**INTERNATIONAL UNIVERSITY - VIETNAM NATIONAL**

**UNIVERSITY SCHOOL OF INDUSTRIAL ENGINEERING AND MANAGEMENT**

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**PROJECT REPORT**

**Management Information System**

Lecturer: Dr. Le Hai Duong

|  |  |  |  |
| --- | --- | --- | --- |
|  | NAME | ID | CONTRIBUTION |
| 1 | Phạm Ngọc Huy | IELSIU19166 | 100% |
| 2 | Lương Nguyễn Thảo Linh | IELSIU19188 | 100% |
| 3 | Nguyễn Thị Thái Bình | IELSIU19115 | 100% |
| 4 | Phạm Tuyết Ngân | IELSIU19048 | 100% |

Ho Chi Minh, December 27,2021

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6. **Introduction**

Alongside with the rapid development of advanced information technology, life quality is also in need of enhancing in various aspects. As people are leading way more hectic lives than before, convenience has become one of the top priorities in daily-life activities. Based on that increasing need, several enterprises from different fields start to transform their services into online platforms using information systems. One of the biggest aspects that takes place in most people’s lives that has made a great transformation in offering services through various channels is shopping, including retailers, supermarkets and even convenience stores. Catching up with the great shift in online shopping trend worldwide that brings convenience as well as amazement into the shopping experience for the customers, this project offers a basic online shopping website. The offered website would provide customers with the ability to place orders, browse for items, make payments or even experience having discounts on the web with ease. By equipping the customers with such ability, online shopping websites would be a convenient as well as an indispensable tool in people’s lives.

* 1. Purpose

The conventional shopping approach requires the customers to get to the physical stores and browse then experience the items for themselves, which is extremely inconvenient for those who have travel restrictions or limited time allowed. Moreover, retailers’ physical stores do not always offer everything they have in stock due to limited displaying space and sometimes that may cause confusion for the customers. Therefore, in view of optimizing shopping processes as well as offering convenience and comfort to the customers, an online shopping website is a good option to take. Not only would the website provide customers with ease in browsing and shopping time, but it would also help them with immediate checkout without any queueing or delay. The online shopping website mentioned would also bear resemblance to the traditional shopping methods in terms of inputs, outputs, and processing stages, just shifting from the offline paper and manual checking into using information systems.

* 1. Scope

Applications of information systems are various in several aspects. However, this project will concentrate on using an information system in managing an online shopping platform called SUNMART, which is an electronics shopping website to be more particular. From that, we would scope the work down to managing the shopping procedures from the view of an enterprise offering the service, which would offer a better view of basic activities of online shopping websites managers with specific inputs and outputs on the products.

1. **System specification**
   1. Functional Requirements And Related Business Processes
      1. Business requirement
         1. Online payment processing

Applications of information systems are various in several aspects. However, this project will concentrate on using an information system in managing an online shopping platform called SUNMART, which is an electronics shopping website to be more particular. From that, we would scope the work down to managing the shopping procedures from the view of an enterprise offering the service, which would offer a better view of basic activities of online shopping websites managers with specific inputs and outputs on the products.

* + - 1. Automated customer communications

There are a variety of ways for customers and administrators of online commerce websites to communicate automatically. However, automatic communication by email is arguably the quickest and most dependable method. Our customers come from many different countries. They reside in different parts of the world and work in different time zones, so they can make purchases at any time. As a result, the automated system will send a successful order confirmation email to customers as soon as they make an order successfully. Sending messages via email is far more formal and secure than sending messages through a phone number. Furthermore, we can regularly update more information for customers such as restocked products, exclusive promotions for each customer. When buying on Sunmart, everything feels great in terms of security and safety.

