2) DML : insert, update, delete   Data manip^n lang
                                                                        → before commit
3) TCL (transaction control lang) : commit, rollback, savepoint
                                                                        → inserts
                                                                          rows

4) DCL (Data control language) : → who can access what (for DBA)
             grant, revoke

        SQL> grant select, insert, update
                on emp
                    to Scott;

        SQL> revoke insert, update
                on emp
                    to Scott;

       5) Data retrieval : select, desc

Database users :
    1 Naive users   → view level, uses using GUI (ej-teller)
    2 Application programmers → who design these GUIs (using RAD & 4th gen lang)
    3 Sophisticated users → specialized queries, OLAP, data mining
    4 Specialized users → interact with database using specialized softwares
    5/   (CAD, knowledge base)

      4th generation languages : SQL, Mathematica
      Rapid Application Development tools : VB, Developer 2000 (D2K),
                  (RAD)   Delphi
      Online analytical processing (OLAP) tool
      Data mining tools
      Computer aided designing (CAD) systems.
        Knowledge base.

DBA

1) Schema definition → gives a particular space to users
2) Storage structure and access method definition
3) Schema and physical organization modification
4) Granting of authorization for data access. → access grant by DBA
5) Routine maintenance. → by DBA
   - Periodic backup
   - Ensuring available disk space
   - Prioritize data

Lecture 5

SSK

9/01/2018 # Database system architecture