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**Course Project**

**[CMP184] – Systems Analysis And Design**

Major: **INFORMATION TECHNOLOGY**

**Supervisor:** Mr.Ngô Thanh Hùng

**Student’s name :**

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Dev: Hi, thanks for taking the time to meet with me today. To start, can you share with me the general idea of ​​the website you want to build?

Customer: Hi. I just think that I need a website... an "online store" to sell my software keys. How can people come in to see the products and then buy them?

Dev: I understand. "Online store" is a great place to start. So let me try to visualize it with you. When customers visit, they will see a main page that displays all the products, right?

Customer: That's right! There should be pictures, product names, and prices for people to see. Oh, sometimes I have many types, if I can categorize them, for example "Windows keys", "Office keys", that would be great.

Dev: Great. So we have two important concepts: Product and Category. For customers to buy, do they need an account? Or can they buy without registering?

Customer: Well... I think we need an account. So that later I can know who bought my products. So there must be a place for people to register and log in.

Dev: That makes sense. When we have an account, we will have another object called User. After logging in, users will be able to review the history of the transactions they have made, right?

Customer: Yes! That is necessary. Sometimes they forget the key they bought, they need a place to review it. And... I want a shopping cart too. Like on Shopee, people can put many items in the cart and pay at once for convenience.

Dev: Yes. So we will have a Cart and an Order, in which each Order will record the transaction history. Now comes the important part, which is your management role. You said you want to manage your own products. Does this mean you need a separate area where you can add new products, change prices, or delete products that are no longer available?

Customer: That's right! I can't call you every time there's a new product, I need a tool for me to do it myself. Only I can do that.

Dev: Of course. This is where the concept of decentralization comes in. In our system, there will be at least two roles:

Customer: They are normal users, they can view products, manage their shopping carts, and make purchases.

Admin: You. You have all the rights of a customer, and you have special rights to manage products.

Customer: That makes sense. You organized my ideas so that they are easy to understand.

Dev: Yes, that's my job. Now, to ensure that our system works well and is easy to upgrade in the future, I will not build it arbitrarily.

Customer: Sounds professional and safe, so I trust your proposal. Just make sure the website runs well, is stable, and I can easily add new features later.

Dev: Don't worry. Based on what we discussed, the next step is to sketch out some simple diagrams to describe these functions and architecture. I will present them to you next time and confirm them again before we start building.

Customer: Great. Thank you, today's conversation was very productive.

Make Transaction

* Actor: Customer, Admin
* Goal: Enable user to buy key for the app
* Precondition:
  + Customer has to be logged in
* Postcondition:
  + A key is generated and given to the customer
  + The key and receipt are sent to the customer’s email
  + Transaction of customer is updated
* Basic Flow
  1. Customer choose product
  2. Customer enter credit card information
  3. After a successful transaction, System Key and receipt to the customer’s email
* Alternative Flow

2A. Credit card information is incorrect

3A. Key fails to generate and the customer is refunded

* Exceptions
  + Connect to server failed

Manage Profile

* Actor: Customer, Admin
* Goal: Let the user change their display name, change password, change profile pic, view transaction history and view current cart
* Precondition:
  + User must be logged in
  + User must not be banned
* Postcondition
  + User’s information is succesfully updated
* Basic Flow
  1. User enter user management system
  2. User view or make changes they want
  3. User update their information
* Alternative Flow

3A. The Account failed to update

* Exception
  + User is banned

Register and login

* Actor: Customer, Admin
* Goal: User can create an account, login and log out of the account
* Precondition:
  + Username or email must not be taken
  + Password must meet the minimum security requirement
* Postcondition:
  + Account is successfully created
* Basic Flow
  1. Customer goes into account registration page
  2. Customer enter required field
  3. Customer press create account
  4. Customer login their account in the login page
* Alternative Flow

3A. Customer’s username or email is taken

4A. Customer write wrong login information

* Exception
  + Sql database fail to connect or update

View Home Page

* Actor: Customer, Admin
* Goal: User can view all product, based on the filtered product
* Precondition:
  + User get into the site
* Post Condition:
  + User can browse items, or use all of the site’s feature
* Basic Flow:
  1. User enter the site’s domain into the web browser
  2. User browse site and use the site’s feature
* Alternative Flow:
  + User can’t access site cause the site is down (User enter the site’s domain into the web browser)

