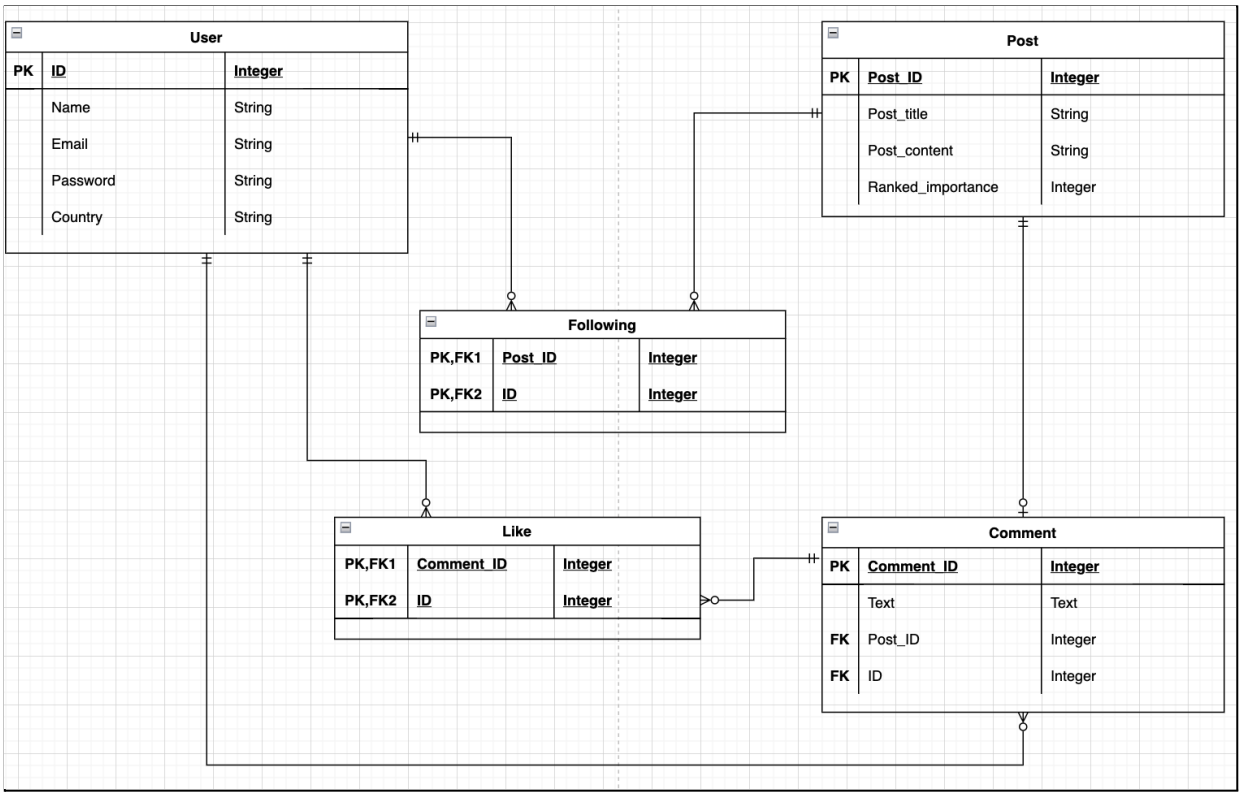
Purpose of Application

The purpose of the application is to create a site which allows users to ask questions and have them answered by other users on the app. In addition to this users have the ability to comment on posts, read all questions that have been asked on the site, follow posts and upload pictures to be attached to a question they have asked.

While users are not required to sign up or login to the application to look at questions, it is necessary for them to be logged in if they wish to engage with the site beyond that feature. As such, the site has the ability for users to create an account by signing up with their details including their name, email address, country of origin and a password. Users are able to login by entering their email address and password on the login page. Once users have been authorised with the site they will gain the ability to ask and answer questions, look at and edit their profile information and look at the user index.

