LAU
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DATABASE DESIGN FOR A NEWSPAPER

PHASE IV

By

(S Q L S Q U A D) ;

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Report submitted to: **Dr. Ramzi Haraty**

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II-Changes to Phase 3:

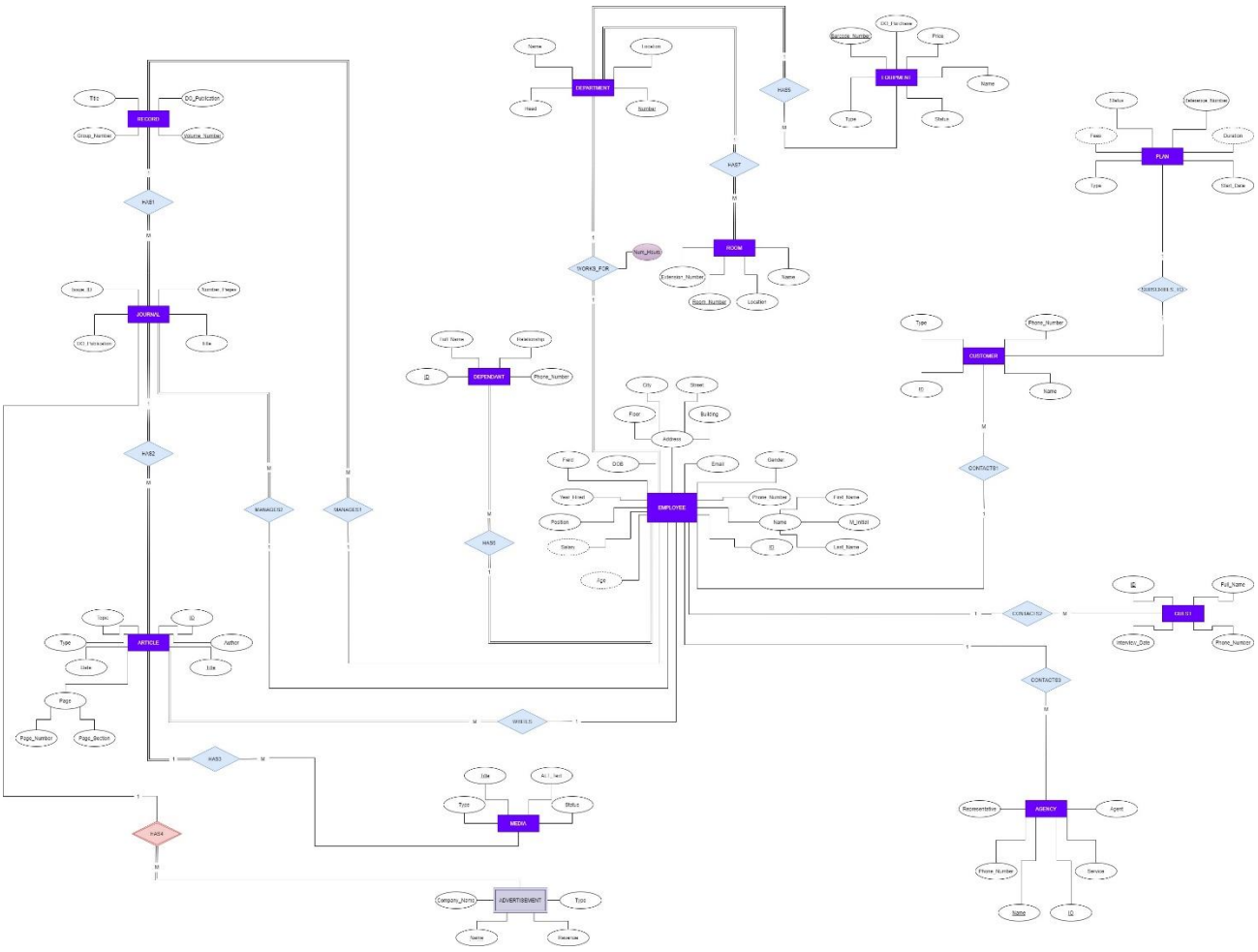
- ER Diagram:
    - No changes
- Report:
    - Fixed the design and structure of the report.
    - Added missing tables
    - Corrected queries code and output
    - Normalized our database up to the BCNF Normal Form

III-Introduction

Our team, named “The SQL Squad” (a name inspired by “The Suicide Squad”, a DC Universe team of villains), are delighted to submit our report detailing the thought process and design choice justifications for our hypothetical newspaper organization. Our members have visited “Al Nahhar” Newspaper HQ located in Downtown, Beirut in order to inquire about their Database outline and implementation techniques, as well as their organizational management. There, we met with Elie Bou Moussa, the IT manager responsible for the upkeep and maintenance of the organization’s IT services, as well being the individual responsible for communicating with their external database service provider. Elie was a great help in giving us a tour of the campus grounds, explaining the organizational chart and employee hierarchy along the way. We were shown multiple departments and had the pleasure to ask department managers and employees about their place in the company as well as the responsibilities they must fulfill. It is without a doubt that we accredit much of our success in accurately representing a newspaper to the generous and hospitable team at Al Nahhar Newspaper. On our efforts, the experience working as a team as well as going through a creative process has proven to be an undeniably helpful asset in each of our members’ repertoire. Each team member has grown better as a scientist as well as a free thinker after having went through a methodical research process and applying their knowledge to create and deploy a system as complex and rich as ours.

