COP4710 Project

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Web Application Development Technology Stack

The development stack that is being used for this project is the LAMP or WAMP stack (depending on which operating system is being used). A LAMP/WAMP stack contains all the software components that will be needed to create a complete web application. A LAMP/WAMP stack consists of the following components:

- **L**inux or **W**indows Operating System
- **A**pache HTTP Server
- **M**ySQL
- **P**HP

LAMP/WAMP Components

The following section will describe the components of a LAMP/WAMP development stack.

Operating System

Linux and Windows are both use for managing computer hardware, software resources and provides common services for computer applications. They can both will be used to mange all of the application development technologies that will be discussed.

Web Server

The Apache HTTP server is a cross platform open source web server. Apache instances can run on a Linux distribution, many Unix-like operating systems (i.e. macOS) and Microsoft Windows. Apache supports server-side programming languages such as PHP.

Apache will act as a middleware between a server and a client and pulls requested content from a server and delivers it to the client.

Database Management System

MySQL is an open source relational database management system. MySQL is designed to store and manage multiple relational databases. MySQL provides applications that are built with it data independence. The application is protected from changes in the way the data is organized or stored. To achieve this MySQL does not allow the application to directly access the database. The application must instead send a SQL query or update and MySQL will access the database to perform the update or send a query result back to the application.

Programming Language

PHP is a general purpose scripting language that is primarily used for web development. PHP is used to allow wed developers to write dynamically generated web pages quickly and efficiently. It borrows syntax for other popular programming languages like C, Perl and Java.

Database Design

This section will detail the database design for the application.

