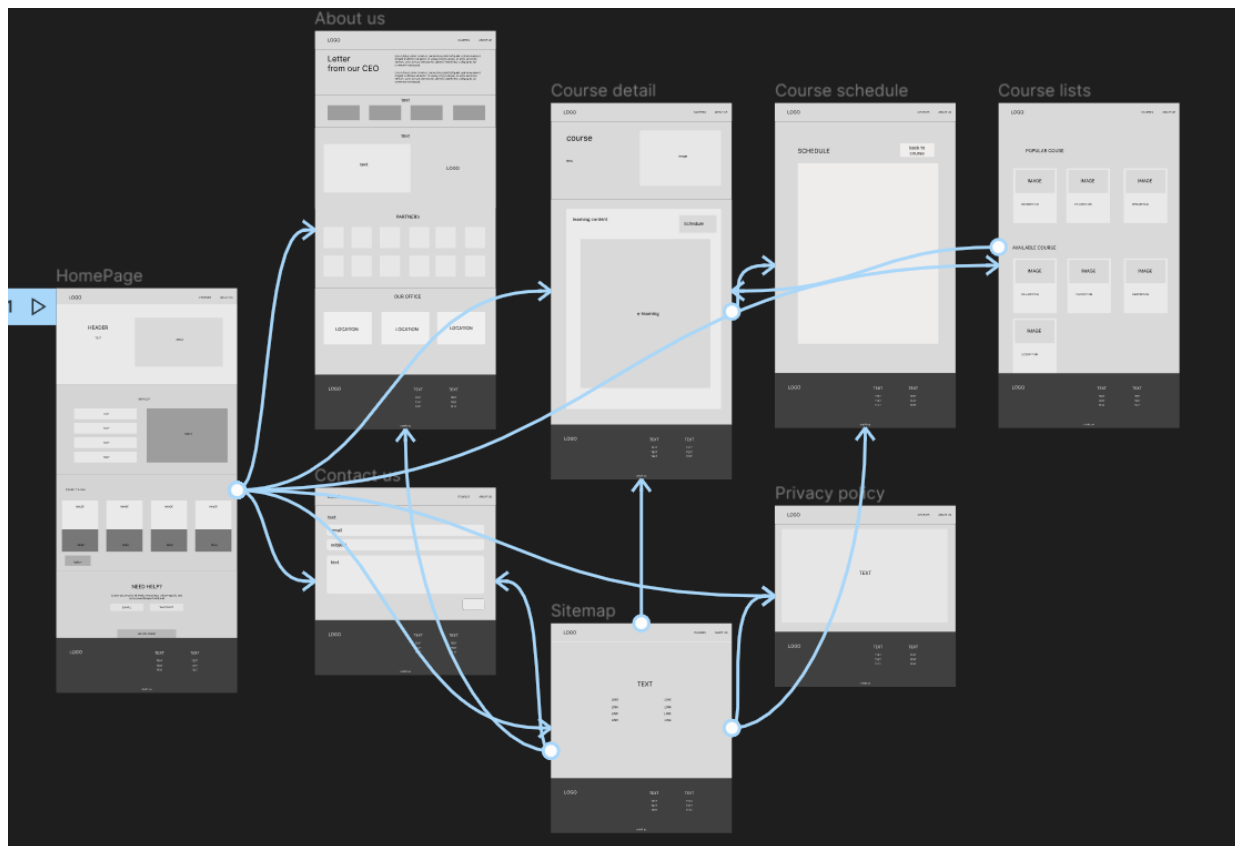
Used to present a clear picture of what will happens throughout the entire site what will the page looks like and what the team will do. The production storyboard contains detailed information on graphics, text, image, videos, colors, etc. containing instruction for anything necessary for the team member involved to do their jobs.

3. Maintenance storyboard

Used by the production team to provide an overview of the site whether it will be updated or maintained, as well as what part will be left out and be modified by professional.

Development of ABC Learning Center Website

Storyboard and explaining the mapping between the storyboard based on the given scenario:



Gambar 2. 9 Website Storyboard for ABC Learning Center

On the storyboard we are using production storyboard type of website storyboard. We can clearly see the flow, structure and relations of each website. the homepage is the main page that connects to all pages that is available, All arrows describe the relationship and flow for each pages for the flow example the homepage can access login page and after login page it can be directed back to the homepage, for the relationship example the homepage can access all the page that is connected by the arrow, and that also apply to other pages.

4. Implementation.

After we finished planning the website with Information Architecture, Wireframes, and Storyboard we can start implementing the website with considering client's requirements and using software and language necessary to make the website, such as:

Requirements:

It is required to design and develop the website using HTML, CSS, and JavaScript.

Required to develop following pages in the website:

1. Common content
 - a. Header
 - b. Footer
 - c. Navigation
2. Home page
3. About us page
4. Course detail page
5. Course schedule page
6. Contact us page
7. Sitemap page
8. Privacy policy page