The site contains seven main pages or page types: the homepage, the login, the signup, the feed, user's individual account pages, a user index and each question has its own individual page. The homepage for the site serves as the welcome page for users and visitors, it contextualises the application's purpose and provides links to other pages of the application. The login page allows existing users to login into their account and access the full functionality of the site. The signup page allows new users to to create an account for the application. The feed displays all previously asked questions on the site and users are also able to ask new questions from this page. Each user is given an individual account page that only they are able to access. From this page, users can edit their profile, see which posts they are currently following and comments they've liked. The user index page displays a list of all current users of the site. Finally each question is given its own individual page. Here, the writer of the post is able to upload a picture alongside their question and edit or delete their post. Users are able to on the post on this page, delete their comment, like/unlike and follow/unfollow the post.

Entity Relationship Diagram



Preventing Integrity Errors

A main field that will need to be validated when users sign up to prevent an integrity error is their email. The user database requires all users to have a unique email for their account to exist. As such, new users cannot create an account with an already in use email account. Similarly, the ID of a user will need to be validated when an existing post or comment is attempted to be edited or deleted. This field needs to be validated as only the writer of a post has permission to delete/edit a post/comment. Validating users' ID when they attempt these actions will prevent integrity errors. The number of comments on a post will need to be validated to prevent an integrity error due to each post only being allowed one comment. The template has been adjusted to make it impossible for users to add another comment to a post if it currently already has one.

Security Concerns

Protecting user privacy is one of the key security concerns of the site. User privacy will be further protected by implementing an authorisation system into the site. A combination of user authorisation and authentication will be used via a password system to make sure users have permission to access what they are trying to access and protect personal information. As such, users will be required to set up a password for their account which requires a minimum of 6 characters to be accepted. Similarly a hashing system will be used for the site, meaning that when users login into the site an encryption technique is used to create a brief string of characters and/or integers which replaces their chosen password. As such, attacks would not have access to users' password if the site were to be compromised. Instead, they obtain access to the encrypted "hash" that the password generates (Hoffman, 2020).

Furthermore, object relational mapping (ORM) is supported by SQLAlchemy which aids in protecting against SQL injection attacks. ORM allows you to read, write, and query whole objects by mapping your database tables to your objects. ORM is a fantastic approach to prevent SQL Injection since it lowers the use of explicit SQL. Similar to other injection attacks, SQL Injection begins with malicious user input. As a result, ensuring the user's input is genuine is an excellent strategy to avoid it. If it isn't, the procedure will be aborted, or the possibly harmful characters will be removed (Is SQL injection protection built into SQLAlchemy's ORM or Core?, 2021).

Professional, Ethical and Legal Obligations

One of the professional obligations of the project is delivering the completed application by the due date, Sunday the 19th of December 2021 at 11:55pm. In order to ensure the project is completed in time a number of measures have been taken, including the breakdown of the project into a Trello board. This organisational tool aids in time management as it outlines everything that needs to be completed for the project, both with an appropriate due date and priority level for each individual task.

In order to make sure the project abides by the ethical codes of conduct approved by the industry all developers will be made to read and abide by the Code of Ethics found on the Information Technology Professionals Association website (Code of Ethics, 2021). Whilst developers will follow all standards outlined on the site, they must pay particular attention to the standards concerning privacy, communication and system integrity. These codes are given special attention because they are the ones most likely to impact the application when it is being built and has been deployed. As such, developers will only access user's personal information when it is required in the course of their responsibilities. Similarly, they will keep users updated about technological issues that may impact them, and developers will work to maintain the quality of the technologies they are in charge of.

As users are able to sign up to the site, their personal information including their email is stored in a user database. In order to follow legal obligations a *Privacy Policy* is included in the site to inform users that their information is being collected and stored. Similarly, the site also has a *Terms of Use for Contributors* as users do have the ability to post on the website. Given the nature of the application being a question and answer site people may rely on the information or advice posted on the site. As such, a *Website Disclaimer* is used to outline that the site does not endorse or validate content posted by users.

References

- Hoffman, B., 2020. *How Do Passwords Work?*. [online] Thycotic. Available at: <https://thycotic.com/company/blog/2020/05/07/how-do-passwords-work/#:~:text=Hashing%20turns%20your%20password%20> [Accessed 18 December 2021].
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