Project – Bits & Bots

Overview

You and your project team are employed by DB 4Ever., a consulting company with clients worldwide. You've been assigned to help Ms. Yotta Bietz set up a database for her latest entrepreneurial enterprise, **BITS & BOTS.** The new venture will be an online marketplace for the maker community. It will permit makers to set up small virtual storefronts for securely distributing intellectual property, collecting payments, and interacting with users.

Ms. Bietz needs a simple information management system and database to **support virtual inventory, buyer/seller accounts, sales, and feedback operations**. You will be given a list of minimum requirements. You will need to supplement your solution with features that you consider important or interesting to expand on the minimum requirements and to provide new functionality beyond the scope of the basic requirements.

Your final document will include a detailed description of your DB design and capabilities, relational database schema, entity relationship diagram, SQL code, data, and other DB components.

You and your teammates will work on this project independently from other teams all semester. This project will measure your ability to apply the concepts learned in this course. There will be several required check-point assignments that will help you to navigate through the project and to assemble some of the required components. You will receive feedback on your work. The purpose of that feedback is to provide you with some pointers and assess your progress. Check-point work submitted during the semester does not guarantee the correctness and completeness of your work. Those are the responsibilities of your team and not of the graders. All check-point work will need to be retained and submitted again as a part of your final project documentation.

Final Project will be due at the times listed. Late submissions will not be accepted. Each team member is equally responsible for completion, presence, and correctness of required documentation and files. One submission per team is required. However, all team members are expected to retain copies of all completed work. Students who do not contribute fairly towards this project, will face point deduction or/and removal from the team at any point during the semester.

Bits & Bots main rivalries:

Yotta Bietz has suggested that you look at sites like Amazon, Esty, eBay, and Shopzilla for examples of online spaces that cater to multiple sellers and buyers. Look at their item listing, purchasing, and feedback processing to determine the necessary data items, their types, constraints, and relationships. Conduct your own market research and identify other online sellers that Bits & Bots want to compete against. Keep in mind that Bits & Bots will only sell non-physical items and will not store physical inventory.

Test Data:

You will need to create your own buyer, seller, product, and other data. You can utilize online sites that generate random data for testing. You should put enough test data into your database in order to run all the queries and test various scenarios. It is important that you have enough test data to generate reasonable results for each of the assigned queries and views.

Main DB functionalities:

The database should be able to support the usual operations of an online store. That is, that buyers search for different items, make purchases, save their information and payment preferences, leave feedback for purchased products, and review their accounts. Sellers should be able to create new listings, manage their inventory, and see various sales statistics.

The intellectual property may be source code, executables, CAD files, PDFs, images, and other file formats. Your DB must allow to store all required product, user, payment, order, feedback, and other relevant information.

Here is set of user stories that contain minimum requirements that your DB must fully accommodate. You will need to create more.

AS A [PERSON]	I WANT TO [ACTION]	SO THAT I CAN [BENEFIT]
Buyer	Search for 3d files	Print a replacement part for my mini-bot
Buyer	Purchase multiple items from various virtual stores/sellers at the same time in one order	Save time and get all needed files at once
Seller	Create a listing for my IP item that includes a title, description, price, can display at least up to 5 screenshot/images, multiple applicable keywords, file type.	Sell my IP item for cryptocurrency, karma points or dollars
Seller	Set up my virtual store(s) with a name, description, banner, seller bio, seller photo, at least up to 5 URLs for blog, social media, etc. A Seller should be given an option to set up more than one virtual store within your marketplace if desired.	Customize my portal and attract buyers
Buyer/Seller	Leave feedback for other party. Only buyers/sellers who are involved in the particular transaction can leave feedbacks for each other. Buyer can leave feedback for each product and rate that product.	Earn karma points (internal currency) that can be used to pay for purchases
Buyer	Can use more than one payment method to pay for a purchase. The system should allow to fully store required payment details such as crypto, bank accts, and credit cards details necessary to pay for purchases.	Be competitive. Offer convenience in variety of accepted payment methods and ability to securely save the info for future purchases.
Buyer/Seller	Have a financial management / reporting portal.	Track sales, purchases, expenses, gains, losses, etc.
Buyer	Provide a different email address for delivery of IP Item	Get items delivered to another person, as a gift.
Buyer/Seller	Receive/issue a refund if a faulty file is provided	Maintain high level of quality and professionalism

Final Project Document Description

The final report must be a professionally presented, well-organized, typed document addressed to your client. It needs to be accompanied by a complete SQL database and a series of script files, submitted electronically to the Carmen Dropbox, all in a single ZIP file. This ZIP file needs to be neatly and professionally organized, with all filenames appropriately chosen, and all files suitably organized into subdirectories. Include a Table of Contents file named README.txt that explains the layout of your files, including where to find each of the following files in your file structure.

Outline

Part I – The Final Report

Section 1 - Database Description (Logical DB design)

a. Introduction and project summary
b. (E)ERD – Model properly documented and explained.
c. Relational schema properly documented and explained.
d. Relational algebra statements for all SELECT queries from CP02
e. Database fully normalized, with correct justifications

Section 2 - User Manual (DB Implementation)

a. Table description including table functions, keys, constrains, and data types.
b. A catalog of supplied SQL Queries with explanations and sample output for each.
c. INSERT and DELETE SQL code samples.
d. Two indexes properly explained, including SQL code.
e. Two views explained, including SQL code and data resulting from the execution.
f. Two transactions explained, including SQL code.

Section 3 - Team Reports and Graded Checkpoint Documents

a. Detailed description of all team member contributions.
b. Reflection on project completion process.
c. Description of feedback received, and revisions completed throughout the process.
d. Marked Project Checkpoints and Worksheets.

Part II – The SQL Database

*.sqlite, or *.db file:
correctly formatted, and ready to open with SQLiteOnline

*.txt files:
All CREATE, INSERT, DELETE, and SELECT SQL scripts required to reproduce and test your DB, submitted in separate text files.