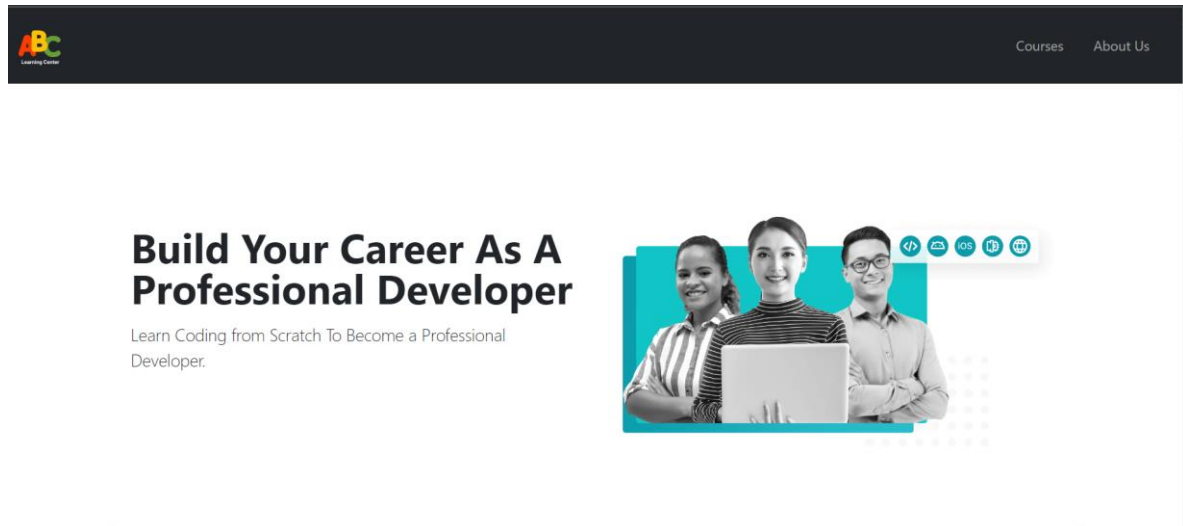
Software and language:

- Design tools: Figma, www.draw.io
- Code editor software: VS Code
VS Code is used because it is easy to use and contains many useful extensions, such as: prettier extensions; is used as code linter and make the code more easier to read and live server extensions; is used to locally host the website on the device and the changes you made is automatically changed and saved.
- Language: HTML, CSS, & JavaScript
- Libraries: Bootstrap(CSS Library) & FontAwesome(Icons Library)

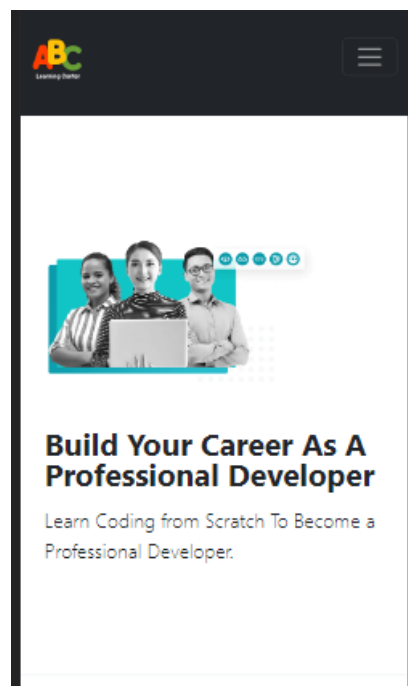
Development of ABC Learning Center Website

Screenshot of Websites

1. Common Content
 - a. Header



Picture 2 Common Content Header Desktop View



Picture 3 Common Content Header Mobile View

A website header is a top section of a website usually contain navigation and banner, on the navigation it is usually contain relevant information such as website logo, navigation menu and other important information such as search bar, contact, social media if necessary, the banner usually contain image, text as a slogan, this helps user to navigate through sites and tell them at which page they're on.

b. Footer



Services

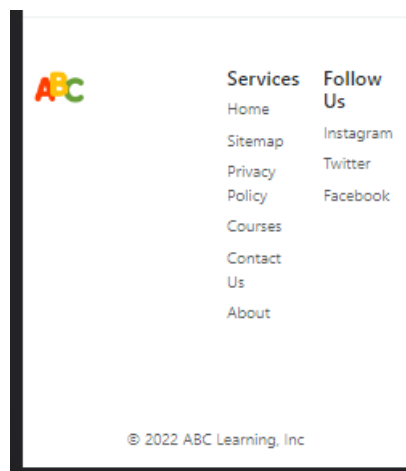
Home
Sitemap
Privacy Policy
Courses
Contact Us
About

Follow Us

Instagram
Twitter
Facebook

© 2022 ABC Learning, Inc

Picture 4 Common Content Footer Desktop View



Picture 5 Common Content Footer Mobile View

A website footer is a bottom section of a website usually every web pages have footer and it contains many information such as copyright notice, privacy policy, links to important pages of the websites, social media, and many other things. This feature is important to improve the user experience as this feature allow the user to navigate through page easily.

