VIETNAM NATIONAL UNIVERSITY

HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY

FACULTY OF COMPUTER SCIENCE AND ENGINEERING

SOFTWARE ENGINEERING (CO3001)

Assignment: A smart printing service for students at HCMUT

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Class: CC02

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1.1:

Domain Context:

Ho Chi Minh City University of Technology - Student Smart Printing Service (HCMUT-SSPS) mostly revolves around the educational domain, specifically serving the printing needs of students in HCMUT, by providing a convenient and efficient printing service for students across the university's campuses. The service operates by placing multiple printers in school campuses and allowing students to interact with them using a software. In the software, students can be authenticated using HCMUT_SSO service for better security and user identity. Students can print up to a certain limit with custom configurations and pay for more credits through online banking systems like BKPay or view their printing history. The limit of pages, page reset date and file types can be configured by the Student Printing Service Officer (SPSO). In addition, the SPSO can also view the students' printing log or the log of some or all printers as well as changing the availability of printers. The service also provides reports and analytics about the printing usage monthly and annually, which can be viewed by the SPSO. In conclusion, the system aims not only to provide the students in HCMUT a efficient and reliable printing service but also helps the university to acquire students' satisfaction about its education quality

Stakeholders:

Include: Students, Student Printing Service Officer, the University, OCB, Software developers.

Stakeholders needs:
- Students: a convenient, reliable, fast service for printing purpose; a cost-effective printing service; an always available printing service.
- Student Printing Service Officer: an efficient way of managing the printing system.
- The University: providing students an effective way of printing study documents; cost-effective system.
- OCB: providing a service for users to pay for the service.
- Software developers: satisfaction of other stakeholders; money; experience.

Stakeholders benefits:
- Students: an affordable, fast printing service; a variety of payment methods; an easy accessibility and availability of printers.
- Student Printing Service Officer: An easy and effective way to manage users' printing options and users' printing usage; more employment.
- The University: additional income from printing fee; improve University's education quality.
- OCB: promoting their banking services.
- Software developers: money; experience; promotion.

1.2:
Functional requirements for some stakeholders:

Students (Users):
- The system must allow users to authenticate via HCMUT_SSO.
- The system must allow users to upload printing files to the system.
- The system must allow users to choose which printer to print their documents.
- The system must allow users to customize their printing options such as paper size, pages (of the file) to be printed, one-/double-sided, number of copies, etc.
- The system must allow users to print to a limited amount (configured by SPSO).
- The system must allow users to view their printing history during a period of time.
- The system must allow users to see their printing with a summary of the number of printed pages for each page size.
- The system must allow users to buy more printing credits through the BKPay system.

Student Printing Service Officer (SPSO):
- The system must allow SPSO to configure printing options such as permitted file types.
- The system must allow SPSO to manage printers such as add/enable/disable a printer.
- The system must allow SPSO to configure the default number of pages a user can have, the date that default number of pages resets.
- The system must allow SPSO to view the printing history of all students and of one student during a period of time in all or some printers.
- The system must be able to automatically generate reports of printing usage at the end of each month, each year, which will be stored in the system, and must allow SPSO to view them.

OCB:
- The system must be able to connect to the OCB banking system.

Non-functional requirements:
Performance:
- The system must be able to handle at least 100 requests at the same time.
- The system must be able to handle banking transactions fast (under 1 minute).

Usability:
- The system must have a friendly user interface that helps users navigate easily.
- The system must allow users to access anywhere, anytime.

Reliability:
- The system must be online 24/7
- The system must recover from crashing quickly (max 1 day)

Security:
- The system must be able to protect users' private infomation.
- The system must encrypt users' data during transactions.
- The system must have secure authentication, and can detect and prevent unauthorized access.

Scalability:

- The system must use scalable cloud service to store users' files as well as printing reports (at least 1gb for each user).

Maintainability:
- The system must be designed modularly and well documented for developers to make changes without breaking the system.
- The system must be tested carefully and regularly (once per week)

Portability:
- The system must be accessible from multiple platforms: Windows/Mac/Linux, Mobile.