**SPSOs:**

**Functional requirements:**

* *User Authentication:* SPSOs should have secure authentication to access administrative functions within the system.
* *Printer Management:* SPSOs should be able to add, enable, or disable printers within the system (ID, brand, model, description, and location)
* *Configuration Management:* SPSOs should have the ability to configure various aspects of the system (default number of pages, permitted files, date when default pages are located)
* *Printing Log Access:* SPSOs should be able to view the printing history (log) of all students or individual students for a specified time (student ID, printer ID, file name, printing start and end time, and the number of pages for each page size).
* *Generate Reports:* SPSOs should have the capability to generate reports summarizing system usage, printing trends, and any relevant statistics at the end of each month and year.
* *Account Management:* SPSOs should be able to manage student accounts (add printing pages to student account, view student balances, Disable accounts for misuse or violation of printing policies)
* *Support and Helpdesk:* SPSOs should have access to a helpdesk or support feature to assist students and troubleshoot any issues related to the printing service.
* *Printer Status Monitoring:* SPSOs should be able to monitor the status of all printers, including their availability and maintenance needs.
* *File Type Configuration:* SPSOs should be able to configure and update the list of permitted file types that students can upload for printing.

**Non-functional requirements:**

* *Security:* The system should ensure the security of SPSO accounts and sensitive student data, including printing logs and financial transactions.
* *Performance:* The administrative functions should be responsive and perform efficiently, even with many printers and students.
* *Scalability:* The system should be designed to manage potential growth in the number of printers and students without compromising performance.
* *Availability:* The administrative functions should be available 24/7 to address any urgent issues that may arise.
* *User Interface:* The administrative interface should be user-friendly and intuitive, making it easy for SPSOs to perform their tasks efficiently.
* *Audit Trail:* The system should maintain an audit trail of administrative actions, including any changes made to printer configurations or student accounts.
* *Data Backup:* Regular data backups should be performed to ensure data integrity and recovery in case of system failures.
* *Integration:* The system should seamlessly integrate with the HCMUT\_SSO authentication service and any other relevant university systems.
* *Compliance:* The system should comply with data privacy laws and regulations, ensuring the confidentiality and protection of student information.
* *Logging and Monitoring:* There should be monitoring and logging mechanisms in place to detect and respond to any security incidents or unusual activities related to administrative functions.