Development of ABC Learning Center Website

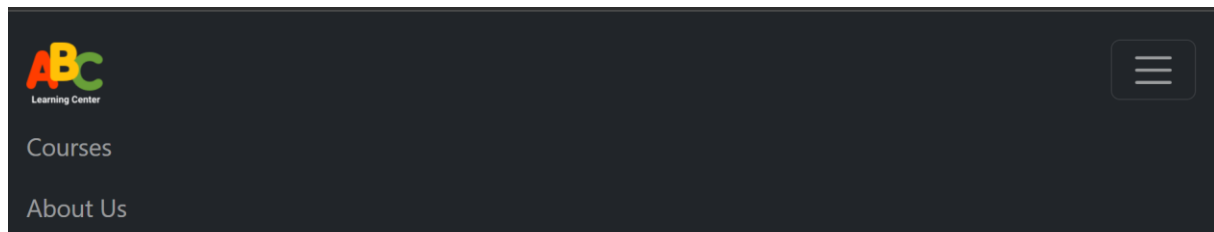
c. Navigation



Picture 6 Common Content Navigation Desktop View



Picture 7 Common Content Navigation Mobile View

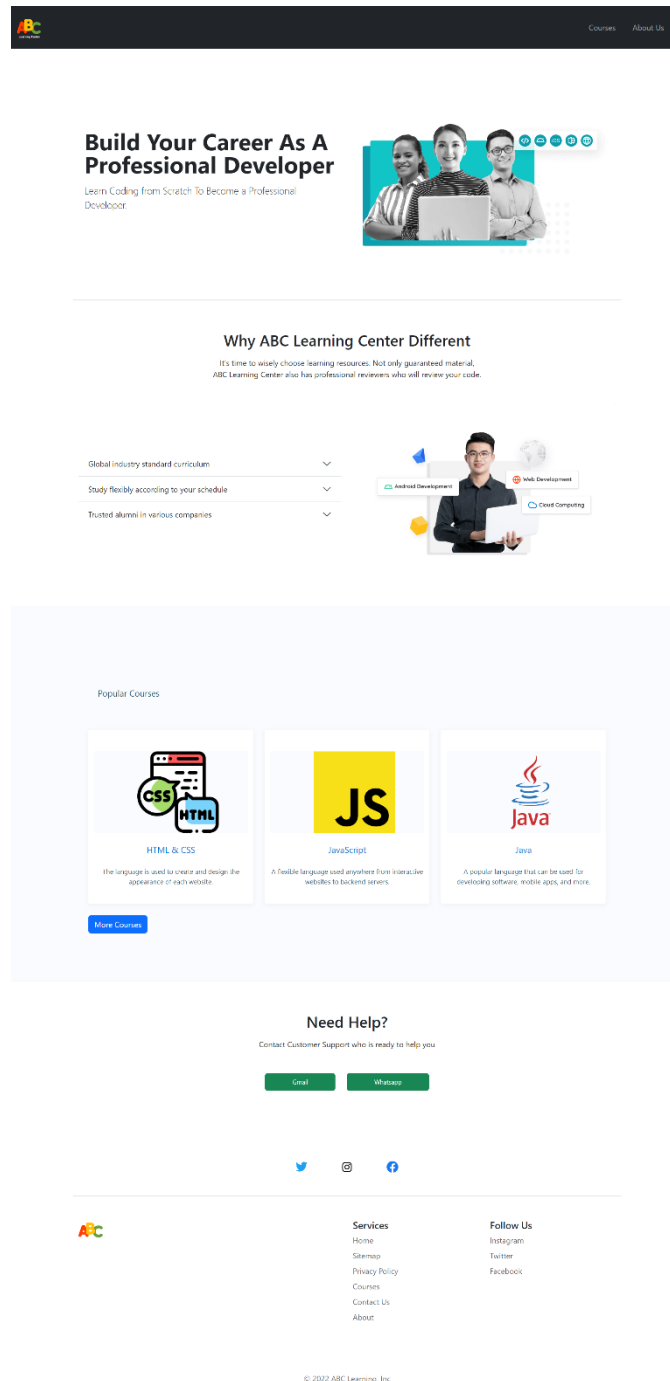


Picture 8 Common Content Navigation Mobile View Opened

A website navigation is a list of links and menus that helps user to go around the web pages easily. It should be easy to use, the label must be clear and concise, and usually organized based on priority. In this case the navigation will change depending on the screen size; when it is on desktop it will appear as a bar and contain all the menus on it, otherwise when it is on mobile it will appear as a button with three lines or it is usually called burger button, when it is clicked the menu will appear at the bottom. This helps the user interface become clean and look good.

Development of ABC Learning Center Website

2. Home Page

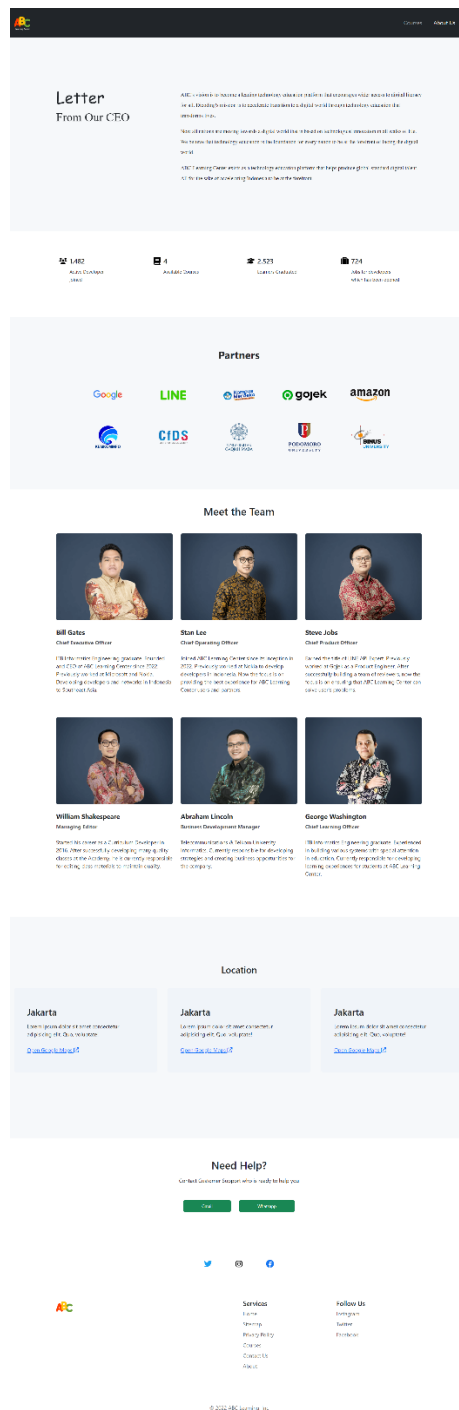


Picture 9 Home Page

A website Homepage is a landing page or is a page where the user see it the first time they visit the website, usually contains information relevant to all things related to the website, such as website purpose, service, etc. the purpose is for user to have a clear overview of website's purpose and content.

