Advanced Databases TU856/TU857/TU858 (DT228/DT211C/DT282) Portfolio Task 2

You are required to:
1. Explain using your own words and including a theoretical example of each the following types of index:
   a. Primary
   b. Secondary
   c. Dense
   d. Sparse
   e. Clustering

   Note: You may need to conduct some independent research, if you do please cite any sources used in this research in your portfolio.
2. Download and run the SQL contained in AdvDB-ClubMembers.sql available in Brightspace.
   a. This SQL will create four tables relating to a club which operates as follows:
      i. The club has number club members
      ii. The club holds events
      iii. Events are held in different locations within the club buildings
      iv. Club members attend events.
3. Design a query which uses all four tables, uses at least one filter, and uses either a sort or a group function.
   a. Run the query against the tables while they have no metadata and no indexes, generating output using explain plan.
   b. Explain the query performance and include snapshots from the explain plan output to illustrate.
4. Identify and create indexes you think would help speed up the query you created in part 4.
   a. Explain your choices.
   b. For each index explain whether it is a primary or secondary index
   c. Include the SQL to create the index.
   d. Run the query again against the tables with the indexes created, generating output using explain plan.
   e. Explain the query performance and include snapshots from the explain plan output to illustrate.
5. Identify and create any constraints, primary keys, and foreign keys you think would help speed up the query you created in part 5.
   a. Explain your choices.
   b. Include the SQL to create the constraints, primary keys, foreign keys.
   c. Run the query again against the tables with the constraints and keys included, generating output using explain plan.
   d. Explain the query performance and include snapshots from the explain plan output to illustrate.
6. Document all of the above in your portfolio.