Search product

* Actor: Customer, Admin
* Goal: User can filter the home page’s item
* Precondition:
  + User must on the home page
* Postcondition:
  + The item on the home page is filtered based on the search bar
* Basic flow:
  1. User enter the condition (in string) into the search bar and confirm
  2. System the filtered items
* Alternative flow:

1A. There is no item that fit the filter

View Product

* Actor: Customer, Admin
* Goal: User can view product description before buying, make comment or rate the product
* Precondition
  + Customer is logged in if they want to comment ,rate or buy the product
* Postcondition:
  + Comment or rating the customer has made is updated
* Basic Flow
  1. User find the product they want
  2. User go into the product’s page
  3. User buy the item
  4. User comment or rate
* Alternative Flow

4A. User do not comment or rate or buy the product

* Exception
  + The product page is not available

Manage cart

* Actor: Customer, Admin
* Goal: User can make a list of item the user wants to purchase, then user can buy all the item in the cart at once
* Precondition:
  + User must be logged in
* Postcondition:
  + User is able store their order inside the cart
* Basic flow:
  1. User press add cart when viewing product
  2. User view all the items in the cart
* Alternative flow:

1A. Item failed to be added to cart

Check order history

* Actor: Customer, Admin
* Goal: User can check their order history and its detail
* Precondition:
  + User must be logged in
* Postcondition:
  + User can view all of their order and it’s detail
* Basic flow
  1. User goes into their product history
  2. User view their order history
  3. User goes into order’s detail
* Alternative flow

1A. Order history return empty

Add Product

* Actor: Admin
* Goal: User can add product to the database
* Precondition:
  + User must be admin
* Postcondition:
  + An item is added
* Basic flow:
  1. User Press add product in home page
  2. User enter product’s detail and add cover picture
  3. User confirm add product
* Alternative flow:

3A. User doesn’s add enough detail to the product

3B. Crucial information like product name is already in the database

3C. Product is not added due to server problem

Delete product

* Actor: Admin
* Goal: Allow User to delete product in the database
* Precondition:
  + User must be admin
* Postcondition
  + The item is deleted in the database
* Basic flow
  1. User find the product they want to delete in the home page
  2. User confirm deletion
* Alternative flow

2A. User is unable to delete the item due to server problem

Edit product

* Actor: Admin
* Goal: Allow user to edit already existed product
* Precondition:
  + User must be admin
* Postcondition:
  + The product is edited
* Basic flow
  1. User find the product
  2. User goes into detail edit page
  3. User edit product detail and confirm
* Alternative flow:

3A. User doesn’t change any information

3B. System edit confirmation fail due to server problem

@startuml

actor Customer

actor Admin

left to right direction

rectangle "Software Selling Application" {

(View Home Page)

(Search Product)

(View Product)

(Register and Log In)

(Manage Profile)

(Manage Cart)

(Check Order History)

(Make Transaction)

Customer --> (View Home Page)

Customer --> (Search Product)

Customer --> (View Product)

Customer --> (Register and Log In)

Customer --> (Manage Profile)

Customer --> (Manage Cart)

Customer --> (Check Order History)

(Manage Cart) <.. (Make Transaction) : <<extends>>

Admin --> (View Home Page)

Admin --> (Search Product)

Admin --> (View Product)

Admin --> (Manage Profile)

}

rectangle "Admin Actions" {

(Add Product)

(Edit Product)

(Delete Product)

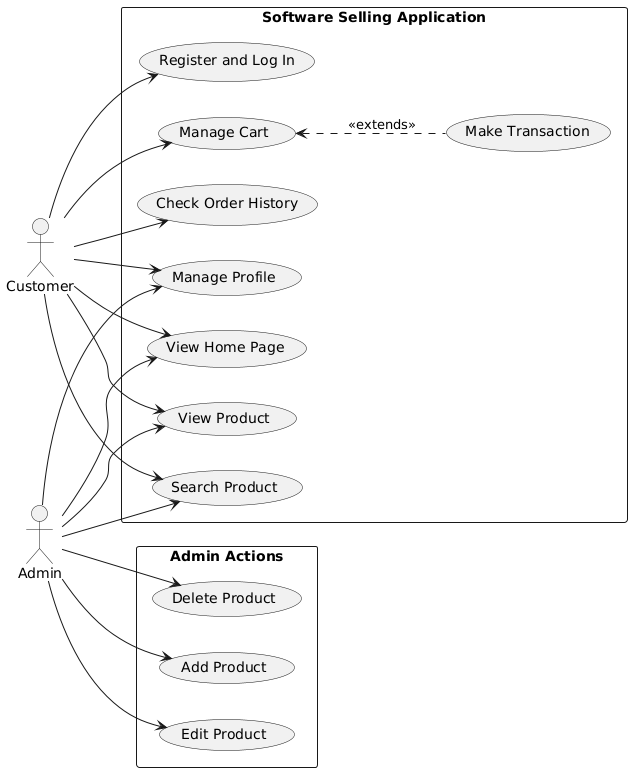
Admin --> (Add Product)