This report will go over our work process, with a thorough dive into our reasoning behind every design choice as well as their function in the overall final project. We had an idea in mind in regard to the approach we will be taking throughout this project. We followed the plan and stuck to a methodical way of handling the project, going through each concept one by one and expanding on it. Much like a tree, this project sprouted from a collection of simple notions and ideas that individually grew to form the collective, each with its own time and care put into it. Regarding software, our team has opted to use “Draw.io”, an ER-Diagram modeling software freely provided by Diagrams.net. We have decided to use this software for it’s ease of use, accessibility, widespread compatibility and 0$ price tag. Other alternatives such as Microsoft Visio were considered but were ultimately overshadowed due to complications in installation and unwanted bloat. Nevertheless, we believe that the project wasn’t undermined by any of these factors and that we were able to deliver the best product possible with the tools at hand and the experiences under our belt. Lastly, we thank Dr. Ramzi Harati for guiding us and teaching us everything we need to know to accomplish such a job. We hope the project is up to par with expectations and meets the requirements of a fine SQL-Based Database.

IV-ER Diagram for the Newspaper



V-System Description

In the digital age, man seldom feels the warmth of freshly printed newspapers chock full of today's latest news and events. Previously one of the few and most common ways to acquire information, newspapers have since been overshadowed by their digital counterparts, which offer a faster, cheaper, more convenient way of catching up on the daily. Nevertheless, newspapers remain journalists' and political and economic figures main way of influence and are a staple in many people's morning routine.

Our employees are split into multiple specializations that interact with each other to deliver a quality final product. The organization is split into departments, with each employee working in a specific department equipped with its own tools and resources specific to its own function. Each department has a name, location, number and head. Each department has specific rooms as well as its own equipment specific to its function. Employees contact customers, agencies, and guests. Most importantly, employees produce journals, which are the core of the newspaper and an integral part in our project.

Journals are the newspaper itself, a collection of pages and information neatly organized and decorated. Journals consist of pages, of which can be articles, different types of media, and advertisements. A record of a journal is kept and stored in an archive along with other information.

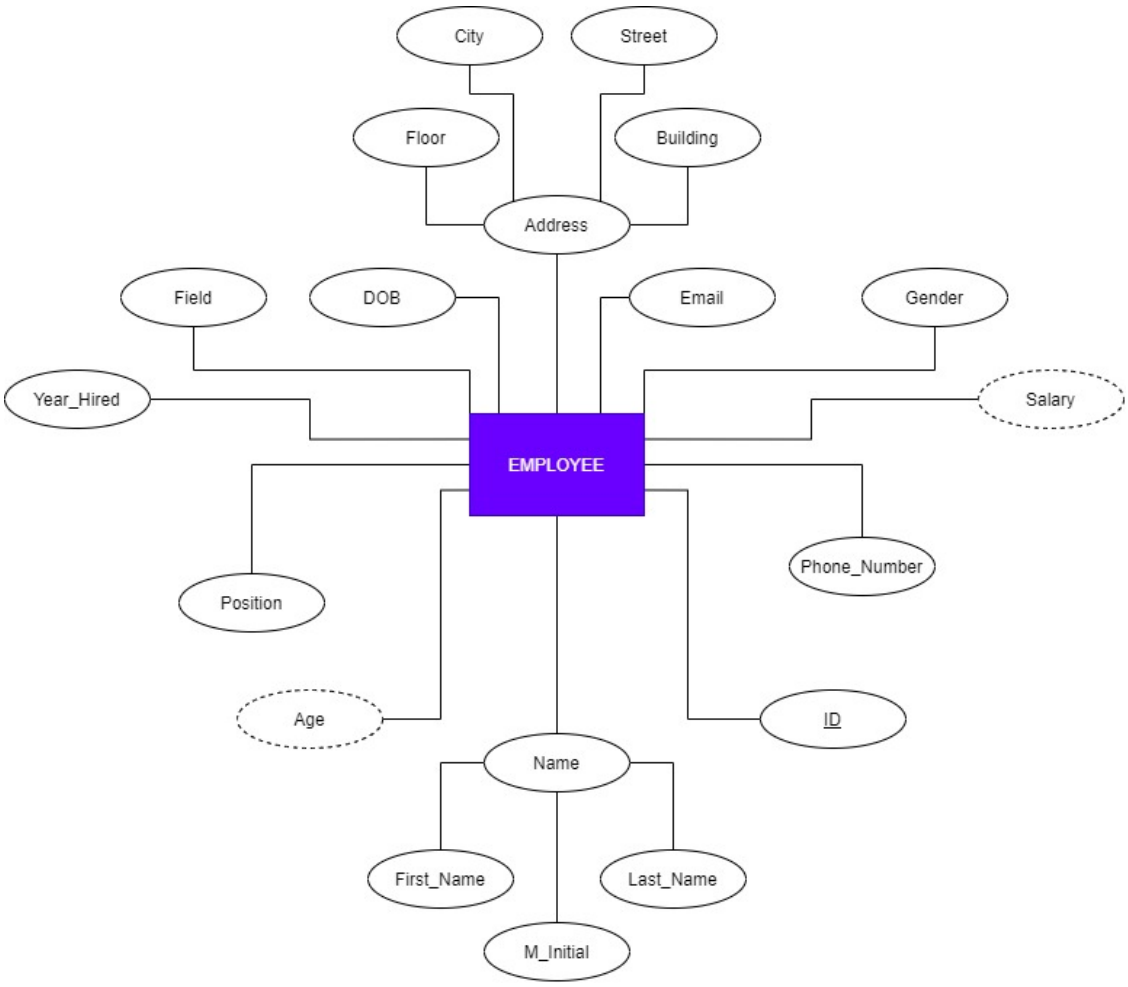
Employee types and responsibilities include photography, editing, writing, illustrating, and other miscellaneous jobs. Employees have equipment they use that either belongs to them or the studio, with each piece of equipment being exclusive to a certain job. Employees have dependents they rely on for emergency contact, or if the employee couldn't be reached.

