

## Final Project Proposal – Part III

Assigned Date: 11/28/2023

Please add the following parts to your final project proposal:

- **Non-trivial Functional Dependencies:** Analyze each schema of your database and provide its non-trivial dependencies. For each schema, specify which normal form does it holds.
- **User Interface:** Please specify the design for the user interface of your database applications, including whether it will be graphical (GUI) or command-line based. Additionally, please outline the tools or open-source resources that you plan to utilize for implementing your design.

- **Non-trivial Functional Dependencies:**

1. Customer( Customer\_ID, Customer\_Name, Phone, Email, Sex, Fax, BirthDate, Country)

FD: { Customer\_ID  $\rightarrow$  Customer\_Name, Phone, Email, Sex, Fax, BirthDate, Country }

This schema is already in BCNF and 4NF

2. Company( Company\_ID, Company\_Name )

FD: { Company\_ID  $\rightarrow$  Company\_Name }

This schema is already in BCNF and 4NF

3. Employee( Employee\_ID, Company, Employee\_Name, Phone, Email, Title, BirthDate, HireDate, Address )

FD: { Employee\_ID  $\rightarrow$  Company, Employee\_Name, Phone, Email, Title, BirthDate, HireDate, Address }

This schema is already in BCNF and 4NF

4. Track( Track\_ID, Track\_Name, Artist\_Name, Album\_ID, MediaType\_ID, Genre\_ID, Bytes, Price )

FD: { Track\_ID  $\rightarrow$  Track\_Name, Artist\_Name, Album\_ID, MediaType\_ID, Genre\_ID, Bytes, Price }

This schema is already in BCNF and 4NF

5. Album( Album\_ID, Album\_Name )

FD: { Album\_ID  $\rightarrow$  Album\_Name }

This schema is already in BCNF and 4NF

6. MediaType( MediaType\_ID, Media\_Name )

FD: { MediaType\_ID  $\rightarrow$  Media\_Name }

This schema is already in BCNF and 4NF

7. Genre( Genre\_ID, Genre\_Name )  
FD: {Genre\_ID→Genre\_Name}  
This schema is already in BCNF and 4NF
8. Order( Order\_ID, Date, Total\_Pay, Customer\_ID )  
FD: {Order\_ID→Date, Total\_Pay, Customer\_ID}  
This schema is already in BCNF and 3NF
9. Invoiceitem( Invoiceitem\_ID, Order\_ID, Track\_ID)  
FD: {Invoiceitem\_ID→Order\_ID, Track\_ID}  
This schema is already in BCNF and 3NF
10. Playlist( Playlist\_ID, Playlist\_Name, Employee\_ID )  
FD: {Playlist\_ID→Playlist\_Name, Employee\_ID}  
This schema is already in BCNF and 4NF

- **User Interface**

1. We are in the process of designing a GUI-based interface for our database applications. This will encompass fundamental operations such as inserting, deleting, and listing entries in the database. Additionally, we aim to facilitate the search for relationships between different attributes within tables.
2. For the front-end, we have chosen Vue.js as our framework, incorporating CSS, JavaScript, and HTML languages. Complementing this, we will implement MySQL as our database, utilizing Python to develop an API that facilitates communication between users and the database. Finally, the data will be stored in either JSON or CSV file formats.