Admin --> (Edit Product)

Admin --> (Delete Product)

}

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Class Diagram

|  |  |  |
| --- | --- | --- |
| Class | Responsibilities | Collaborators |
| Customer | Manage your account and authentication (register, log in, log out, update information), browse products and manage shopping cart, place orders, track orders and confirm receipts, make payments | Product, Cart, Order, Payment Gateway |
| User | A Superclass for customer and admin, contain name and id | User, Admin |
| Admin | Authenticate administrative rights, manage user accounts, manage product catalogs, process customer orders | Customer, Product, Order |
| Product | Provide detailed product information (name, price, product description), track status (inventory quantity) | Customer, Admin, Cart |
| Cart | Keeps user selected products, allows managing items (add/delete), calculates subtotals of items | Customer, Product, Order |
| Order | Record purchase details (user, product, total, shipping information), manage order status, process payments | Customer, Product, Cart, Admin, Payment Gateway |
| Payment Gateway | Process payment transactions, return payment status | Order, Customer |

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title Class Diagram - DuongAnhMinhDaoPhuocHai

Class User

{

-Name: string

-Id: string

-Role: string

}

Class Order

{

+OrderId: string

+DayBought: Date

+From: User

}

Class Cart

{

+ListOfProducts: List<Product>

}

Class ApplicationDbContext

{

-Users DbSet<User>

-Orders DbSet<Order>

-Products DbSet<Product>

-Categories DbSet<Category>

}

Class HomePageController

{

-db : ApplicationDbContext

+AddProduct(listOfProduct: Product)

+ManageCustomer(customer: Customer)

+DeleteProduct(listOfProduct: Product)

+EditProduct(product: Product)

+AddProductToCart(product: Product, categoryList List<Category>)

+MakePayment(gateway: PaymentGateway, user: User)

+SearchProduct(Name: string)

+ReturnProductView(id: int)

+UpdateProfile(user: User)

}

Class DbSet<T>

{

+GetList(): List<T>

+FindById(id: int)

+DeleteFromDB(item: T)

}

Class ClientView

{

-user: User

+Register(loginManager: LoginManager)

+Login(loginManager: LoginManager)

+GetHomePageView(controller: HomePageController)

+GetProductView(controller: HomePageController)

+SearchProduct(controller: HomePageController)

+GetCartView(controller: HomePageController)

+AddToCart(controller: HomePageController)

+GetOrderHistoryView(controller: HomePageController)

+GetProfileView(controller: HomePageController)

+ConfirmProfileEdit(controller: HomePageController)

+MakeTransaction(controller: HomePageController)

+DeleteProduct(controlelr: HomePageController)

+AddProduct(controller: HomePageController)

+EditProduct(controller: HomePageController)

}

Class Product

{

-productName: string

-productId: string

-category: Category

-images: string

}

Class Category

{

-Category\_id: string

-Category\_Name: string

}

Class LoginManager

{

+Login() : User

+Register()

}

Class PaymentGateway

{

+ProcessPayment()

}

HomePageController ..> PaymentGateway

HomePageController ..> Order

HomePageController ..> User

HomePageController ..> Product

Cart <.. HomePageController

Product --o Category

HomePageController ..> Category

HomePageController o-- ApplicationDbContext

User --o ApplicationDbContext

Product --o ApplicationDbContext

Category --o ApplicationDbContext

Order --o ApplicationDbContext

LoginManager ..> User

ApplicationDbContext o-- DbSet

ClientView ..> LoginManager

ClientView ..> HomePageController

ClientView -- User

@enduml