* + 1. Functional requirement

The primary purpose of this Sunmart website is to allow customers to search for and purchase electronic devices. Because we always want to expand to all customers, our team attempts to design an easy-to-use website that everyone can use. Customers are king, and their pleasure is always the top priority:

- Products & Merchandise: Display and sell electronic products, Quick search, multi-function product filter, Search by keyword, category, price... Multiple parameters support (Item code), warranty, color, size ...), Set image size, zoom image when viewing products, Display promotions, discounts, Reviews, product comments, Set related products.

* Make Order & Submit Order: Smart product suggestion mechanism, Intuitive shopping cart, Professional shopping cart feature, easy to use, add to cart with one click, Update cart information, remove products from cart, Submit Order to Order, Checkout and New Order Process.
* Inventory management: Flexible catalog arrangement, Option to hide/show categories, manage product list, Filter, search for products by multiple criteria, set stock/out of stock status, Settings set parameters for goods, Add, edit, delete products, Alert when out of stock.
* Order management: Receiving online orders, viewing order information, Processing, and changing order status, Tracking, order information notes, Order cancellation confirmation, Order confirmation successful goods.
* Customer management: Manage customer information, Search by name, email, phone, group, Update customer information easily.
* Payment & Shipping: Supports many online payment methods integrated with e-wallets and bank cards.
* Marketing & Promotion: Set up groups of promotional products, discounts, new products, upcoming goods... Upload promotional product groups to the homepage or any location on the website, send emails to hundreds of people, thousands of customers, Save the executed campaigns.
  + 1. Use case diagram

Customers who have an account will log in; new customers will register to have an account. Information will be sent to the system’s database and updated product information to Sunmart employees. After logging into their accounts, customers will browse and make orders and information will be sent to systems databases and information systems. Information systems will send order information to employees, employees will update order status back. Information systems will send order status to customers and lead customers to make payments. Payment will update immediately with the system database.

Diagram

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*Figure 1: General Use Case Diagram*

The Hooking Use Case diagram closely illustrates all the processes and people involved when using our Sunmart website. There are four actors that directly impact the process: new customer, registered customer, web customer, and manager/admin. To begin with, new customers without an account can only search and browse things, as well as view feedback and act as viewers. New customers to the website that want to make an order need to go through a registration step. It requires new members to type in their necessary information like their name, address, date of birth to create an account for purchasing purposes. Then, they become registered customers and can now log in and do more actions. Specifically, they can view their desired products, make or cancel an order, checkout, make purchases (by bank card or by e-wallet), as well as take feedback about products. Besides, our website has a manager/admin who has the responsibility to manage accounts. This person can view account information/ customer authentication/ calculation cost/manage payment. He/she is in charge of changing any inappropriate or irrelevant account information. To protect our clients' liabilities, the account manager can deactivate any false or seeding accounts on our website.

Diagram, schematic

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*Figure 2: The Hooking Case Diagram*

* 1. Other Requirements
     1. Interface requirements

Top priority of creating a website for users is that the user interface should be straightforward and attractive. Therefore, the components of the user interface of SUNMART would contain:

*Table 1. Requirements and functions of user interface components on SUNMART*

|  |  |  |
| --- | --- | --- |
| Component | Requirements | Function |
| Log-in / Sign-up section | Straightforward with replacing other logging in methods via social media with icons | Users can access this section to log in  existing accounts or sign up for new ones |
| Home page | Categories in the menu should be illustrated as icons and frontline bars or searching boxes should be in appropriate font, size and colors. | Users would be able to browse for products and get a categorized menu with various products here. |
| Shopping cart | Shopping cart should display selected items with corresponding shipping fees or prices and taxes. Moreover, a shopping cart should be able to lead the users to the original link of an item in it when they click on the items. | Users can visit and control what they one to buy by using a shopping cart to store items as a pre-payment step. |
| Payment | Payment section should have adequate and necessary text boxes requiring receivers’ basic information for shipping. Such text boxes should be followed with a small-size example to guide the users. | Users can complete shopping by filling in the payment section with enough information on the receiver's information and payment method. |

* + 1. System requirement

Integrating information systems into managing online shopping websites requires a lot on the system since it has to be straightforward for both users and managers. Therefore, the following expectations on the system should be met:

* Real-time information: Since an online shopping website is a tool to connect the seller and buyers, SUNMART’s information should be continuously updated in order to keep the customers aware of the current quantity and quality of items. Moreover, real-time information would also help the managers in strategies planning when the inventory drops without any ado.
* Maintainability: Being an online platform, SUNMART is really prone to errors, which may result from viruses or the Internet or any unwanted events. Therefore, the system for SUNMART should be easy to maintain and modify by SUNMART technicians themselves. Effortless maintainability would save a lot for the company in the long run when it comes to costs or the reliability of the website.
* Responsive performance: Busy customers would be more demanding on the website performance. They would love to have a responsive system with an average turnaround of fewer than 2 seconds. This would be a problem during rush shopping hours, when there are too many customers accessing the website at once, responsive performance would save the customers from crashing or gain their loyalty.
* Straightforward navigation: Not every customer is good at using modern technology, which means the easier the navigation, the more adaptable the system. Customers only stay with the website if they find it easy to use when every single button or section is organized logically or easy to find. Therefore, the website navigation systems of SUNMART should be displayed in a logical order but still attractive to the customers’ preferences in colors or images.

1. **System specification**
   1. Graphical user interface flow

Diagram

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*Figure 3: Graphical user interface flow*

Entering the home page, users can either search for their product or log in before surfing the web. However, the login step is needed to proceed with the payment. There are two ways to log in:

* If users haven’t had an account, follow the instructions to create one then visit the web.
* If users already had the account, enter the email and password then you can now go shopping.

After login, users can search keywords for their desired products then choose the most appropriate one, add to the cart then proceed with the payment whenever they want. Or they just randomly pick their favorite items while surfing the website, add to the cart then proceed to checkout. Down to the right corner of the page, there is a small box chat for users to interact with us.

* + 1. Business process formula

Diagram

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*Figure 4: Business process formula*

Any visitors to the website can search for their products and check for availability. They can select the product and the quantity they want. Once a bill is made. Customers have to pay the charge through the credit card number that they registered. When the bill is submitted, we will send out a confirmation message via text message or email.

* 1. Database design
     1. Class diagram

Diagram

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*Figure 5: Class Diagram*

The data will be created in the excel file which includes products, employees, and suppliers. There are many products collaborating with our group project’s website. Each product has its SKU, name, inventory level, and price.

There will be a category for customers to save their information when they use the website. When a guest/customer enters the web, what they have to do is login by their account, or if they do not have an account, they have to register with their own information. The information would be their name, email address, phone number, current address. They will receive an ID. After that, they can start shopping.

They also have the right to buy products and rate with their comments. This rating will be saved in the excel file, too. Of course, it will be public on the website for other customers to see them.

There will be data of employees that customers need help or advice when they have trouble in choosing a product or knowing more information about the product. Of course, that employee will have ID, Name, experience, and field.

Each guest will have their own bill with the information input and system confirmation. The bill comprises many components that show fully the information of the ID, status catalog, the price (with a discount or not), as well as buying of guests, sent back from the customer’s data to the host server. Therefore, the web manager can easily handle the information of the guests and base on that to give them the complete service and price.

* + 1. ERD diagram

Diagram

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*Figure 6: ERD Diagram*

* + 1. CODE

a CREATE DATABASE MANAGE1

USE MANAGE1

CREATE TABLE EMPLOYEE

(

    ID\_EMPLOYEE NVARCHAR(100) PRIMARY KEY,

    NAME\_EMPLOYEE NVARCHAR(100),

    SPECIALLY NVARCHAR(100),

    EXP\_YEAR INT

)

CREATE TABLE CUSTOMER

(

    ID\_CUSTOMER NVARCHAR(100) PRIMARY KEY,

    NAME\_CUSTOMER NVARCHAR(900),

    DATE\_BIRTH DATE,

    CUSTOMER\_ADDRESS NVARCHAR(900),

    PHONE\_NUMBER INT,

    ID\_EMPLOYEE NVARCHAR(100)