Of course, no newspaper is complete without its foreign agents: Customers, agencies, and guests. They are the outside forces that act on the newspaper and influence its profits and influence. Customers form the main source of revenue for the newspaper, and they could be of any type or quantity. Agencies are a way for the newspaper to get media and news, as well as any other service it might need. Guests are often invited to provide insight on topics, to be held interviews with, and to have their work showcased.

Without further ado, we, "the SQL squad", present to you our diagram, containing our entity types and relationships, for our newspaper.

VI-Entity Types:

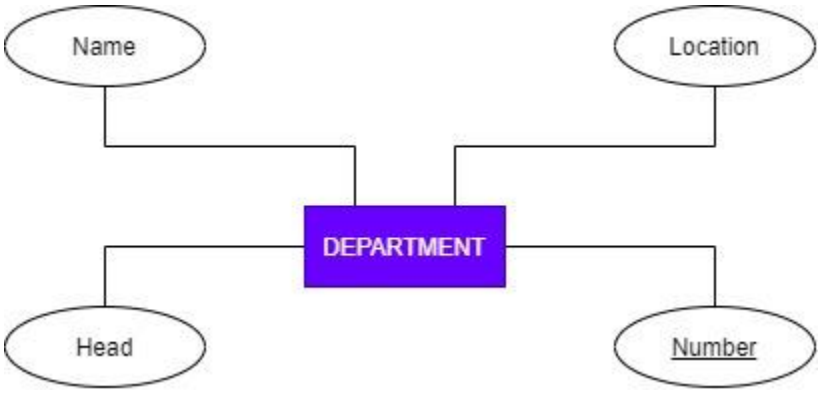
1- Employee



Employees are the most important customers given that they can provide crucial insights into the overall customer experience, although they are often overlooked or neglected. An employee is identified by a unique key, the **ID**. Every doctor has a name (composite attribute) which is divided into last name, first name, and middle initial. Each employee has also other attributes that describe them, including gender, date of birth, age which is derived from the latter, phone number including the country code then the n-digit number. Each employee has other attributes like email, year hired, and field which indicates what he works as, position indicating the level he has reached in his field, and composite address of the employee's residence. There are multiple departments that an employee can work for, that is why a field is provided. The phone number of the employee is provided to ensure contact in case of any ordeal faced.

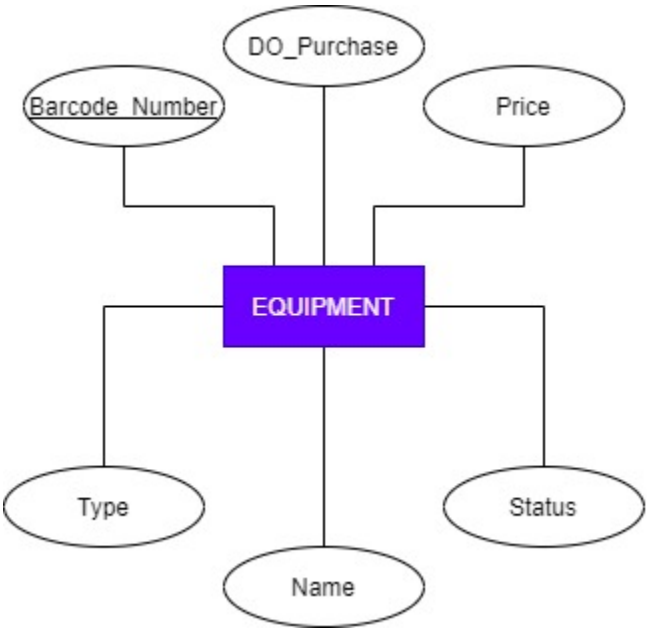
The salary is a derived attribute that is provided from both the field and level reached of each employee and the number of worked hours in the department.

2- Department



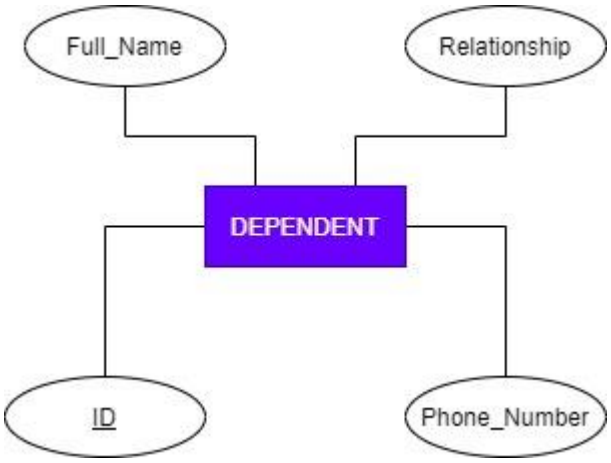
A newspaper has several departments that are always active and efficient, much like a beehive. In a newspaper, we may have many departments that specialize in a specific domain like Finance, Human Resources, Information Technology, Administrative, Printing, Editorial or Advertising. Each department is represented by its head and has as key a **number**, a name, a phone number as well as an email to contact each department, and a location for easier navigation.

