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UNIVERSITY OF TECHNOLOGY
FACULTY OF COMPUTER SCIENCE AND ENGINEERING



Software Engineering

A smart printing service for students at HCMUT

Requirements Report

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Contents

1	Requirement Elicitation	2
1.1	Domain Context	2
1.2	Stakeholders and Needs	2
1.3	Benefits of the System	2
1.4	Functional Requirements	3
1.4.1	Students	3
1.4.2	University Administrator	3
1.4.3	SPSO	4
1.5	Non-Functional Requirements	4
2	Use-Case Diagram	5
2.1	Use-Case Diagram for the Whole System	5
2.2	Use-Case Diagram for Printing Module	6

1 Requirement Elicitation

1.1 Domain Context

The HCMUT Student Smart Printing Service is an application designed for students who want to print documents conveniently at multiple campus locations. Through this system, students can upload files, set criteria, and select printers located in various university buildings. The system logs all print-related information, including student IDs, printer IDs, and job data, while restricting access to authorized students via the HCMUT Single Sign-On (SSO) authentication. Students are given a default quota of A4 pages each semester and may purchase additional pages if necessary through an online payment system. Accessible on both mobile and web platforms, the service meets a wide range of user needs.

1.2 Stakeholders and Needs

The primary stakeholders in the HCMUT Student Smart Printing Service (SSPS) are:

- **Students:** They need an easy-to-use service for printing.
- **Student Printing Service Officer (SPSO):** Needs tools to monitor printer operations, collect usage statistics, and configure system settings, including file formats and page limits.
- **University Administration:** Acts as a source manager, provides authentication (HCMUT_SSO) and payment services (BKPay), and ensures efficient operation.

1.3 Benefits of the System

The system provides several benefits:

- For **students**: A convenient, user-friendly platform for managing printing needs.
- For the **SPSO**: Centralized management of printers and user accounts, allowing access to printing service data for reports, improvement, and research.
- For the **university**: Resource efficiency, reduced environmental impact, and streamlined student payments and service management.

1.4 Functional Requirements

1.4.1 Students

- Upload documents in permitted formats.
- Specify printing properties, including paper size, number of copies, single/double-sided, and specific pages.
- Choose a printer location.
- View detailed print logs, remaining page balance, and filter by day, month, or year.
- Purchase additional credits through BKPay.
- Log in through HCMUT_SSO.
- Can only print within available page balance.

1.4.2 University Administrator

- Generate and view aggregate reports on printing usage, filtered by printer or date range.
- Review system performance metrics like uptime, error logs, and usage efficiency.
- Configure financial policies, such as cost per additional page and semester quotas.
- Provide authentication (HCMUT_SSO) and payment (BKPay) services.
- Audit detailed print logs to ensure policy compliance.



1.4.3 SPSO

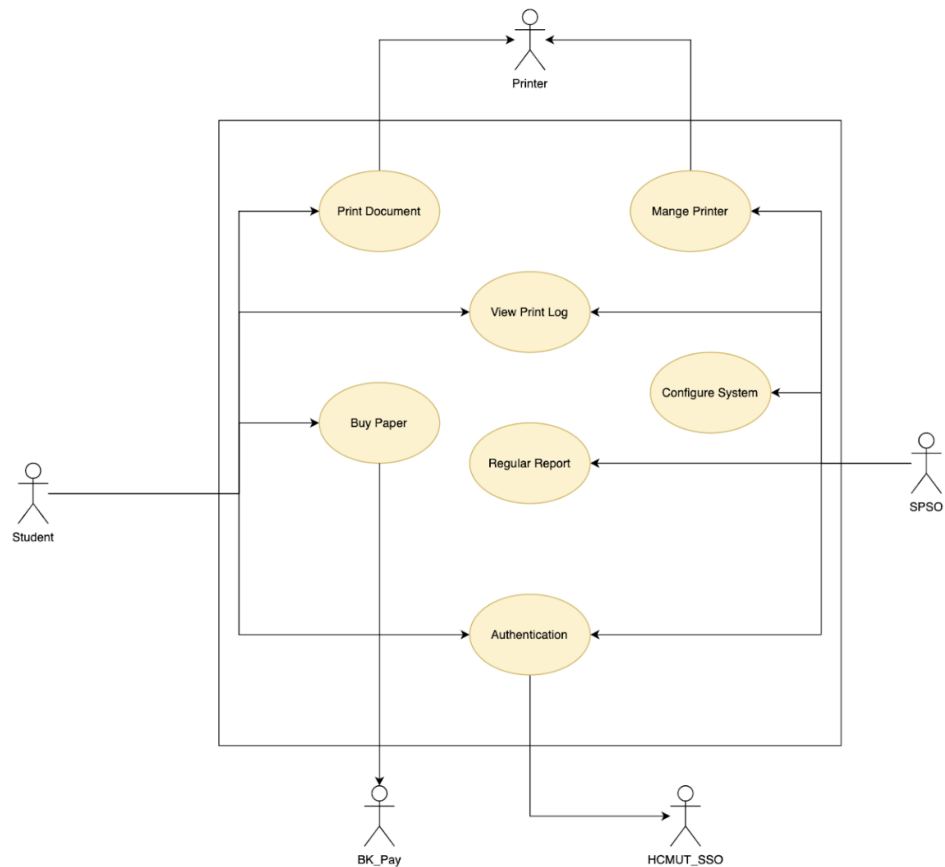
- Add, enable, disable, or remove printers and configure printer details (ID, brand, model, location).
- Configure accepted file types (e.g., PDF, DOCX).
- Set and modify the default A4 page allotment for students per semester.
- Generate reports on printing usage, filtered by date, printer, and student ID.
- Monitor and log printing actions, including student ID, printer ID, file name, and print job timings.
- System automatically generates monthly and annual statistics for SPSO.

1.5 Non-Functional Requirements

- The system must handle concurrent print requests without delays within capacity limits.
- All users must be authenticated via HCMUT_SSO.
- Available on both web and mobile platforms.
- User-friendly interface requiring minimal learning effort.
- Support scalability for an increasing number of users and printers.
- Log printing actions accurately to ensure specified document output.

2 Use-Case Diagram

2.1 Use-Case Diagram for the Whole System



2.2 Use-Case Diagram for Printing Module