    FOREIGN KEY( ID\_EMPLOYEE) REFERENCES EMPLOYEE( ID\_EMPLOYEE)

)

SET DATEFORMAT DMY

CREATE TABLE PRODUCT

(

SKU\_PRODUCT NVARCHAR(100) PRIMARY KEY,

INVENTORY\_LEVEL  INT,

NAME\_PRODUCT NVARCHAR(100),

PRICE NVARCHAR(100)

)

CREATE TABLE SUPPLIER

(

    ID\_SUPPLIER NVARCHAR (100) PRIMARY KEY,

    SKU\_PRODUCT NVARCHAR(100),

    NAME\_COMPANY NVARCHAR(100),

    PHONE\_NUMBER INT,

    QUANTITY\_PRODUCT INT,

    FOREIGN KEY (SKU\_PRODUCT) REFERENCES PRODUCT

)

CREATE TABLE BILL

(

    ID\_BILL NVARCHAR(100) PRIMARY KEY,

    SKU\_PRODUCT NVARCHAR(100),

    ID\_CUSTOMER NVARCHAR(100),

    ID\_EMPLOYEE NVARCHAR(100),

ID\_SUPPLIER NVARCHAR(100),

    PRICE NVARCHAR(100),

    DATE\_BILL DATE,

    FOREIGN KEY (ID\_CUSTOMER) REFERENCES CUSTOMER,

    FOREIGN KEY (ID\_EMPLOYEE) REFERENCES EMPLOYEE,

    FOREIGN KEY (SKU\_PRODUCT) REFERENCES PRODUCT,

FOREIGN KEY (ID\_SUPPLIER) REFERENCES SUPPLIER

)

SET DATEFORMAT DMY

CREATE TABLE RATEPRODUCT

(

    ID\_CUSTOMER NVARCHAR(100),

SKU\_PRODUCT NVARCHAR(100),

COMMENT\_CUSTOMER NVARCHAR(100),

    STAR\_PRODUCT INT,

    FOREIGN KEY (ID\_CUSTOMER) REFERENCES CUSTOMER,

FOREIGN KEY (SKU\_PRODUCT) REFERENCES PRODUCT

)

INSERT INTO EMPLOYEE (ID\_EMPLOYEE, NAME\_EMPLOYEE, SPECIALLY, EXP\_YEAR) VALUES

('QUY1911', N' NGUYỄN HỮU QUÝ', N' CHUYÊN VIÊN TƯ VẤN SẢN PHẨM ĐIỆN TỬ', 2),

('HUNG19122', N' PHẠM HOÀNG HÙNG', N'CHUYÊN VIÊN SỬA CHỮA', 4),

('NGUYEN1988', N' PHAN BÁ KHÔI NGUYÊN', N'CHUYÊN VIÊN TƯ VẤN SẢN PHẨM ĐIỆN TỬ', 3),

('TAN1988', N' NGUYỄN LÊ ĐỨC TẤN', N' CHUYÊN VIÊN TƯ VẤN SỬA CHỮA', 4),

('HAI1913', N' HUỲNH HOÀNG HẢI', N'CHUYÊN VIÊN LẮP ĐẶT, SỬA CHỮA PHẦN CỨNG', 5),

('DAN1969', N' PHÙNG XUÂN ĐOAN', N'CHUYÊN VIÊN TƯ VẤN PHẦN MỀM', 5)