Development of ABC Learning Center Website

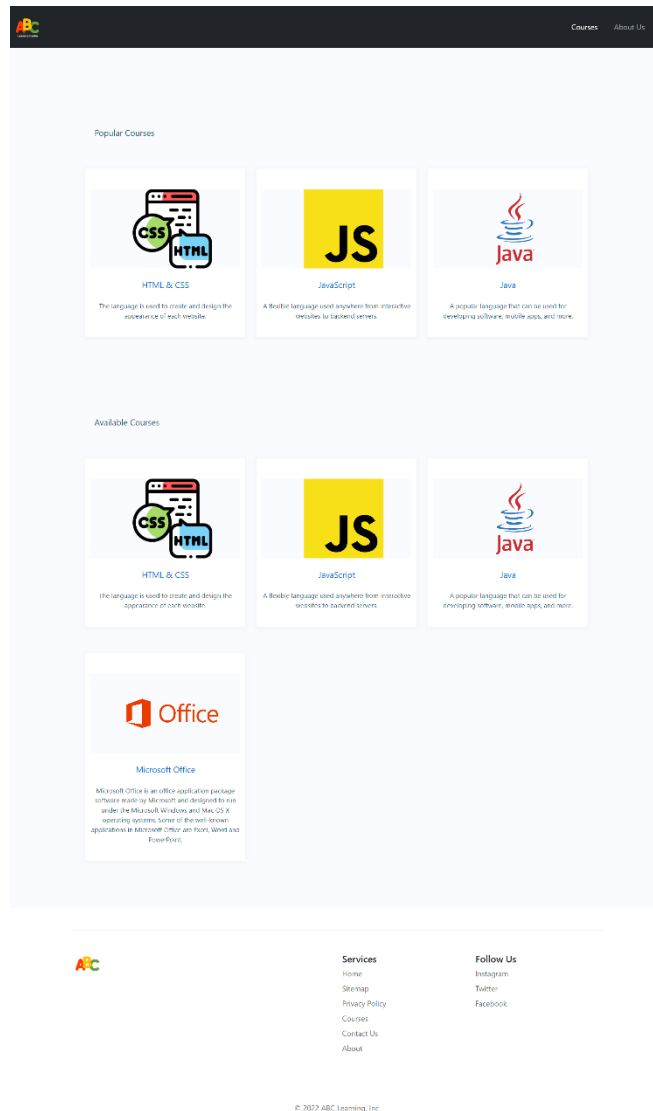
3. About Us



Picture 10 About Us Page

About Us Page is a section that provides all related information about the website or organization, business, individual, in this case the website contains all information about ABC Learning Center usually linked from navigation. This page contains vision&mission, achievement, company's partner, teams, locations, and contact the team managing the website.this page helps user to know what is the company's objective, purpose, teams behind the company, where the company located and many more.

4. Courses list



Picture 11 Courses List Page

This courses list page is a page that contains all popular and available course provided on the website. It helps user to easier navigate and search the course they want to attend.

a. Course Details



Picture 12 Course Detail HTML CSS page

The course detail page is a page that give access to learner about the learning material given on the courses, this is the page where the user will do the course. It contains course descriptions on header and courses material, during the course learners will be going through elearning then do the mcq to evaluate the knowledge they've gained during e-learning, at some point the learners also tasked assignment to implement their knowledge and at the end of the course there will be a project and final evaluation to evaluate the learner's knowledge this will covers all e-learning in this course. You can also check the course schedule on this page.

b. Course Schedule

The screenshot displays the course schedule for 'Front-End Web Development HTML & CSS'. The page features a dark header with the ABC Learning Center logo and navigation links for 'Courses' and 'About Us'. Below the header, the course title is shown with a 'Back to Course' button. The schedule is organized by day, from Monday to Friday, each with a table listing class times, class names, and teachers. The footer includes the ABC logo, a 'Services' menu (Home, Sitemap, Privacy Policy, Courses, Contact Us, About), a 'Follow Us' section with social media icons, and a copyright notice for 2022 ABC Learning, Inc.

Time	Class	Teacher
09.00 - 11.00	Live Class	Otto
11.00 - 13.00	Practical Class	Jacob
13.00 - 14.00	Break	-
14.00 - 15.00	Class Review	Jacob
15.00 - 17.00	Live Class	Otto
17.00 - 18.00	Class Review	Jacob

Time	Class	Teacher
09.00 - 11.00	Live Class	Otto
11.00 - 13.00	Practical Class	Jacob
13.00 - 14.00	Break	-
14.00 - 15.00	Class Review	Jacob
15.00 - 17.00	Live Class	Otto
17.00 - 18.00	Class Review	Jacob

Time	Class	Teacher
09.00 - 11.00	Live Class	Otto
11.00 - 13.00	Practical Class	Jacob
13.00 - 14.00	Break	-
14.00 - 15.00	Class Review	Jacob
15.00 - 17.00	Live Class	Otto
17.00 - 18.00	Class Review	Jacob

Time	Class	Teacher
09.00 - 11.00	Live Class	Otto
11.00 - 13.00	Practical Class	Jacob
13.00 - 14.00	Break	-
14.00 - 15.00	Class Review	Jacob
15.00 - 17.00	Live Class	Otto
17.00 - 18.00	Class Review	Jacob

