End of first semester EXAM 2022/2023
Introduction to Database

Part 1 (3mks)
  1- Give the difference between the 2-tier and the 3-tier architectures
  2- State the commands of the DDL

Part 1 (8mks)
Consider the following DB
Student (<u>NumStud</u>, NameStud, FNameStud, AddrStud)
Book (<u>NumBook</u>, TitleBk, #<u>NumAuthor</u>, #NumEditor, #NumTheme, EditionYear)
Author (<u>NumAuthor</u>, NameAuthor, AddrAuthor)
Editor (<u>NumEditor</u>, NameEditor, AddrEditor)
Theme (<u>NumTheme</u>, TitleTheme)
Borrow (#<u>NumStud</u> # <u>NumBook</u>, borrowdate, returndate)

Display the following queries
  1- The name, First name and address of the student "Alami"
  2- The number of the author "Alami"
  3- The list of books of the author number 121
  4- The number and address of the author of the book "How to have 20 in Database"
  5- The books of the author "Alami" edited by the editor 'No where'
  6- The books of the author "Alami" or "Belhadj"
  7- The books that have never been borrowed

Part 3: 9mks

The director of a chain of CD sales stores (the "Fnak") asks you to create the information system for his Internet sales service ("Fnak.com"). In order to better understand the needs of this company, you questioned the director and were able to draw the following points:

The only activity of Fnak.com is the sale of music CDs to the French public on the Internet. Visitors to the online sales site can only buy after opening a customer account to which they connect by entering their e-mail address and a password of at least eight characters. When they register, they are asked for their marital status, their address (the one that will be used for invoicing the purchased CDs) and their Fnak store loyalty card number (if they have one).

For each CD in the catalog, a visitor can view the album cover and a comment on this album. He can also know if it is a special edition of the album (a CD collector for example). The barcode number of a CD is different depending on the edition of the album.

The price (expressed in euros) of a CD depends on the date from which it was released. In general, when it comes out, its price is moderate, then a few weeks later, the price is raised. Finally, the Successful CDs are sold at knockdown prices after a few months.

During a visit to the site, a customer can create a new "basket" in which he puts the CD(s) he wants to buy as well as the number of copies he wants to buy. This basket can be modified as long as the payment thereof is not validated and confirmed. Payment is made by a specialized intermediary who is responsible for deducting the cost of their order from customers, confirming to Fnak.com that the order has been paid for and to edit a unique payment number. An invoice is then established, each invoice has a number (unique but the numbers do not necessarily follow each other), the customer's contact details, a billing address, a delivery address and the list of CDs purchased.

There is a tool to search for a CD by its author, its title or the name of a track of this CD. For each CD consulted, a list of other CDs is offered to the client. This list is of the type "Internet users who bought this CD also bought:".

Delivery costs are invoiced to customers: each order costs 3 euros plus 1 euro per CD ordered.

An order can have several states after its validation: "awaiting replenishment" when one or more CDs is not in stock, "in process" when the order is being processed, "being delivered" when it is with the carrier

Task: Draw the ER model and derive the relational model