3- Equipment



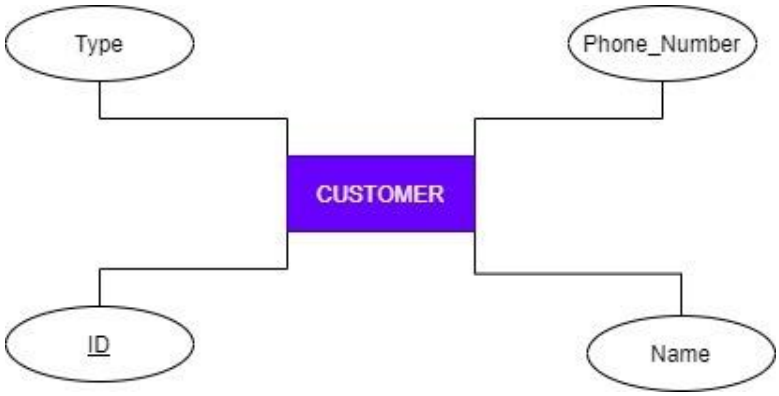
Every newspaper company needs equipment like printers, cameras, and computers to facilitate the work of the reporters, photographers, journalists and the rest of employees. Every piece of equipment has its **barcode number** for references of the product (key), a type (Camera, Microphone, Light, Wallpaper, etc…) and has a date of purchase to know when the product was bought as well as a price that informs us how much each piece of material cost. Every piece of equipment has a status indicator indicating whether it's in use, free, stockpiled, in repair, sold, in transit, etc…

4-Dependent



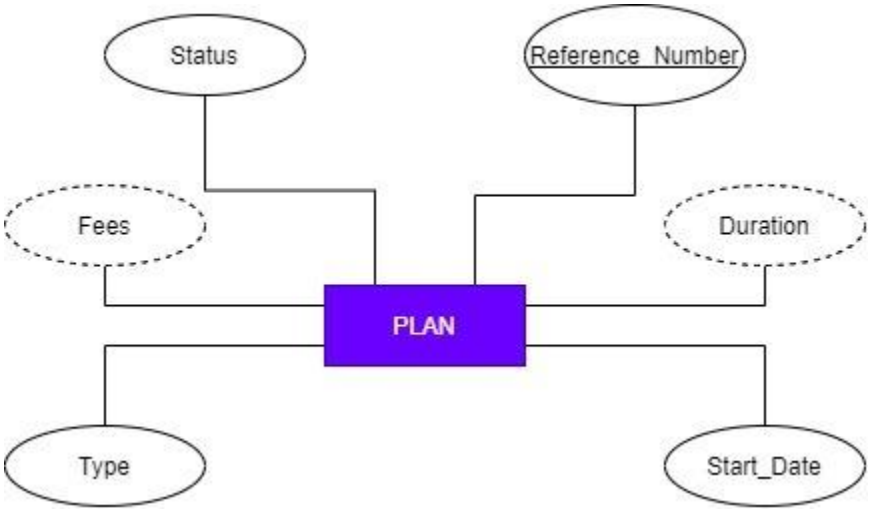
Dependents are the emergency contacts employees depend on in case of an emergency or the organization loses contact with staff. They have very simple attributes such as the key **ID**, a name, phone number, email and their relationship with the employee. It is important to have someone as a backup in case something goes awry.

5-Customer



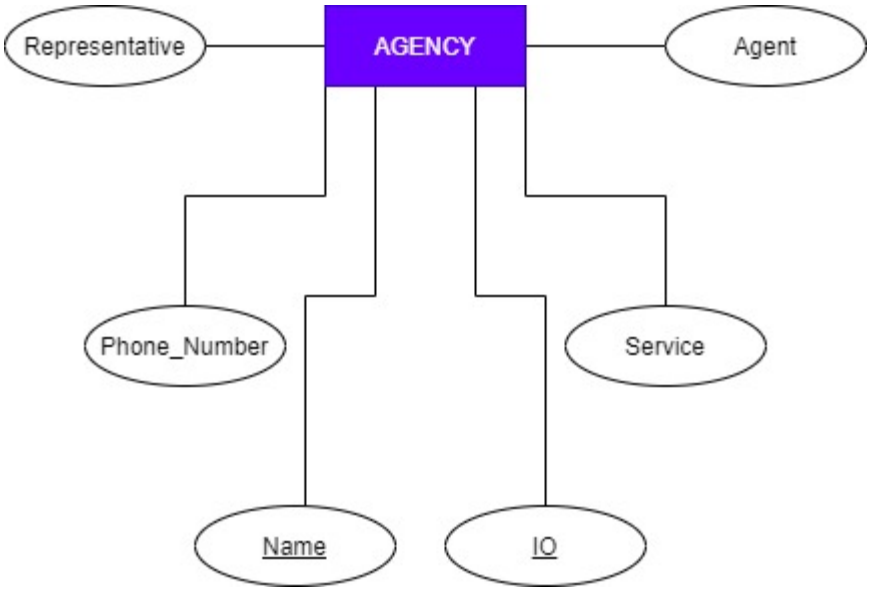
A customer is any individual or organization that wishes to subscribe to the newspaper and receive weekly, biweekly or monthly journals. Every customer is contacted and contacts an employee in order to manage their subscription (or set up one.). Customers have a name, **ID** as a key for storage, phone number for contact, and a type. Customers can be individual people, retailers, or any other entity. They subscribe to a plan that dictates how often and how they receive newspapers. Customers form the vast majority of income for the organization and are a key component to keep track of in order to maximize profit and engagement.

