

A10: Product

SegFault is an online discussion forum, for professionals developers and novices alike, where users can easily share expertise on all programming related topics.

The users can post detailed questions on the site, associating each question with a given set of categories. Additionally, users can answer questions on the site, as well as commenting other questions or answers. In order to keep the community self-moderated, users can also upvote/downvote questions/answers/comments, as well as reporting inappropriate messages. Users trusted by the community (measured by their reputation points) automatically gain the moderator status, gaining owner-like permissions over all messages (delete and edit other's messages). The website also provides advanced search options, with fuzzy matching against the question's title and content, as well as filtering search queries by categories.

In this artifact, we will identify all the functionalities of our platform as well as some development details relative to the product.

1. Installation

Link to the Github release with the final version of the code: TODO

Full Docker command to test the group's Docker Hub image using the DBM database:

```
docker run -it -p 8000:80 -e DB_DATABASE=lbaw1763 -e DB_USERNAME=lbaw1763  
-e DB_PASSWORD=sq34hv89 sudoblob/lbaw1763
```

2. Usage

Navigate to the following link using your favorite browser: <http://lbaw1763.lbaw-prod.fe.up.pt>.

2.1. Moderator Credentials

All users actions are available to moderators throughout the site. For instance, a moderator may delete or edit anyone's messages, in order to ensure good content quality on the site.

Username	Password
lbawMod	password

2.2. User Credentials

Username	Password
sudoblob	password
hey	password

3. Application Help

Several visual cues have been used to improve the usability of our site. For instance, as is traditional, the green color is continuously associated with positive messages/actions (used for success alerts), and the red color for negative messages/actions (used for error messages, as well as on report and delete buttons).

Additionally, several tooltips are displayed throughout the site: on the heart-shaped bookmark button, on the exclamation-shaped report button, among others. To further facilitate the use of our site, all links to users (**e.g.** on a message he posted) point to their corresponding profiles, and all links to categories (**e.g.** on the categories list of a message) point to the categories page featuring related questions.

Regarding ease of navigation, we strive for a consistent user experience across all pages, with standardized layout for the navbar and footer, as well as site-wide colors. We also increased the site-wide contrast, to facilitate navigation on lower-quality monitors, and possibly by the colour blind.

4. Input Validation

Input data is validated on the client side using javascript (for instance, checking the number of submitted categories on a new question, or whether the names of these categories are valid), and further validated on the server side using PHP. Additionally, when appropriate, data is validated on the database server using triggers (**e.g.** a new question must contain between 1 and 5 categories). Additionally, text input is *htmlencoded* to prevent injection of unintended scripts.

5. Check Accessibility and Usability

According to our evaluation, our site scored a 17/18 on the accessibility checklist, missing the ability to properly navigate without CSS.

Regarding usability, we scored a 26/28, missing a readability point, and "Open Graph" social network tags.

6. HTML & CSS Validation

We provided six PDF files in the submitted ZIP file on Moodle, two for each validated file (on NuHtmlChecker and W3CValidator). The validated files are: the global *app.css* file, the main page (*SegFaultIndex.html*), and the question page (*SegFaultQuestion.html*).

For the *app.css* file, the "Nu Html Checker" displayed 4 errors:

- 3 of the type "too few values for the property linear-gradient", offering no further information. According to both the MDN documentation and the W3Schools documentation the linear-gradient CSS property may receive 2, 3 or more arguments, validating our use with 3 arguments of type **linear-gradient(direction, color-stop-1, color-stop-2)**.
- 1 of the type "is not a valid color, 3 or 6 hexadecimal expected": this is due to our use of transparency on a attribute's color (therefore using 8 hexadecimals), a feature that is available in CSS and implemented on all major browsers.

For the *app.css* file, the "W3C Validator" displayed several errors, all bootstrap related or regarding CSS variables.

For the main page (*SegFaultIndex.html* file), the "Nu Html Checker" displayed a single error regarding a Google related necessary script.

For the question page (*SegFaultQuestion.html* file), the "Nu Html Checker" displayed a couple errors regarding the Markdown Editor library we're using (*simplemde*).

The "W3C Validator" for the same page files (main and question page) displayed 6 errors, all regarding imports of CSS library files (bootstrap, font-awesome, simplemde).

The validation of subsequent site pages points to similar results, with errors regarding the use of external APIs and CSS variables, a common shortcoming of CSS validators.

7. Revisions to the Project

This section describes the revisions made to the project since the requirements specification stage.

7.1 Database

- **commentable_notification** and **badge_notification** - Tables removed.
- **notifications** - Table changed to merge all notifications.
- **moderator_badge** and **trusted_badge** - Tables removed.
- **badges** - Table changed to merge all badges.
- **password_resets** - New table to accommodate the *forgot password* feature. It holds the email of the user who wants to reset his password, a token sent to that email and a creation date to manage token expiration.
- **check_categories** - Trigger removed. Its logic is now in PHP to prevent database exceptions when editing questions.
- **gen_comment_notification**, **gen_answer_notification** and **gen_badge_notification** - Triggers removed. Its logic is now in PHP to enable real-time notifications by Pusher.
- **bookmarks** - Table added to manage a user's bookmarks.
- **users**
 - **remember_token** - Added attributes to enable *remember me* feature.
 - **password** - No longer *NOT NULL* to enable API sign-up/sign-in.
 - **provider** and **provider_id** - Added attributes to enable API sign-up/sign-in.

