HANOI UNIVERSITY

Faculty of Information Technology

FIT329
SYSTEM ANALYSIS & DESIGN
FINAL REPORT

Faculty:	**Information Technology**
Module Code:	**FIT329**
Module Name:	**System Analysis & Design**
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Topic:	**Computer Shop Management System**
Group:	
Group members:	**Lương Thái Dương (1501040042)**
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	Trần Hoàng Anh (1501040014)
Class:	**4C-15**

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ABSTRACT

Technological Revolution substantially changed our life. Computers has become more and more important in our work and entertainment. The need of computer is increasing each year. Therefore, a System that helps Computer Shops and customers in sale, management will make it easier to bring those technology products to many people. Computer Shop Management System is a solution for customers ordering PCs, laptops and computer components online as well as management them in store inventory. The goal of our project is to followed the Rational Unified Process (RUP) to capture the business context of the system, collect and specify requirement for the system, analysis the requirements to provide an architectural design solution for the Computer Shop Management System. The Computer Shop Management System is designed to fulfil both functional and non-functional requirements. The results of our works consist of system documentations for three workflows: business modeling, requirements and analysis & design; Unified Modeling Language (UML) model artifacts (using Visual Paradigm); and a runnable prototype of the system.

GROUP ROLES

Members	**Roles**
Lương Thái Dương (1501040042)	Business Designer, Business Process Analyst
Trần Hoàng Anh (1501040014)	Requirements Specifier
Nguyễn Thị Hiền (1501040070)	Software Architecture, Designer, Database Designer

1. Business Modeling (Lương Thái Dương)

Dương is the business designer and business process analyst. She is responsible for the business architecture. She details the specification of a part of the organization by describing the workflow of one or several business use cases, along with defining the responsibilities, operations, attributes, and relationships of one or several business workers and business entities. She also leads and coordinates business use-case modeling by outlining and delimiting the organization being modeled; for example, establishing what business actors and business use cases exists and how they interact.

2. Requirements Definition (Trần Hoàng Anh)

Hoàng Anh is the requirements specifier. He detailed the specification of a part of the system's functionality by describing the Requirements aspect of one or several use cases and other supporting software requirements. He is also responsible for the use-case package, and maintains the integrity of that package. He detailed the use cases and the supplementary requirements and made them consistent with other requirements discipline artifacts. Besides, he captured requirements on the user interface, including usability requirements.

3. Prototype (Nguyễn Thị Hiền)

Hiền have implemented a prototype to demonstrate the Computer Shop Management System functionality using HTML, CSS & JavaScript (with additional libraries and frameworks such as Bootstrap, jQuery, AngularJS, …). The prototype is provided a simple Graphical User Interface and have some function of the system specified in requirements definition such as sign-in, display computers, add computers, …

The prototype is to demonstrate the system functionality; therefore, there are no server-side code and dedicated database yet. Also, in the prototype, models and controllers are putted into a single file. To ease the demonstration, runtime variables are used to store data objects (computers, users, orders, …) instead of a dedicated database; thus, changes will not be saved permanently.

Account for testing prototype:

Email	**Password**	**Account Type**
customer@mail.com	123456	Customer
employee@mail.com	123456	Employee
accountant@mail.com	123456	Accountant

4. Analysis & Design (Nguyễn Thị Hiền)

As a software architecture, Hiền leads and coordinates technical activities and artifacts throughout the project. Her primary responsibility is to establish the overall structure for each architectural view: the decomposition of the view, the grouping of elements. Therefore, she has a breadth view of the system architecture. The table below describes detailed her activities as a software architecture in the Analysis & Design workflow.

Activity	**Description**	**Output Artifacts**
Prioritize Use Cases	Define input to the selection of the set of scenarios and use cases that are to be analyzed in the current iteration. Define the set of scenarios and use cases that represent some significant, central functionality. Define the set of scenarios and use cases that have a substantial architectural coverage or that stress or illustrate a specific, delicate point of the architecture.	Software Architecture Document
Architectural Analysis	Define a candidate architecture for the system, based on experience gained from similar systems or in similar problem domains. Define the architectural patterns, key mechanisms and modeling conventions for the system. Define the reuse strategy.	Use-Case Realization, Deployment Model, Software Architecture Document, Design Model
Identify Design Mechanisms	Refine the analysis mechanisms into design mechanisms based on the constraints imposed by the implementation environment.	Design Model, Software Architecture Document

Incorporate Existing Design Elements	Analyze interactions of analysis classes to find design classes. Refine the architecture, incorporating reuse where possible. Identify common solutions to commonly encountered design problems. Include architecturally significant design model elements in the Logical View section of the Software Architecture Document.	Design Model, Software Architecture Document
Describe Distribution	Describe how the functionality of the system is distributed across physical nodes.	Software Architecture Document, Deployment Model
Identify Design Elements	Analyze interactions of analysis classes to identify design model elements.	Design Model

As a designer, Hiền is in charge of defines the responsibilities, operations, attributes, and relationships of several classes, and determines how they will be adjusted to the implementation environment of the Computer Shop Management System. The table below describes detailed his activities as a designer in the Analysis & Design workflow.

Activity	**Description**	**Output**
Use-Case Analysis	Identify the classes which perform a use case's flow of events. Distribute the use case behavior to those classes, using use-case realizations. Identify the responsibilities, attributes and associations of the classes. Note the usage of architectural mechanisms.	Analysis class, Use-Case Realization, Design Model, Analysis Model

Use-Case Design	Refine use-case realizations in terms of interactions. Refine requirements on the operations of design classes.	Use-Case Realization
Class Design	Ensure that the class provides the behavior the use-case realizations require. Ensure that sufficient information is provided to unambiguously implement the class. Handle non-functional requirements related to the class. Incorporate the design mechanisms used by the class.	Design Class

As a database designer, Hiền essential obligation is defining the tables, indexes, views, constraints, and other database-specific constructs needed to store, retrieve, and delete persistent objects. The table below describes detailed her activities as a database designer in the Analysis & Design workflow.

Activity	**Description**	**Output**
Database Design	Ensure that persistent data is stored consistently and efficiently. Define behavior that must be implemented in the database.	Data Model

5. Conclusion

Based on knowledge acquired from this course (FIT329 SAD) and previous courses, we have designed a management system with requirement match real world business (Computer Shop Management System). In our project, we have modeled business context for the system, capture and describe system requirement using both textual and UML notation. Moreover, we have designed the system using Model-View-Controller models as a foundation; therefore, improve robustness and reusability of system components. Also, a runnable prototype is built based on the requirement to demonstrate system functionality. Nevertheless, there is still room for improvement in project. Because our knowledge base limit and inexperience in System Analysis & Design particularly and Information Technology in general, erroneous in our work are inevitable. Therefore, we will continue improve our knowledge to deliver better product in the future.