INSERT INTO CUSTOMER (ID\_CUSTOMER, NAME\_CUSTOMER, DATE\_BIRTH, CUSTOMER\_ADDRESS, PHONE\_NUMBER, ID\_EMPLOYEE) VALUES

('IELSIU19166', N' PHẠM NGỌC HUY', '10/12/2001', N'CHUNG CƯ MASTERI, TÒA A, QUẬN 2', 0775018298,'QUY1911'),

('IELSIU19204', N' LẠI NHẬT NAM', '07/05/2001', N'VINHOME CENTRAL PARK, QUẬN BÌNH THẠNH', 0399999999,'HUNG19122'),

('IELSIU19195', N' DƯƠNG TẤN LỘC', '11/02/2001', N'CHUNG CƯ VINHOME, QUẬN 9', 0381111099, 'NGUYEN1988'),

('IELSIU19187', N' ĐÀO NGỌC THÙY LINH', '09/09/2001', N'LANDMARK 81, TÒA B1, QUẬN BÌNH THẠNH',0987778889,'TAN1988' ),

('IELSIU19188', N' LƯƠNG NGUYỄN THẢO LINH' , '08/08/2001', N'CẦU ÁNH SAO, QUẬN 7' , 0987888349,'HAI1913' ),

('IELSIU19115', N' NGUYỄN THỊ THÁI BÌNH' , '07/05/2001', N' KÍ TÚC XÁ KHU B, ĐHQG TP.HCM' , 0779658913, 'DAN1969')

INSERT INTO PRODUCT (SKU\_PRODUCT, INVENTORY\_LEVEL, NAME\_PRODUCT, PRICE ) VALUES

('46', 34, 'MACBOOK M1', N'20000$'),

('12', 45, 'IPHONE 13 PROMAX' , N'1500$'),

('34', 56, 'CLEANING ROBOT' , N'780$'),

('56', 78, 'AIR POD 3', N'400$'),

('67', 89, 'AIR POD MAX', N'780$'),

('103', 89, 'IMAC M1', N'THƯƠNG LƯỢNG VỀ GIÁ')

INSERT INTO SUPPLIER (ID\_SUPPLIER, SKU\_PRODUCT, NAME\_COMPANY, PHONE\_NUMBER, QUANTITY\_PRODUCT)VALUES

(N'L1899', '46', 'SUNMART' , 0399995555, 34),

(N'L1892', '12', 'SUNMART' , 0399995555, 45),

(N'L1893', '34', 'SUNMART' , 0399995555, 56),

(N'L1894', '56', 'SUNMART' , 0399995555, 78),

(N'L1895', '67', 'SUNMART' , 0399995555, 89),

(N'L1896', '103','SUNMART' , 0399995555, 89)

INSERT INTO RATEPRODUCT (ID\_CUSTOMER, SKU\_PRODUCT, COMMENT\_CUSTOMER, STAR\_PRODUCT) VALUES

('IELSIU19166', N'46', N' XÀI RẤT TỐT, RẤT HÀI LÒNG', 5),

('IELSIU19204', N'46', N' SAU 1 THÁNG XÀI THÌ HƠI GIẬT LAG, NÊN QUYẾT ĐỊNH MUA THÊM CÁI NỮA :V', 5),

('IELSIU19195', N'12', N' GIÁ RẺ, DÙNG LÙA MÈO RẤT TỐT, RƠI VÀI LẦN RỒI NHƯNG MỚI VỠ MÀN HÌNH :">', 5),

('IELSIU19195', N'34', N' DỌN KHÁ SẠCH , NHƯNG CŨNG PHẢI QUÉT LẠI NHÀ DO VỢ BẮT :"<', 4),

('IELSIU19187', N'56', N' SPAM CHO VUI HIHI', 5),

('IELSIU19188', N'67', N' BEAT NGHE HAY NHƯ BEAT CỦA TOULIVER :3', 5),

('IELSIU19115', N'103', N' CON MÁY NÀY NHÌN NHƯ MÁY HÚT BỤI VẬY' , 2)

INSERT INTO BILL  (ID\_BILL,SKU\_PRODUCT, ID\_CUSTOMER, ID\_EMPLOYEE, ID\_SUPPLIER, PRICE, QUANTITY\_BUYING, DATE\_BILL) VALUES