6- Plan



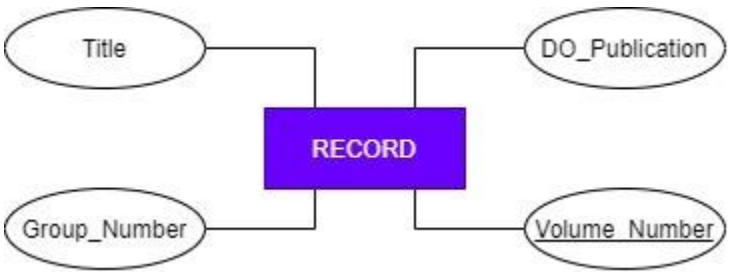
Plans are the structure in which the product gets delivered and sold. They are the basis for which our customers receive their promised newspapers. Plans have a type, with differing perks and pricing for each type, as well as fees such as subscription and delivery fees (derived from the type of plan subscribed to). Plans have a start date and continue up until they are terminated with the derived attribute, duration. They are referenced by a **reference numbe**r as a key and have a status that indicates whether the plan is active, inactive, or on hold.

7- Agency



Agencies are the other major organization that the newspaper will be making contact with. They are most often a larger source of media and content used in the papers themselves. Agencies have a representative, i.e., a person that the newspaper will be regularly contacting for sales, meetings, and such. Not to be confused with representatives, agents are agency staff that deliver the product and services: They are managed by the representative and instructed to provide services and products to the newspaper in accordance with the contract. Agencies have an **insertion order** as primary key as well as a *name* as secondary key and phone number for contact. Every agency provides a specific service, such as photo delivery, information gathering, investigative work, etc.…

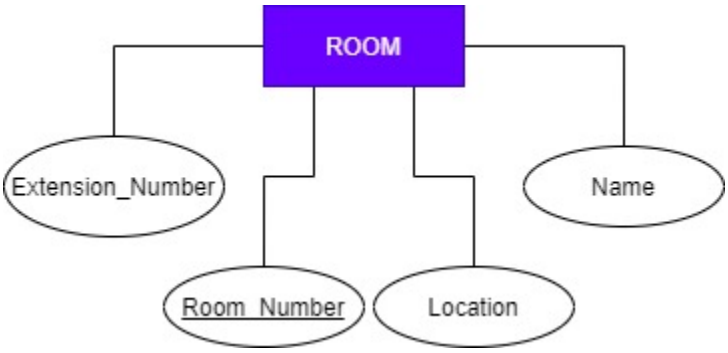
8-Record



It is crucial for journals to have records kept in case a recall, revision, or review is needed. Records act as symbolic monuments for the newspaper as well, indicating its history and past successes and failures. “History repeats itself” as they say. Records have a title, a date of publication, and are stored in

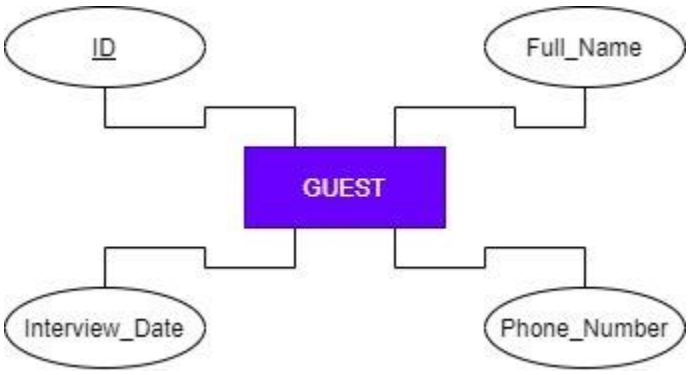
groups. These groups can be categorized into time, topic, political events, or other criteria. Records have a **volume number** as key to identify them within these groups.

9-Room



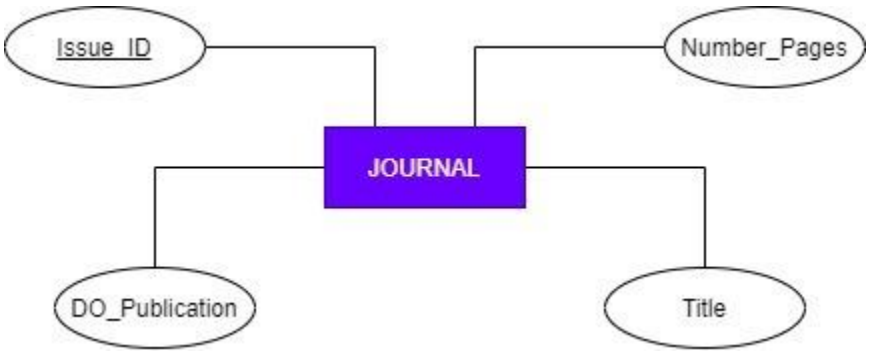
A room can be simply defined as the area in which productive activity takes place or where other miscellaneous affairs are held. A room has a name, an extension number for people to call, a **room number** for quick identification to distinguish rooms, and a location for easier navigation to know in which building or area it is located. It is very important for an organization to have organized rooms, to be able to maintain a study workflow free of disruptions.

