Presentation (UI)

Brower based user interface

API Management

HCMUT Authenciation (Login)   BKPay (Buy printing pages)   Give papers to students each semester

Log printing action   Generate report   Change system configurations   Manage printer

View printing log   Printing

Data Storage

System storage

1. User interface

According to the requirements, we decide to implement the application as a web application. The interface will therefore be written in HTML. In the final product, it will take a form similar to what drawn in Figma in the previous section 2.4. In design perceptive, the main focus is intuitive and easy-to-look-at for user. The main color theme is a mix between dim blue and dim white color. Combining those colors with the color black used in word font makes words easily readable. For sake of simplicity, for each function that SPSO or student can access, there is only one main flow for each. Each flow has many states that require user input and they go back to the previous state. When there's need for user input, the user will input through a text box or a button. If there's a lot of thing of the same type like log or report, a list will be used to display them.

2. External services/API

On the student's side, they can only use printing and view printing log. Printing will be carried out with what the student specify through the interface if they have enough paper to print. To view log, the system will get data from the storage, filters out any log that doesn't include the current student user's activity and display it.

For SPSO, they are allowed to change many system configurations and manage printer. This includes changes made to the number of pages to give to students each semester, the date to give pages to them each semester, the type of file that is allowed to be printed or enabling/disabling printer. Any change resulted from these actions will be saved in the system storage. And for viewing log, all logs will be fetched from the storage and display appropriately.

The system will automatically record any usage of the printing service and log it into the storage. Based on the usage of last month, a report will be generated and saved in the storage..

Next, the system makes use of 2 external services: HCMUT_SSO authentication and BKPAY payment system. When a user access to the website, the system redirects to the login interface of HCMUT_SSO. Only user that successfully login into their HCMUT_SSO account will be allowed to further interact with the system. With the authentication completed, user can also now access to the BKPAY system, which

can only be used by members of HCMUT. When the user wants to buy more paper, an entry will be added to the BKPAY account of the user. Payment will be handled in BKPAY service and only add more page to the user when the payment is completed.

3. Data storage

The main storage that will be used is the system storage. Logs and reports that generated at the end of the month or year will be saved for later view from student or SPSO. Each time the printing service is used, a log entry is saved in the system. An entry must have the followings data: user student's ID, used printer's ID, printed file's name, date and time when starts and ends printing, a list of number of printed pages for each page size, one sided/double sided. For the report, it will be saved separately from the log and contains data about the usage of the service in the past month or past year. It will contain all the log entry in the last month or last year.

Additionally, data about student and SPSO's account is also saved in system storage. The number of pages to give to student each semester, the date to give pages to students each semester, the type of file that is allowed to be printed, which printer is enabled or disabled will also be saved in the system storage.