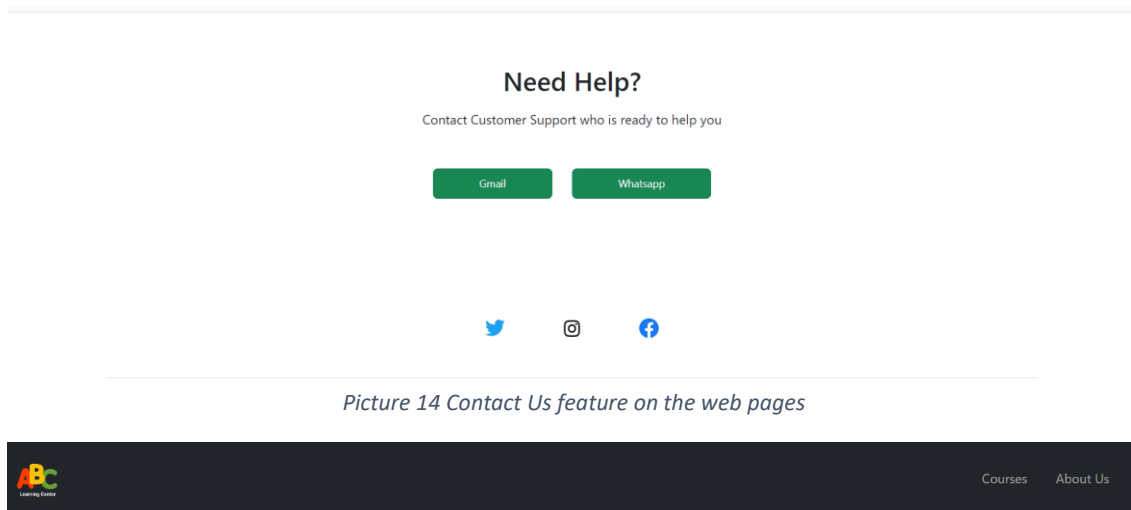
Time	Class	Teacher
09.00 - 11.00	Live Class	Otto
11.00 - 13.00	Practical Class	Jacob
13.00 - 14.00	Break	-
14.00 - 15.00	Class Review	Jacob
15.00 - 17.00	Live Class	Otto
17.00 - 18.00	Class Review	Jacob

© 2022 ABC Learning, Inc.

Picture 13 Course Schedule Page

The course schedule page is a page where the learner can view the schedule of the course. This page gives information about time, class, and the teacher of the class to the learner so that student can follow the class and meet the expected result at the end of the class. This page can be accessed through the course details and can back to the course details through button available on the top of the schedule.

5. Contact Us



Contact Us via e-mail

Email address

Subject

text



Services

[Home](#)
[Sitemap](#)
[Privacy Policy](#)
[Courses](#)
[Contact Us](#)
[About](#)

Follow Us

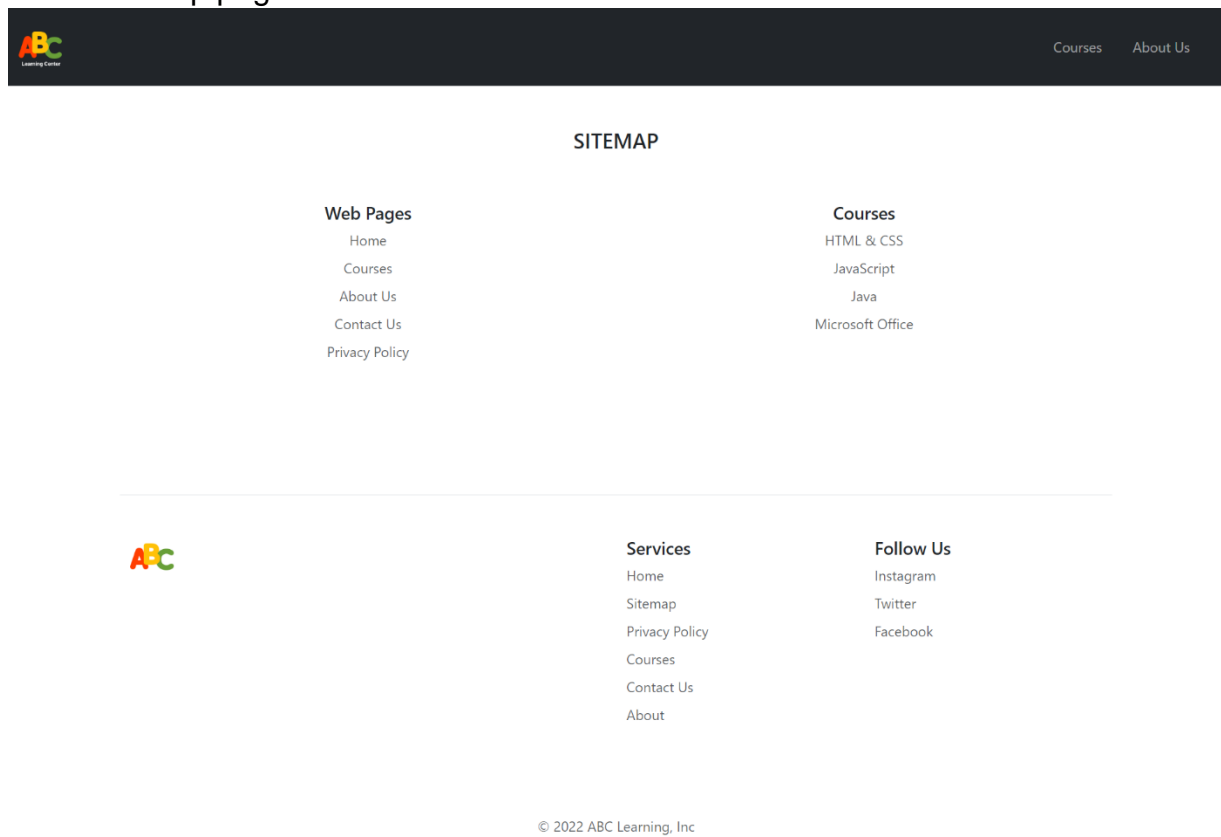
[Instagram](#)
[Twitter](#)
[Facebook](#)

© 2022 ABC Learning, Inc

Picture 15 Contact Us page via email

The contact us page is a page where the visitor of the website can contact the website's support team. The contact us feature can be accessed from few pages such as homepage and about us page, and is also available on footer. The visitor can contact through various ways such as email and social media. On the website, if the user wants to contact via mail, the user will be redirected to a page with a form. Otherwise, if the user wants to contact through social media, they will be redirected to the company's social media page.