10-Guest



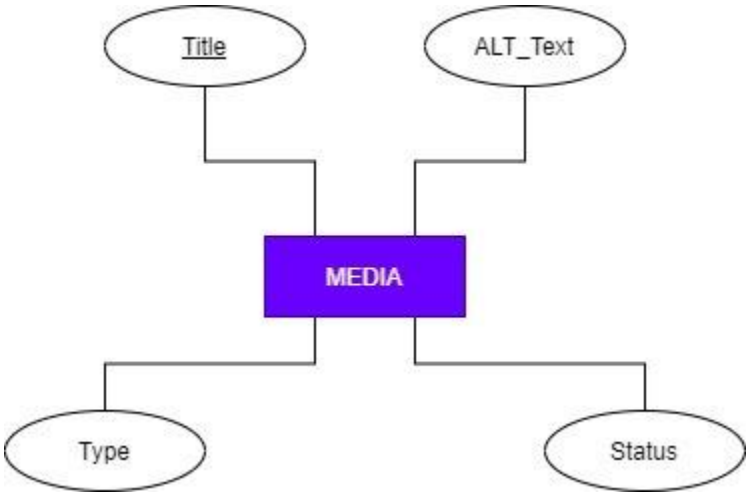
A guest is a person who would come to the newspaper for specific reasons that are of value for the newspaper or personal reasons. That's why each guest has a Motif, i.e., a reason for coming, an **ID** as key to keep track of every guest, a name, and a phone number. Guests constantly show up for news coverage, interviews, a speech or a presentation. Guests are kept track of incase they are recurring, or if media with guests needs to be found.

11- Journal



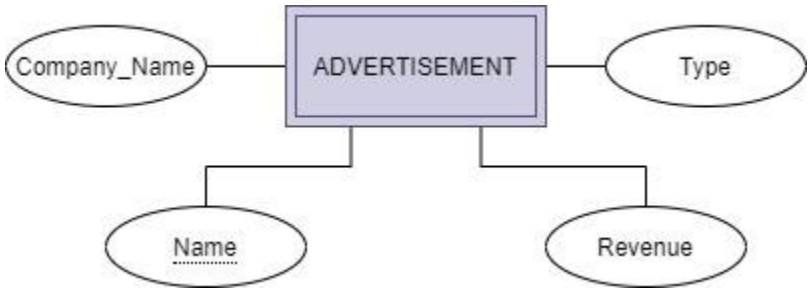
A journal is any one issue of a newspaper. It is every instance of the collective media and news produced on any given day. A journal has a date of publication, a key which is the **issue ID**, a title, and number of pages. Journals are the core product of a newspaper, with all productive efforts being concentrated onto their production and distribution, as well as upholding a minimum standard of quality. In fact, journals are so important that records are kept of every journal.

12- Media



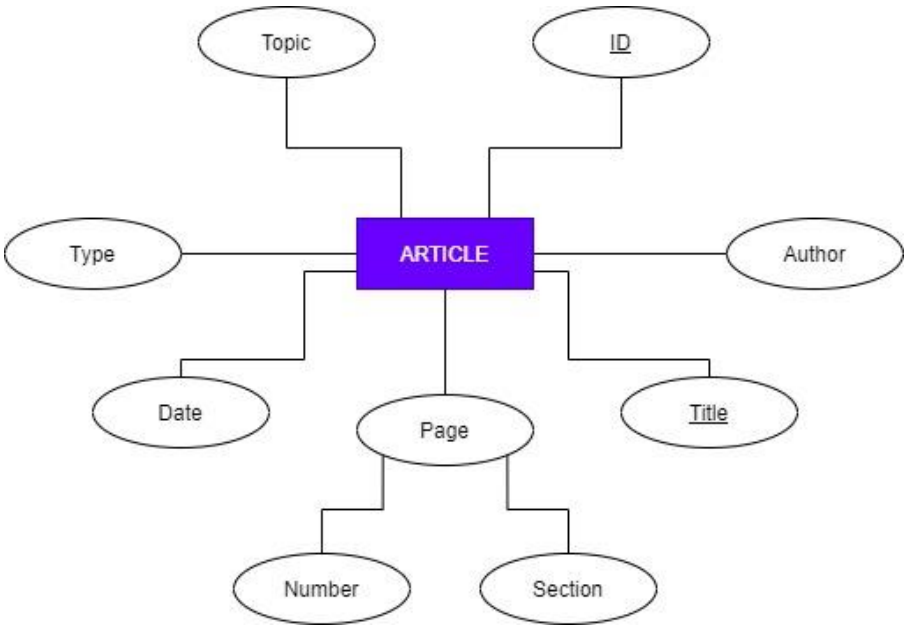
Media refers to the collective imagery and audio used in day-to-day issues to represent abstract ideas or concrete objects. Seeing something is different from reading about it, so it is highly important a large supply of media is constantly being refreshed and kept up to date. Every piece of media has a type (Photo, Video, Drawing, Audio, etc.…), as well as a key, a **title**. The status refers to the state the piece of media is in, as it could be in use, inactive or archived. Alt-text refers to a small piece of text to quickly give whoever wishes to access it a quick brief description.

13- Advertisement



Advertisements are another source of income for the newspaper. They are placed by advertisers and could be of multiple types. Advertisements have a *name* as a weak key (rendering the advertisement entity as weak) to describe the advertisement itself (e.g., 2004 Ford for sale) as well as the seller's name and the amount of revenue retrieved from the advertisement itself. Advertisements constitute a small to medium portion of the journal.

14- Article



Articles are the core of newspapers considering that these articles can provide a useful source of information about historical and current events. Each article has an **ID** (key), a specific topic, an author who is an employee in this newspaper company, date of writing this article, a

title which is a secondary key, and pages which is a composite attribute consisting of the page number and section of group of pages.

