

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:

<https://github.com/jflcarvalho/lbaw1763/releases/tag/A10>

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** */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% |

| Identifier | Name | Priority | Description | Team members | State |
|------------|-----------------------|----------|--|--------------|-------|
| 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% |
| 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% |

| Identifier | Name | Priority | Description | Team members | State |
|------------|-----------------------|-----------|--|--------------------------------|-------|
| 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% |
| 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% |

| Identifier | Name | Priority | Description | Team members | State |
|------------|------------------------------|-----------|--|--------------------------------|-------|
| 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% |
| 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 |
|------------|------|----------|-------------|--------------|-------|
|------------|------|----------|-------------|--------------|-------|

| 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% |
| 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