('L1002', '46', 'IELSIU19166', 'QUY1911', 'L1899', N'40000$',2, '28/10/2021'),

('L2001', '46', 'IELSIU19204','HUNG19122', 'L1899',N'40000$',2, '30/10/2021'),

('L3010', '12', 'IELSIU19195', 'NGUYEN1988', 'L1892',  N'1500$',1, '24/09/2021'),

('K1021', '34', 'IELSIU19195', 'NGUYEN1988', 'L1893', N'1560$',2, '24/09/2021'),

('K1022', '56', 'IELSIU19187', 'TAN1988', 'L1894', N'800$',2, '24/09/2021'),

('J1200', '67', 'IELSIU19188', 'HAI1913', 'L1895' , N'1560$',2, '25/09/2021'),

('M2001', '103', 'IELSIU19115', 'DAN1969', 'L1896' ,  N'THƯƠNG LƯỢNG VỀ GIÁ',1, '28/09/2021')

SELECT ID\_BILL, PRODUCT.SKU\_PRODUCT, EMPLOYEE.ID\_EMPLOYEE, CUSTOMER.ID\_CUSTOMER

,NAME\_PRODUCT, NAME\_EMPLOYEE, NAME\_CUSTOMER, CUSTOMER\_ADDRESS, DATE\_BIRTH, CUSTOMER\_ADDRESS

,CUSTOMER.PHONE\_NUMBER

,QUANTITY\_BUYING, DATE\_BILL, BILL.PRICE

,COMMENT\_CUSTOMER, STAR\_PRODUCT

FROM EMPLOYEE, CUSTOMER, PRODUCT, SUPPLIER, RATEPRODUCT, BILL

WHERE EMPLOYEE.ID\_EMPLOYEE = CUSTOMER.ID\_EMPLOYEE  AND PRODUCT.SKU\_PRODUCT = SUPPLIER.SKU\_PRODUCT  AND CUSTOMER.ID\_CUSTOMER = RATEPRODUCT.ID\_CUSTOMER

AND PRODUCT.SKU\_PRODUCT = RATEPRODUCT.SKU\_PRODUCT AND BILL.ID\_CUSTOMER = CUSTOMER.ID\_CUSTOMER AND BILL.ID\_EMPLOYEE = EMPLOYEE.ID\_EMPLOYEE

AND BILL.SKU\_PRODUCT = PRODUCT.SKU\_PRODUCT AND BILL.ID\_SUPPLIER = SUPPLIER.ID\_SUPPLIER

--FROM RATEPRODUCT

DROP TABLE EMPLOYEE

DROP TABLE CUSTOMER

DROP TABLE PRODUCT

DROP TABLE SUPPLIER

DROP TABLE BILL

DROP TABLE RATEPRODUCT

DROP DATABASE MANAGE1

ALTER TABLE BILL ADD QUANTITY\_BUYING INT

* + 1. Data

**CUSTOMER:**

A picture containing table

Description automatically generated

**EMPLOYEE:**

Text

Description automatically generated

**SUPPLIER:**

Table

Description automatically generated

**PRODUCT:**

Graphical user interface, text, table

Description automatically generated

**RATE PRODUCT:**

Text

Description automatically generated

**BILL:**

`Graphical user interface, application, table

Description automatically generated

1. **System implementation data**
   1. Website demo

A picture containing text, indoor, screenshot

Description automatically generated

*Figure 7: Website Home Page*

Graphical user interface, application

Description automatically generated

*Figure 8: Registration page*

Graphical user interface, website

Description automatically generated

*Figure 9: Best seller page*

Graphical user interface, website

Description automatically generated

*Figure 10: Product page*

Graphical user interface

Description automatically generated

*Figure 11: Checkout page*

1. **Conclusion**

To sum up, our web is still in the testing and implementing phases, yet it still has fundamental functions to run and meet the requirements of the project. Due to some financial limitations, our web, unfortunately, cannot unlock the payment function, apart from that, the remains perform well and are decently decorated.