

Project 1 information

Your first project is about NoSQL Document Database Design, Implementation, and Deployment Project. Please use MongoDB and work **individually** to complete the first project, which worth 15% of the total course grade and will be evaluated through your written submission. You need to submit the report after completing each part with **screenshots**. Your report must be submitted to the BB. Here is a list for each part.

Project Report format and marking scheme:

Database application:

Select an application from the list provided below and try to create minimum 5-10 entities and 5-10 interesting relationships among the entities from the description that you will provide in the written submission. You should be familiar with the data requirements of the selected application. Designing more entities and relationship among them will show more benefits of your Document Database.

Project 1:

- **Application Description:** Write a report on description of the application, its functions and the information that you expect from it, in high level (2 marks)
- **Design the ER model:** that has different type of entity relationships (1:1, 1:N, N:M) (2 marks)
- **Schema design:** Use MongoDB to create the collections derived from ER/EER diagram and submit the source code with screenshot of your collections (2 marks)
- **Database construction:** Populate the collections of database by using MongoDB commands (2 marks)
- **Designing Simple Quarries:** Prepare at least 8 simple queries (at least one for each of your collection) and show the snapshots of their results. In general, you have to produce professional report results for queries. The query results should show records in collections with meaningful titles and proper format. (2 marks)
- **Designing Advanced Quarries:** Prepare at least 6 advanced queries to retrieve data from two or more collections. All queries should have clear and nice formatted results. (3 marks)
- **Updating and deleting database content:** Prepare at least 4 commands for updating different collections and the same for the other 4 deleting database content commands. (2 marks)

Total: 15% marks.

Application List:

Please note your application should be unique. I will inform you if someone else has already taken that application or not.

Select your application from following Database Applications List. Make sure you communicate with me about interested application to reserve it for you.

Hotel Management Database Management Systems
University online student registration system
E-commerce System
Online Job bank system
Retail Banking system
Patient Information and Record Management System
Point of Sale System for Shopper Drug Marts
Document Management system
Data Center
E-ticket Reservation System
E-learning system
Online movie store
Employee performance management system
Help desk system
Library Database system
University Enrollment Application
Movie and Music Store DBMS
Equipment test center
Clothing Retail Store DBMS
Auction DBMS
Medical clinic information system
Consulting database management information system
Store sale DBMS
Customer relation system
Car Rental DBMS
Payroll Management DBMS
Hospital-pharmacy DBMS
Art gallery/convention center DBMS
Telecommunication (VoIP/VOD/IPTV) DBMS
Ice Cream Manufacturer DBMS
Photo/Video equipment rental DBMS
Soccer League DBMS
Dental clinic DBMS
Intensive Care Unit (ICU) DBMS

If you are interested to do any other application which is not listed here please confirm with me.

The above applications are common database application. Below are the two example descriptions of such database systems which are not complete. You are welcome to select them but you have to enhance the writing and add more to their descriptions to make them larger systems with more functions.

Example 1: DBMS of Fulfillment Service of Amazon (FBA): These days, Amazon provides a resource that helps people handle their business and by helping the sellers to find new customer at their site. This service is called fulfillment by Amazon (FBA). FBA makes the products visible to millions of loyal happy Amazon customers while providing fulfillment, fast shipping and good customer service that will get the business to a whole different level.

The business owners (we call them sellers) can purchase products online from anywhere in the world and can make payment using different methods. The online store then ships the ordered products to the Amazon facilities that are located all over the world. The products are stored securely. Sellers pay Amazon for keeping the inventory. These inventory details are accessible to the sellers from any device, any location.

A seller has various attributes like its user name, password, email, seller ID and its response time. Out of all the said attributes seller ID is the primary key attribute because it's unique. A seller sends the online store all the information of the products that s/he needs to get shipped to the Amazon facility. While placing the order, it is required that the seller makes a payment of that order too. The payment ID of any payments will be a primary key attribute of all the attributes. Payments can be made through credit/debit cards or gift cards and will comprise of billing address, date and any discount codes used. The online store from where the products are picked from has an store ID as a primary key attribute, store address and phone number. Also the store can have a rating of the products that they ship. Store rating is a weak entity. The products that the store is shipping has product id as the primary key attribute. The other attributes of the products can be its name, price, description and whether or not the item is in stock. Once the product is in Amazon facility, it has its product ID and the location address... see following link for more details:

<https://services.amazon.com/fulfillment-by-amazon/benefits.html>

Example 2: DBMS for YouTube Channels: YouTube was first introduced in 2005 and was taken over by google in 2006. It is a video sharing website that has grown drastically in the past years. Reports show that over 1.5 billion people log in to YouTube every month and 1 billion hours of video are watched daily. This website is not limited to streaming videos. Users are able to upload videos, like, dislike or leave a comment for a video. For these actions you need to use a google account. In the recent years channels have become very popular. A YouTuber creates a channel and uploads their videos there. Other users can subscribe to the channel and be notified when a new video is uploaded.

As of May 2017, over 1500 channels have more than 1 million subscribers with the highest belonging to Pewdiepie with over 50 million subscribers. Also some media corporations such as BBC, CNN and NBC etc. have channels on YouTube.

This part focuses on a channel and its subscribers. A channel creator needs a google account and to build this account following information is needed: first name, last name, date of birth, gender and phone number. Subscribers also need to have same information to have a google account. A channel can be for personal or business purposes. Creator usually adds links of their website or their social media accounts. In the about section an email can be provided to contact the YouTuber. There are many other parts that can be added to this system such as information of videos , related videos and etc.