7.2 REST

7.2.1 Added routes

- **Login page** */login*
- **Reset password** */password/reset* and *password/email*
- **Notifications** */api/notifications*
- **API login** *auth/{provider}*

7.3 Features

- We added real-time notifications, using **WebSockets** and the Pusher library. All notifications have information regarding the event which triggered it, and a corresponding link.
 - on new answers: notifies the question's owner and all users who bookmarked the question;
 - on new comments: notifies the message's owner (be it a question or answer), and all the users who participated in the discussion (other commenters);
 - on new badges: the awarded user is notified of his new badge;

- We added infinite scroll throughout the site:
 - on the main page (for all the tabs), meaning no reloads are required to navigate the main page;
 - on the search page, and the categories page, similarly to the main page, enabling navigation between these two pages without reloads;
 - on the user's profile, to fetch its statistics, as well as its questions/answers/comments and bookmarked questions;
- We added Templating and client-side rendering on all ajax requests for views.
 - on the main page, search page, profile page, and question page, to fetch details of the targeted messages;
- We added the ability to reset passwords: users receive an email pointing to a unique link, enabling them to reset their password.

8. Implementation Details

This section describes the external libraries used in this project, as well as the completion status of all the user stories and the person responsible for each one.

8.1. Libraries Used

Name	Reference	Description of Use	Example
Laravel	Reference	Used to accelerate back-end development, Laravel establishes a secure and modular framework, implementing common actions in websites.	Automatic CSRF verification when updating passwords
Bootstrap	Reference	Used to accelerate front-end development, making things look beautiful and responsive	Navigation bar dropdowns
SimpleMDE	Reference	Used to add/edit questions/answers using markdown. This editor supports a lot of features essential to our website, such as code syntax highlight, lists, tables and quotes.	Add question editor
Pusher	Reference	Used to add real-time notifications	Navigation bar notifications
Tagify	Reference	Used for beautiful and functional tag input.	Add question tag input
Mustache	Reference	Used to enable templating with AJAX requests.	Templating answers in a question page

8.2 User Stories

This section details the status of the implementation of each user story.

8.2.1. User

Identifier	Name	Priority	Description	Team members	State
US01	Question Page	Mandatory	As a User, I want to consult Questions, their Answers and their Comments, so that I can clarify my doubts.	All	100%
US02	Profile	Mandatory	As a User, I want to consult the profile of an authenticated User, so that I can see his biographic information.	João Carvalho, Daniel Marques	100%
US03	Search	Mandatory	As a User, I want to search for specific posts, so that I can find what I'm looking for faster.	André Cruz	100%
US05	Profile Badges	Mandatory	As a User, I want to consult the badges of an authenticated User, so that I can better understand his community contributions and privileges.	Edgar Carneiro	100%
US04	Category Consult	Important	As a User, I want to consult the questions related to a given category, so that I can search content regarding that category.	Daniel Marques	100%
US06	About Page	Optional	As a User, I want to access the About page, so that I can see a complete website's description.	André Cruz	100%

Table 2: User's user stories.

8.2.2. Visitor

Identifier	Name	Priority	Description	Team members	State
US11	Sign Up	Mandatory	As a Visitor, I want to register myself into the system, so that I can become a Member.	Daniel Marques	100%
US12	Log In	Mandatory	As a Visitor, I want to authenticate into the system, so that I can have Member privileges.	André Cruz	100%
US13	Sign Up using Github	Optional	As a Visitor, I want to register myself into the system using a Github account, so that I can become a Member, spending less time registering.	André Cruz	100%
US14	Log In using Github	Optional	As a Visitor, I want to authenticate into the system using a Github account, so that I can have Member privileges.	André Cruz	100%

Identifier	Name	Priority	Description	Team members	State
US15	Sign Up using Google+	Optional	As a Visitor, I want to register myself into the system using a Google account, so that I can become a Member, spending less time registering.	André Cruz	100%
US16	Log In using Google+	Optional	As a Visitor, I want to authenticate into the system using a Google account, so that I can have Member privileges.	André Cruz	100%

Table 3: Visitor's user stories.

