Assignment Brief

Module Title	IT3113 - Advanced Web Technologies
Assignment Title	Music Instrument Shop Online Store
Assessor	Ms. Nethmi Mohotti
Hand In Date	16th January 2026
Hand Out Date	28th February 2026
Expected deliverables	Source code and any Resources
Method of Submission	Submit your website code a. Important: Zip the project directory of each implementation. DO NOT submit your code as a Word, Notepad or a PDF document

Submission Instructions

Files to submit: all your source code files.

You should NOT copy and paste your code into notepad, Word or other applications but simply submit in a zip file all your source, i.e. the files with extension .php and .sql. Alternatively you can use VsCode to create a zip file of your whole project (go to the menu File->Export Project->to Zip).

Referencing code: Any code taken from other resources (i.e. a textbook or internet) should be referenced in comments within your code (full textbook details or full web URL), identifying the exact code that you used it as part of your application and the exact portions of the original source code that you reused.

You should submit via LMS's Assignment functionality (do NOT use email, as email submissions will be ignored.), all the files described above. A single zip file with the name Mxxxxxxxxxxx/ Fxxxxxxxxxx (where it is your university ID) containing all the above files could be submitted alternatively.

Assignment: Music Instrument Shop Online Store

Case Study: Melody Masters Instrument Shop

Introduction

The growth of e-commerce has enabled traditional retail businesses to expand beyond physical locations and reach a wider customer base. Melody Masters Instrument Shop is a music retail business that currently operates as a physical store and seeks to establish an online presence. The purpose of this system is to provide a web-based platform that allows customers to browse, purchase, and manage musical instruments and related products while enabling staff to efficiently manage inventory and customer orders. This document outlines the system requirements, database design, and functional scope of the proposed application.

Business Background

Melody Masters Instrument Shop is a retail business that specializes in selling musical instruments, accessories, and sheet music to customers ranging from beginners to professional musicians. The business currently operates through a physical store but aims to expand its reach by introducing an online store. The proposed web application will allow customers to browse and purchase musical instruments and accessories, manage their accounts, and access digital sheet music. In addition, shop staff and administrators will use the system to manage inventory, process orders, and oversee overall operations efficiently.

Core System Overview

The online store is designed to support multiple user roles with varying levels of access. Guests can browse products and register for an account, while registered customers can place orders, track purchases, and download digital products. Staff members are responsible for managing inventory and processing customer orders, whereas administrators have full control over the system, including user management, product management, and order monitoring.

The system organizes products into well-defined categories such as guitars, keyboards, drums and percussion, wind instruments, string instruments, accessories, and digital sheet music. These categories may also contain subcategories, allowing users to navigate the product catalog easily and efficiently.

Product Management and Categorisation

Products within the system are organised into structured categories, including guitars, keyboards, drums and percussion, wind instruments, string instruments, accessories, and digital sheet music. Categories may contain subcategories to improve navigation and search accuracy. Each product includes descriptive information such as pricing, brand, specifications, stock availability, and product type. This structure enables users to efficiently locate items and allows staff to maintain consistent product records.

Business Rules

The system follows specific business rules to ensure correct operation. Physical products require shipping, and shipping costs are applied unless the total order value exceeds £100, in which case free shipping is offered. Digital products, such as sheet music, become available for download only after a successful purchase. Certain products may have limited stock, and customers are only allowed to review products that they have previously purchased. These rules help maintain data integrity and provide a consistent user experience.

Database Design Overview

A relational database is used to store and manage all system data. User information is maintained within a dedicated users table, which stores authentication credentials, contact details, and role information. Product categories and subcategories are stored in a categories table, supporting hierarchical relationships. Product data, including pricing, stock levels, and specifications, is maintained in the products table.

Digital products are managed separately through a digital products table, which stores file metadata and download limitations. Customer purchases are recorded in the orders table, while individual order items are stored in a linked order items table. An optional reviews table enables the storage of customer feedback linked to verified purchases. This database structure supports data integrity, scalability, and efficient query performance.

User Interface and Shopping Features

The public interface of the system includes a homepage displaying featured products, promotional content, and category highlights. A dedicated shop page allows users to filter and sort products based on category, price, and brand. Individual product pages provide detailed descriptions, images, specifications, and availability status.

The shopping cart enables users to manage selected items, update quantities, and view real-time cost calculations. User authentication features support secure registration and login, while optional password recovery functionality enhances usability and account security.

Order Processing and Customer Accounts

The checkout process collects shipping information, payment preferences, and order confirmation details in a structured workflow. Upon order completion, customers are presented with a confirmation summary that includes order details, delivery estimates, and access to digital downloads where applicable.

Registered customers can access an account dashboard that displays order history, order status, and download links for purchased digital products. Profile and address information can also be updated through this interface, improving customer autonomy and system usability.

Administrative and Staff Operations

Administrative functionality is provided through a secure dashboard that presents key operational metrics such as total orders, revenue, and low-stock notifications. Staff and administrators can manage products, update inventory levels, upload product images, and process customer orders. Order management tools allow for order status updates, tracking number assignment, and detailed order review. These features support efficient back-office operations and inventory control.

Technical Implementation Considerations

The system is implemented using responsive web design principles to ensure compatibility across desktop and mobile devices. Frontend layouts are constructed using modern CSS techniques such as Flexbox or Grid. Session management is used to maintain shopping cart data, and reusable database connection functions are implemented to improve maintainability. Input validation, error handling, and feedback messages are incorporated to enhance system reliability and user experience.

Functional Requirements

- The system shall allow users to browse products without authentication.
- The system shall allow users to register and log in securely.
- The system shall enable customers to add products to a shopping cart and place orders.
- The system shall calculate shipping costs and apply free shipping for qualifying orders.
- The system shall allow customers to download digital products after payment confirmation.
- The system shall allow customers to view order history and order status.
- The system shall allow staff to manage products and update inventory levels.
- The system shall allow administrators to manage users, orders, and system data.
- The system shall allow verified customers to submit product reviews.

Non-Functional Requirements

- The system shall provide a responsive and user-friendly interface across multiple devices.
- The system shall ensure data security through encryption and access control mechanisms.
- The system shall maintain acceptable performance under normal and peak usage conditions.
- The system shall provide clear and informative error messages.
- The system shall be scalable to support future business growth.
- The system shall ensure data consistency and reliability at all times.