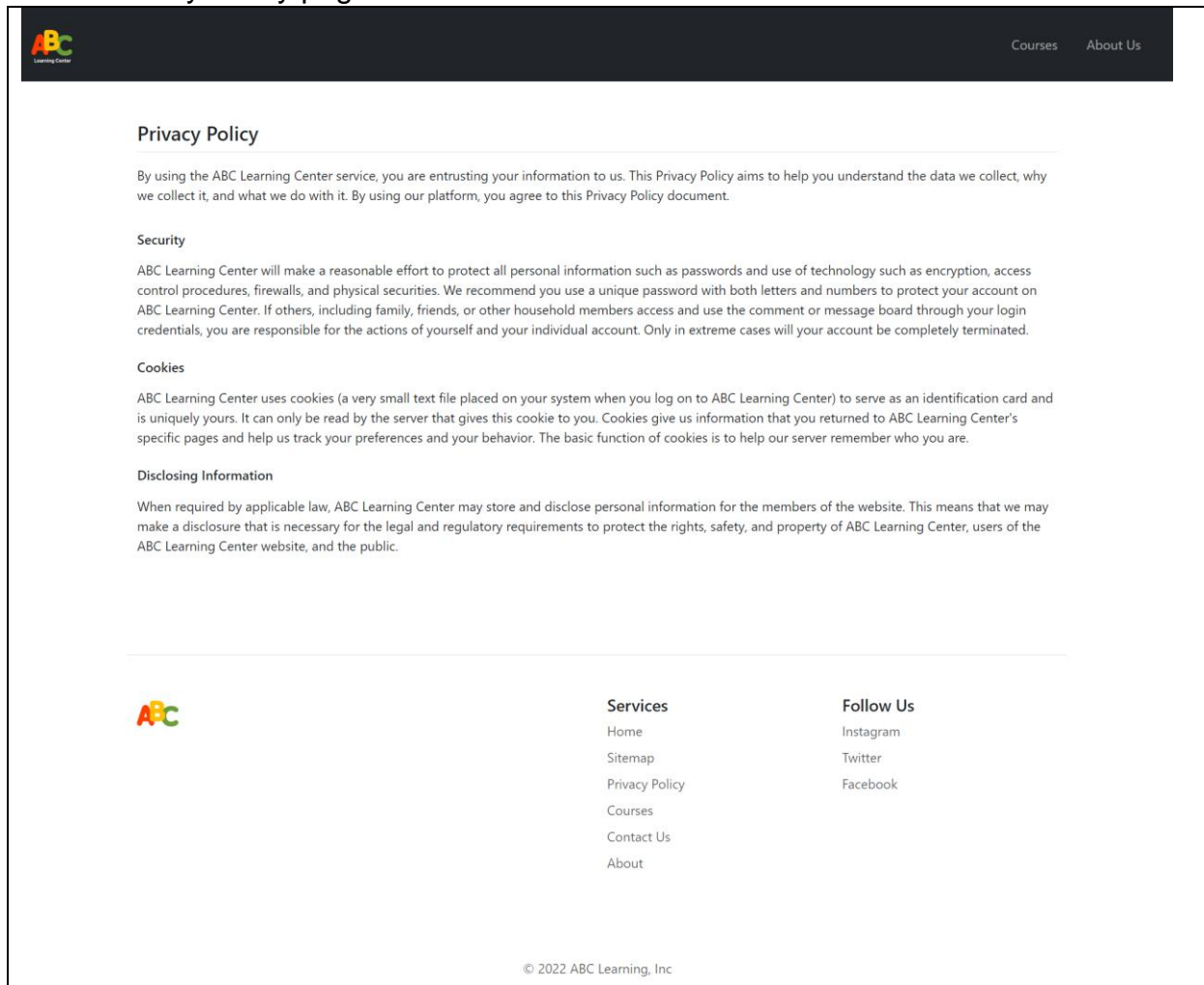
6. Sitemap page



Picture 16 sitemap page

A website sitemap page is a page that provides the user a visual overview of the website, usually list all pages and related topics within the websites. It helps user find specific pages, understand the structure pages, and navigate more easily.

7. Privacy Policy page



A privacy policy page is a explain how a websites collect, uses, and protect user's data and information usually include how it is used, third party involved, how its protected. It is to inform the user about how they manage user's information, and to comply with law related to data privacy and protection.

5. Testing.

By the definition, testing means the evaluation process of a software product or system to identify problems, achieved by running the software under controlled circumstances and observe it to make sure it performed as expected. meanwhile validation is the process of verifying the requirements and expectations, usually done by checking if the software's requirements and expected result are met.

Testing and validation are important aspects of software development process to make sure the product is high quality, met the requirements, and minimal errors.

There are many different types of testing and validation it is chosen depending on the purpose of testing, intended audience, for this scenario there is four testing type used and its testing case:

1. Usability testing

This type of testing is used to evaluates how easy to use a product, this testing includes testing the software design, navigation, and user experience to make sure it is easy to use. The objective of this type of testing is to find an areas that may be difficult to use or understand to users and improve it.

Usability testing case:

ID	Test info	Expected Result	Actual Result	Test Status	Corrective action
1	Logo visibility	The website's logo is visible and recognizable on the page	As expected	pass	none
2	Readability	The legibility website text's content, font size, contrast, line spacing	As expected	pass	None
3	Mobile responsive	The websites performances and usability on various screen width	As expected	pass	None
4	Feedback	The websites form can be used to input feedback	As expected	pass	None
5	Image quality	The all images on the website including resolution, size, and format	As expected	pass	None
6	Interactive elements	Image changed when clicking buttons	As expected	pass	None
7	Tab	All content can be accessed through tab	As expected	pass	None
8	Link	Link is easy to find and can redirect pages	As expected	pass	None
9	Content	All content properly aligned	as expected	pass	None
10	Title	Display title on each web page	As expected	pass	None

Development of ABC Learning Center Website

2. Functional testing

Functional testing is a testing type that is used to evaluate whether the product meet its specified functional requirements, this testing type includes testing the product functions and features to make sure it work correctly. This type of testing objective is to identify any problems or bugs or issues within the product functionality and work as intended.