8.2.3. Member

Identifier	Name	Priority	Description	Team members	State
US201	Logout	Mandatory	As a Member, I want to logout from the system, so that my account remains safe and other users can authenticate.	Daniel Marques	100%
US202	Create a Question	Mandatory	As a Member, I want to create a Question for the community to answer, so that I can get enlightened regarding my doubt.	Edgar Carneiro	100%
US203	Answer a Question	Mandatory	As a Member, I want to answer a Question created by other Member, so that I help him with his problems and doubts.	Edgar Carneiro	100%
US204	Edit Profile Information	Mandatory	As a Member, I want to edit my own profile information, so that it's updated and adequate (e.g. changing profile picture and editing biography).	Daniel Marques	100%
US205	Edit Account Settings	Mandatory	As a Member, I want to edit my own account settings, so that I keep my account safe (e.g. changing password).	Daniel Marques	100%
US206	Vote a Comment	Mandatory	As a Member, I want to vote on a Comment, so that other Users know what I think about that Comment.	Daniel Marques	100%
US207	Vote an Answer	Mandatory	As a Member, I want to vote on an Answer, so that other Users know what I think about that Answer.	Daniel Marques	100%

Identifier	Name	Priority	Description	Team members	State
US208	Vote a Question	Mandatory	As a Member, I want to vote on a Question, so that other Users know what I think about that Question.	Daniel Marques, Edgar Carneiro	100%
US209	Create a Comment	Important	As a Member, I want to comment an Answer or a Question, so that I can contribute to the discussion regarding that Question/Answer.	Edgar Carneiro	100%
US210	Mark a Question	Optional	As a Member, I want to mark a question, so that I have easier access to it.	Edgar Carneiro	100%
US211	View Marked Questions	Optional	As a Member, I want view my marked questions, so that I have easier access to them.	João Carvalho	100%
US212	Notifications	Optional	As a Member, I want to see my notifications, so that I'm always aware of updates on my questions.	André Cruz	100%
US213	Report a Message	Optional	As a Member, I want to report a Message, so that the website remains without inadequate content.	Edgar Carneiro	100%

Table 4: Member's user stories.

8.2.4. Owner

Identifier	Name	Priority	Description	Team members	State
US31	Select correct Answer	Important	As an Owner, I want to select a correct Answer to my own Question, so that other Users know what is the correct Answer without having to read all of the other answers.	Edgar Carneiro	100%
US32	Delete a Question	Important	As an Owner, I want to delete my own Question, so that the website does not contain inadequate information.	Edgar Carneiro, Daniel Marques	100%

Identifier	Name	Priority	Description	Team members	State
US33	Delete an Answer	Important	As an Owner, I want to delete my own Answer, so that the related Question does not have inappropriate Answers.	Edgar Carneiro, Daniel Marques	100%
US34	Delete a Comment	Important	As an Owner, I want to delete my own Comment, so that the related Question/ Answer does not have inappropriate comments.	Edgar Carneiro	100%
US35	Edit a Question	Important	As an Owner, I want to edit my own Questions, so that I keep them updated and adequate.	Edgar Carneiro	100%
US36	Edit an Answer	Important	As an Owner, I want to edit my own Answers, so that I keep them updated and adequate.	Edgar Carneiro, João Carvalho	100%
US37	Edit a Comment	Important	As an Owner, I want to edit my own Comments, so that I keep them updated and adequate.	Edgar Carneiro, João Carvalho	100%
US38	Edit a Question's Categories	Important	As an Owner, I want to edit my Questions' Categories, so that I keep them updated and correct previous mistakes.	Edgar Carneiro, João Carvalho	100%

Table 5: Owner's user stories.

8.2.5. Moderator

Identifier	Name	Priority	Description	Team members	State
US41	Select correct Answer	Important	As a Moderator, I want to select a correct Answer to any Question, so that other Users know what is the correct Answer without having to read all of the other answers.	Edgar Carneiro, Daniel Marques	100%
US42	Delete a Question	Important	As a Moderator, I want to delete any Question, so that the website does not contain inadequate information.	André Cruz	100%

Identifier	Name	Priority	Description	Team members	State
US43	Delete an Answer	Important	As a Moderator, I want to delete any Answer, so that the related Question does not have inappropriate Answers.	André Cruz	100%
US44	Delete a Comment	Important	As a Moderator, I want to delete any Comment, in order to filter inappropriate comments from a discussion.	André Cruz	100%
US45	Edit a Question	Important	As a Moderator, I want to edit any Question, so that I keep them updated and adequate.	João Carvalho, Edgar Carneiro	100%
US46	Edit an Answer	Important	As a Moderator, I want to edit any Answer, so that I keep them updated and adequate.	João Carvalho, Edgar Carneiro	100%
US47	Edit a Comment	Important	As a Moderator, I want to edit any Comment, so that I keep them updated and adequate.	João Carvalho	100%
US48	Edit a Question's Categories	Important	As a Moderator, I want to edit the Categories of any Questions, so that I keep them updated and adequate.	Daniel Marques	100%

Table 5: Moderator's user stories.

GROUP1763, 30/05/2018

André Cruz, up201503776@fe.up.pt
 Daniel Marques, up201503822@fe.up.pt
 Edgar Carneiro, up201503784@fe.up.pt
 João Carvalho, up201504875@fe.up.pt