VII-Relationships:

Each **RECORD** has journals saved in the database of newspaper company annually. Thus, a "**HAS**" relationship is created between **RECORD Entity** and **JOURNAL Entity**. The relationship is 1/Many since each record can have multiple journals. The participation is total on both sides since every record has multiple journals and every journal exists in some record. Every record has multiple journals, yet each journal is that of a specific single record.

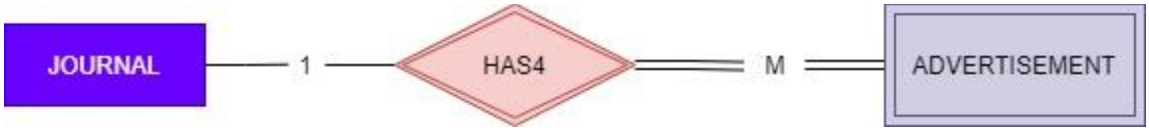
Each **EMPLOYEE** manages records saved in the database of newspaper company. Thus, a "**MANAGES**" relationship is created between **EMPLOYEE Entity** and **RECORD Entity**. The relationship is 1/Many since each employee can manage multiple records. The participation is total on record side since every record is managed by some employee, yet it is partial on employee side since not all employees take care of managing records.

Each **EMPLOYEE** manages journals saved in the database of newspaper company. Thus, a "**MANAGES**" relationship is created between **EMPLOYEE Entity** and **JOURNAL Entity**. The

relationship is 1/Many since each employee can manage multiple journals. The participation is total on journal side since every journal is managed by some employee, yet it is partial on employee side since not all employees take care of managing journals.

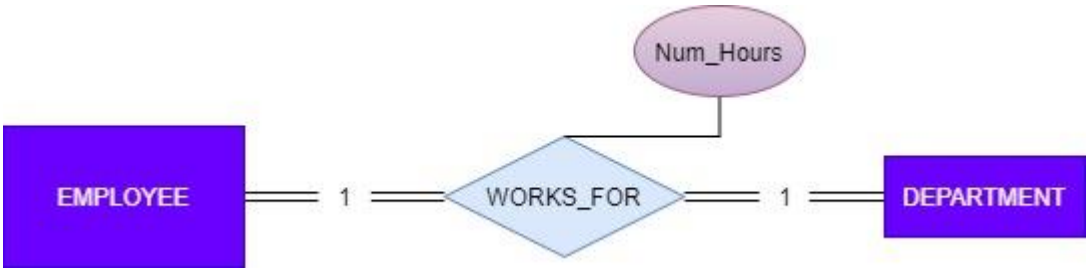
Each **JOURNAL** has articles saved in the database of newspaper company. Thus, a "**HAS**" relationship is created between **JOURNAL Entity** and **ARTICLE Entity**. The relationship is 1/Many since each journal can have multiple articles. The participation is total on both sides since every journal has multiple articles and every article exists in some journal. Every journal has multiple articles, yet each article is that of a specific single journal.

Each **ARTICLE** has media saved in the database of newspaper company. Thus, a "**HAS**" relationship is created between **ARTICLE Entity** and **MEDIA Entity**. The relationship is 1/Many since each article can have multiple medias. The participation is total on article side since every article has multiple different medias, yet it is partial on media side since not all medias exist in an article. Every article has multiple medias, yet each media is that of a specific single article.



Each **JOURNAL** has advertisements saved in the database of newspaper company. Thus, a "**HAS**" identifying relationship is created between **JOURNAL Entity** and **ADVERTISEMENT Weak Entity**. The relationship is 1/Many since each journal can have multiple advertisements. The participation is total on journal side since every journal has multiple advertisements, yet it is partial on advertisement side since each advertisement is that of a specific single journal. Every journal has multiple advertisements, yet not all advertisements exist in a journal.

Each **EMPLOYEE** writes articles saved in the database of newspaper company. Thus, a "**WRITES**" relationship is created between **EMPLOYEE Entity** and **ARTICLE Entity**. The relationship is 1/Many since each employee can write multiple articles. The participation is total on article side since every article is written by some employee, yet it is partial on employee side since not all employees take care of writing articles.



Each **EMPLOYEE** works in a certain field in the newspaper company under a certain department. Thus, a "**WORKS_FOR**" relationship is created between **EMPLOYEE Entity** and **DEPARTMENT Entity**. The relationship is 1/1 since each employee can work for a single department only. The participation is total on both sides since every employee works in a department and every department is worked in. Every employee works in exactly a single department and every single department has specific employees that work in it. The relationship has an attribute: the number of hours which states how many hours the employee works in each department to calculate their salary (as a derived attribute to EMPLOYEE entity).

Each **DEPARTMENT** has equipment needed by the employees to perform their tasks. Thus, a "**HAS**" relationship is created between **DEPARTMENT Entity** and **EQUIPMENT Entity**. The relationship is 1/Many since each department can have much equipment. The participation is total on department side since every department has equipment yet is partial from equipment side since not all equipment is found in a certain department.

Each **EMPLOYEE** has dependents saved in the database of newspaper company so that if by any chance an accident occurs the department employees would be able to contact their emergency contacts. Thus, a "**HAS**" relationship is created between **EMPLOYEE Entity** and **DEPENDENT Entity**. The relationship is 1/Many since each employee can have many dependents. The participation is total on both sides since every employee has a dependent and every dependent in the database is that of an employee. Every employee has multiple dependents, and each dependent is that of a specific single employee.