Functional testing case:

ID	Test info	Expected Result	Actual Result	Test Status	Corrective action
1	Buttons	The website's button is available and works on the page	As expected	pass	None
2	JavaScript	JavaScript work properly in different browsers	As expected	pass	None
3	Mobile responsive	The websites performances and usability on various screen width	As expected	pass	None
4	Social Media	The websites can redirect user to social media	As expected	pass	None
5	Image quality	The all images on the website including resolution, size, and format	As expected	pass	None
6	Interactive elements	Image changed when clicking buttons	As expected	pass	None
7	Learning system	All courses can be accessed without problems	As expected	pass	None
8	Browser	The website runs on different browsers	As expected	pass	None
9	Forms	All forms able to take inputs	as expected	pass	None
10	Navigation	Navigating from pages to pages	As expected	pass	None

Development of ABC Learning Center Website

3. Compatibility testing

This type of testing evaluates whether the products works as intended in various environment and with different hardware, software, and connections. Usually it tested to different operating systems, browsers, and platforms. This test is used to make sure the product is accessible to the largest possible user number and work correctly in many different setting.

Compatibility testing:

ID	Test info	Expected Result	Actual Result	Test Status	Corrective action
1	OS Compatibility	The website is working with different OS such as Windows, macOS	As expected	pass	None
2	Browser compatibility	The website is working with different browser such as chrome, firefox, edge, and opera.	As expected	pass	None
3	Mobile responsive	The websites ls working on various screen width	As expected	pass	None
4	Images compatibility	The websites can work using different types of images	As expected	pass	None
5	Image	The all images on the website is displayed regardless resolution, size, and format	As expected	pass	None
6	HTML & CSS compatibility	Test HTML and CSS version is compatible with the browser versions	As expected	pass	None
7	Fonts	All Fonts can be displayed and usable in the different browsers	As expected	pass	None
8	JavaScript	JavaScript code is usable in different browsers	As expected	pass	None
9	CDN compatibility	Able to apply CDN on the website	as expected	pass	None
10	Device	Website compatible and can run on any device	As expected	pass	None

Development of ABC Learning Center Website

4. Performance testing

Performance testing is a type of test that assess how well a product do under various conditions, includes product's speed, scalability, and stability. The goal is to identify the bottlenecks and performance issue and optimize it

Performance testing case:

ID	Test info	Expected Result	Actual Result	Test Status	Corrective action
1	Page load	The website fully load in browser within a short time	As expected	pass	None
2	Browser compatibility	The website run on different browsers	As expected	pass	None
3	Mobile responsive	The websites performances and usability on various screen width	As expected	pass	None
4	Network	The websites can load with low speed network	As expected	pass	None
5	Image	The all images on the website including resolution, size, and format	As expected	pass	None
6	Font	Optimized font reduced file sizes and load times	As expected	pass	None
7	CDN	All content can be accessed	As expected	pass	None
8	Link	Testing links ensuring it works properly	As expected	pass	None
9	Preload resources	All content resources preloaded making it faster to load the page	as expected	pass	None
10	Devices	Website perform properly on the different devices	As expected	pass	None

Development of ABC Learning Center Website

5. Responsive

Responsive testing is a process of testing website or application to make sure its optimized and perform through various devices and screen width and providing consistent user experience and can gain potential user as many as possible.

Responsive testing case:

ID	Test info	Expected Result	Actual Result	Test Status	Corrective action
1	Navigation bar	Navigation bar collapsing into hamburger menu when on small screen	As expected	pass	None
2	Logo	The website logo scales properly with different screen width	As expected	pass	None
3	Footer	The websites footer scales properly with different screen width	As expected	pass	None
4	Navigation bar	Navigation bar hamburger menu button opened when clicked on small screen	As expected	pass	None
5	Social media	All social media is properly aligned regardless screen width	As expected	pass	None
6	Course list	All course list can scale its size properly aligned and spaced Grid format on larger screen and column list on smaller screen	As expected	pass	None
7	Course details & schedule	All courses & schedule are aligned properly at different screen sizes	As expected	pass	None
8	images	All images size are scalable on different screen size	As expected	pass	None
9	Font	All fonts on the website consistent	as expected	pass	None
10	Layout	Website layout didn't have any major change	As expected	pass	None

6. Develop jQuery Menus & Tabs.

jQuery is a JavaScript Library that was released in 2006 by John Resig and it has features that is fast, small, and has many features. It is supposed to simplifies things like document traversal and manipulation, animation, event handling, and interact with server-side data such as AJAX. It become an important tool for front-end Developers because it enables them to write less code, efficient, and faster.

The key to that make it able to write less code, efficient, and faster is because jQuery has many built-in function that allow developers to write code with just a few lines instead the usually longer and complex code.

Another benefit of it is jQuery able to work in many web browsers such as Chrome, Firefox, Opera, Internet Explorer and many more. It also has many plugins that cover a wide range of use case such as calendars, sliders, animations, and many more.

To use jQuery there is three ways to do it:

1. Download the jQuery library

This way you need to download the jQuery library from the official jQuery website and include it on your HTML file you can either download compressed or the uncompressed. The uncompressed is best to use during development or debugging and the compressed file saves bandwidth and improve performance.

