Exercise 1

1. What is the difference between DSMS and DBMS?

   DBMS:
   a. DBMS refers as Database management system.
   b. DBMS queries are one time queries.
   c. DBMS queries are transient and provide exact answer
   d. Random data access occurs in DBMS.
   e. It deals with persistent data.
   f. Data update rates are relatively low in DBMS.
   g. DBMS doesn't gives any real time service.

   DSMS:
   a. DSMS refers as Data Stream Management system.
   b. DSMS queries are continuous.
   c. DSMS query answer is outdated or approximate.
   d. Sequential data access occurs in DSMS.
   e. It deals with volatile data streams.
   f. Data update rates are really high in DSMS.
   g. DSMS gives real time service

2. What are the steps that a query goes through before its deployment?

   1. Choose a application.
   2. Create the queries through that application.
   3. Compile the query into a logical query plan.
   4. Trying to optimize the query for better possible outcomes.
   5. Converting the logical query into a physical query plan.
   6. Deploy and execute the physical query plan.

3. How are queries processed in DSMS different to those in DBMS?
   a. DSMS handles continuous queries on the other hand DBMS handles one-time queries.
   b. Data stream sizes are unbounded and it behaves like an open-ended relation on the contrary database size limited to its tables.
   c. Maximum time data stream set up on temporal data and database is not based on temporal data
   d. Database queries always provide accurate and to the point data however data stream provides either exact or approximate data.
   e. A data stream system cannot re-read stream nevertheless database systems can access the same table as many times as application requires.

4. Provide three use cases, where DSMS can be used; describe the data processed and the queries performed on them in each use case.

   Use Case 1: Monitoring the number of speeders in a reduced speed area.
   a. Want to know how many cars went and whose speed was greater than certain speed limits.
   b. Want to retrieve an update every 10 seconds.

   Use Case 2: Weather monitoring System
   a. Get real-time storm detection and weather forecast through data streaming.
   b. In a heavy rainfall area, predict how much it may rain in that particular season.

   Use Case 3: Online Game Streaming
   a. Monitor streaming data about player-game interactions then analyze the data in real time, in order to offer lucrative and dynamic experience.
   b. Monitoring which player often spends how much time in a particular game and their decision making process.