Entity Relationship Diagram

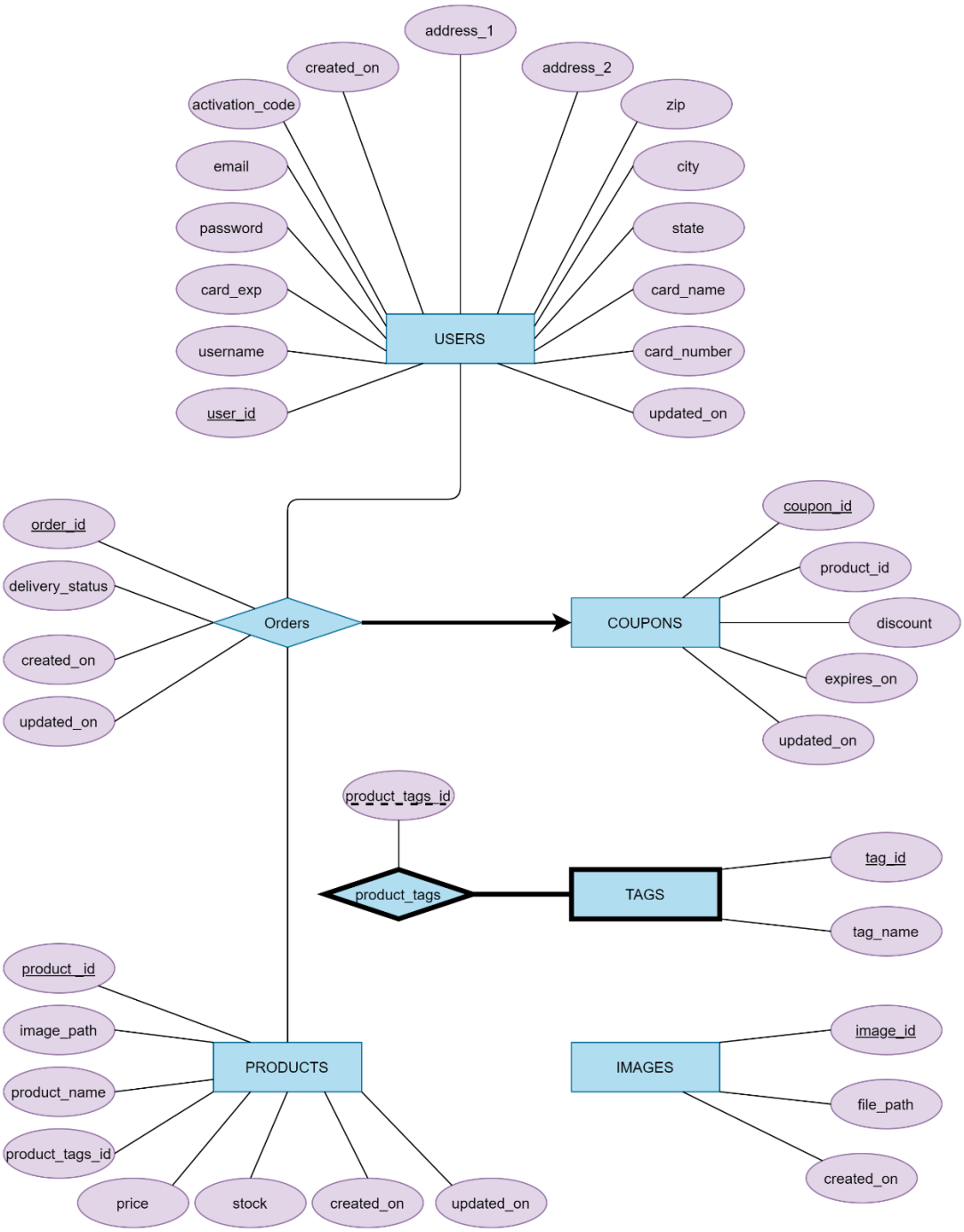

Figure 1: Current Working ER Diagram

Database Schema

This section details all tables in the database that will be used in the application.

Users

The users table stores all user information including the delivery and payment information the user will use at checkout.

Users	
PK	user_id : INT(11)
	username : VARCHAR(128)
	password : VARCHAR(256)
	email : VARCHAR(128)
	activation_code : VARCHAR(128)
	created_on : TIMESTAMP
	address_1 : VARCHAR(128)
	address_2 : VARCHAR(128)
	zip : VARCHAR(64)
	city : VARCHAR(128)
	state : VARCHAR(128)
	card_name : VARCHAR(128)
	card_number : VARCHAR(64)
	card_exp : DATE
	udated_on : TIMESTAMP

Coupons

The coupon table stores all coupons created for a product. The coupons' expiration date and current discount value is also stored in this table.

Coupons	
PK	coupon_id : INT(11)
	product_id : INT(11)
	expires_on : TIMESTAMP
	udated_on : TIMESTAMP
	discount : FLOAT

Orders

This table stores all orders made by all users. This will be used to keep track of the following information:

- What user made the order?
- What was product ordered?
- What coupon did the user apply to the order?
- What is the current status of the order?

Orders	
PK	order_id : INT(11)
FK1	user_id : INT(11)
FK2	product_id : INT(11)
FK3	coupon_id : INT(11)
	delivery_status : TINYINT(1)
	created_on : TIMESTAMP
	updated_on : TIMESTAMP
	completed : TINYINT(1)

Products

This table stores all information about the products that will be stored in the store.

Products	
PK	product_id : INT(11)
	image_path : VARCHAR(256)
	product_name : VARCHAR(2048)
	product_tags_id : VARCHAR(256)
	price : FLOAT
	stock : INT(11)
	created_on : TIMESTAMP
	updated_on : TIMESTAMP

Images
This table stores the location of all images used on the store website.

Images	
PK	image_id : INT(11)
	file_path : VARCHAR(256)
	created_on : TIMESTAMP

Product Tags
This table stores all the tags that have been applied the products sold on the store.

Product Tags	
PK	product_tags_id : VARCHAR(256)
PK, FK	tag_id : INT(11)

Tags
This table stores all the tags that are available to be applied to a product.

Tags	
PK	tag_id : INT(11)
	tag_name : VARCHAR(128)

Software Implementation

HMTL styled with CSS use used for the front-end of this web site. It was used to create any forms and to display information to the user in an understandable and appealing way. PHP was imbedded into the HTML to create dynamic web pages for the user. Depending on what the user committed to the web page different information will be show on the front-end.

PHP was also used to establish and maintain a connection to the database. Once a connection was made it was also used to prepare SQL query and SQL update statements that were the sent over that connection to perform any database modifications or queries. It was also used to implement user sessions so the web site can identify which user is making a request and present that user with the correct dynamically created webpage.

MySQL was used to store the location of the source file for product images. The sources files for the product images are not stored on the host server but are instead pulled from a remote server through the internet. So, when an image HTML tag is used to show the product's image a link is used as the source from that product's database relation.