2. Using a CDN (Content Delivery Network)

A CDN is a network of servers that host the jQuery library and allow you to include it in your HTML file without the needs to download it. To use jQuery CDN, you can include the script tag from jQuery CDN domain, you can get the complete script tag by visiting <https://code.jquery.com> and click the version you desired, copy paste that tag on your HTML file.

3. Using JavaScript package manager

A JavaScript package manager like npm or yarn allows you to install and manage jQuery library as part of your project. This method is beneficial when working on big project that have many developers because it make sure all the developer are using the same versions of jQuery.

In this implementation we will using CDN to use jQuery and its library, named jQueryUI to implement menus & tabs because it reduces the load time of the web pages since the jQuery library is stored on server closer to the user.

jQueryUI is a user interface (UI) library built with jQuery, providing many collection of pre-build reusable code to make more interactive user interfaces for the web pages such as menus, tabs, draggable which make an element able to be dragged using mouse in the pages, and many more.

Development of ABC Learning Center Website

Implementation of menus & tabs using jQueryUI:

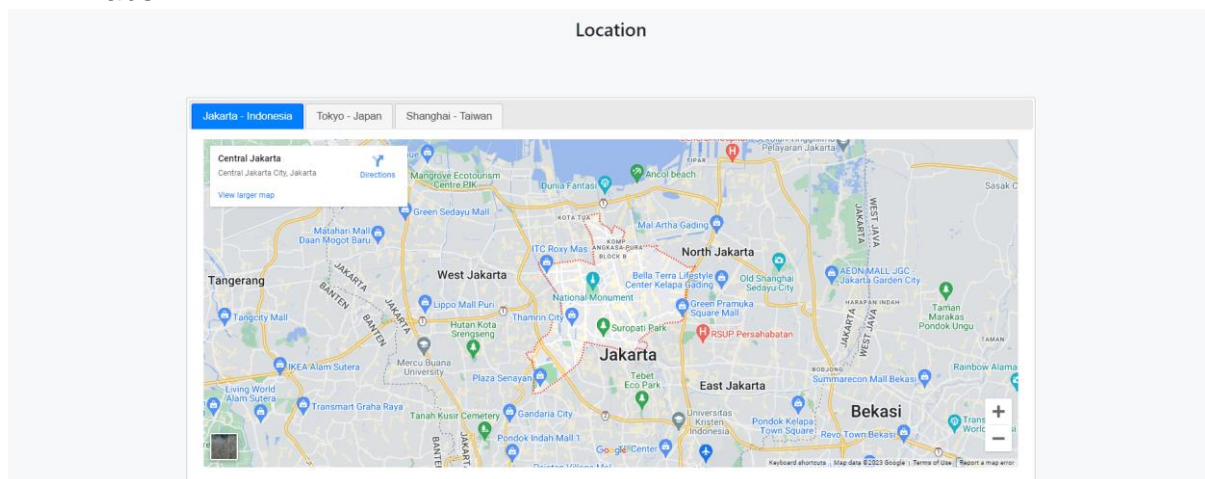
- Menus



Picture 17 using jQueryUI to make menus on navbar

Implementing the menus on navbar can improve navigations, it helps organizing information and provide a clear way to access certain pages, section, or contents on website, in this case using menu to organize course list, inside course you can access related pages such as HTML & CSS, JavaScript, Java, and Microsoft Office courses.

- Tabs



Picture 18 using jQueryUI to make tabs

Implementing multiple locations using tabs helps save spaces because tabs allow users to switch between different content on a webpage or section, when the user click tab button, corresponding content is displayed and the others are hidden so it only use one section instead inserting multiple map on different section and make the pages too long this improve user experience by making it more convenient and efficient accessing the content.

Using jQuery to implement menus & tabs instead JavaScript have many benefits, one of it is the syntax is easier to write and read, take an example of how JavaScript on the left selecting an element on the HTML file with an Id "menu" compared to jQuery on the right just by this example it can make it easier and faster to write if the program have many selections that require multiple selections.

```
document.querySelector("#menu");
```

Picture 19 selecting an element on the HTML file with an Id "menu" using JavaScript

```
$( "#menu" )
```

Picture 20 selecting an element on the HTML file with an Id "menu" using jQuery

References

- <https://xd.adobe.com/ideas/process/information-architecture/information-ux-architect/>
- <https://www.usability.gov/what-and-why/information-architecture.html>
- <https://www.omkarsoft.com/blog/top-benefits-information-architecture-better-user-experience-ux-design/>
- <https://www.altexsoft.com/blog/uxdesign/information-architecture/>
- <https://www.mstoner.com/blog/content-and-writing/information-architecture-project-benefits/>
- <https://www.usability.gov/how-to-and-tools/methods/wireframing.html#:~:text=A%20wireframe%20is%20a%20two,styling%2C%20color%2C%20or%20graphics.>
- Jesse James Garrett's *The Elements of User Experience: User-Centered Design for the Web and Beyond (2nd Edition)*
- <https://careerfoundry.com/en/blog/ux-design/what-is-a-wireframe-guide/>
- <https://www.experienceux.co.uk/faqs/what-is-wireframing/>
- <https://www.usability.gov/how-to-and-tools/methods/wireframing.html#:~:text=A%20wireframe%20is%20a%20two,styling%2C%20color%2C%20or%20graphics.>
- <https://www.capterra.com/resources/what-is-a-storyboard-in-web-design/>
- https://public.wsu.edu/~ericsson/story_bd.html
- <https://www.saasworthy.com/blog/what-is-a-storyboard-in-web-design/>
- <https://www.guru99.com/complete-web-application-testing-checklist.html>
- <https://testsigma.com/blog/web-app-testing-checklist/>
- <https://jquery.com/>
- <https://jquery.com/download/>
- <https://jqueryui.com/draggable/>