Each **EMPLOYEE** contacts customers to review subscription to plans. Thus, a "**CONTACTS**" relationship is created between **EMPLOYEE Entity** and **CUSTOMER Entity**. The relationship is 1/Many since each employee can contact many customers. The participation is partial on both sides since not all employees are required to contact customers, and not all customers are contacted by employees. Every employee contact multiple customers, and each customer is contacted by a single employee.

Each **EMPLOYEE** contacts guests for interviews, collaboration, or meetings. Thus, a "**CONTACTS**" relationship is created between **EMPLOYEE Entity** and **GUEST Entity**. The relationship is 1/Many since each employee can contact many guests. The participation is partial on both sides since not all employees are required to contact guests, and not all guests are contacted by employees. Every employee contacts multiple guests, and each guest is contacted by a single employee.

Each **EMPLOYEE** contacts agencies in case the newspaper company needs any external resources. Thus, a "**CONTACTS**" relationship is created between **EMPLOYEE Entity** and **AGENCY Entity**. The relationship is 1/Many since each employee can contact many agencies. The participation is partial on both sides since not all employees are required to contact agencies, and not all agencies are contacted by employees. Every employee contacts multiple agencies, and each agency is contacted by a single employee.

Each **CUSTOMER** can subscribe to specific plans offered by the newspaper company. Thus, a "**SUBSCRIBES_TO**" relationship is created between **CUSTOMER Entity** and **PLAN Entity**. The relationship is 1/1 since each customer can subscribe to one plan only. The participation is partial on both sides since not all customers subscribe to plans, and not all plans can be subscribed to at the same time. Every customer subscribes to a single plan, and each single plan is subscribed by a single customer.

Each **DEPARTMENT** has rooms in some location of newspaper company. Thus, a "**HAS**" identifying relationship is created between **DEPARTMENT Entity** and **ROOM Weak Entity**. The relationship is 1/Many since each department can have multiple rooms. The participation is total on both sides since every department has multiple rooms, and all rooms exist in a certain department.

VIII-ER to Relational Mapping Algorithms:

After designing the ER schema and having displayed the database for Promise Hospital as a system of entities, attributes, and relationships, this high-level design must be translated into a relational database design. To map the ER design to a relational database design, a seven-step algorithm needs to be followed. The following is a detailed description on applying the different steps to our database design. The steps in brief are as follows:

- **Step 1:** All regular entity types are mapped into relations schemas. By regular, we mean that only non-weak entities will be mapped in this step. For every regular entity, only the simple attributes are encoded into the relation schemas. Composite attributes are broken down into their simple attribute components. Multivalued and derived attributes are not encoded in this step. Multivalued attributes will be added in the Step 6.
- **Step 2:** All weak entity types are mapped into relation schemas. As in Step 1, only the simple attributes are encoded into the relation schemas. Composite attributes are broken down into their simple attribute components. Multivalued and derived attributes are not encoded in this step. Multivalued attributes will be added in the Step 6.
- **Step 3:** All binary 1:1 relationship types are mapped into relation schemas. Specifically, in this step, we apply the foreign key approach where we choose the entity on the total participation side of the relation, then we add as a foreign key the primary key of the other entity participating in this relation.
- **Step 4:** All binary 1:N relationship types are mapped into relation schemas. As in Step 3, we apply the foreign key approach. We add a foreign key in the entity type at the many sides of the relationship. This foreign key will be the primary key of the other entity type participating in this relationship.
- **Step 5:** All binary M:N relationship types are mapped into relation schemas. Unlike in Step 3 and 4, we encode the relationships by creating a new relation which includes, as foreign keys, the primary keys of all participating relations. Their combination would form the primary key of this newly created relation. This step is not represented here in our report because the database does not include any M:N relationship types.
- **Step 6:** All multivalued attributes that were left over from the previous steps are mapped. Specifically, a relation is created for every multivalued attribute. It would contain the

primary key of the entity has that attribute. This step is not represented here in our report because the database does not include any multivalued attributes.

- **Step 7:** All N-ary relationship types are mapped in this step. But there are no N-ary relationships in the database, so nothing is done for this step in this database system.

STEP 1: Mapping of Regular Entity Types

In the first step, the regular entity types must be mapped into relations. Each regular entity is going to have its own relation that includes all of its simple attributes and a single primary key which is underlined. The regular (strong) entities in this database design for Promise Hospital are EMPLOYEE, DEPARTMENT, DEPENDENT, AGENCY, ARTICLE, ADVERTISEMENT, CUSTOMER, GUEST, PLAN, RECORD, JOURNAL, MEDIA, EQUIPMENT, ROOM.

- **EMPLOYEE:**

ID	First_Name	M_Initial	Last_Name	Phone_Number	Field
Street	City	Building	Floor	Gender	Position
Year_Hired	DOB	Email	Dep_Number		

The EMPLOYEE entity contains simple, derived, composite and multivalued attributes. The derived attribute *Age* and *Salary* are not represented in this relation. This relation only includes all simple attributes and the primary key **ID** which is underlined. The EMPLOYEE entity has *Name* as a composite attribute of which only the simple attributes *First_Name*, *Last_Name*, and *M_Initial* are included in the relation. This entity also has *Address* as a composite attribute of which only the simple attributes *Street, City, Building,* and *Floor* are included.

DEPARTMENT:

The DEPARTMENT entity contains simple attributes only, so we simply include in this relation the four attributes: Name, Location, Head, and **Number** which is underlined because it is a primary key.

EQUIPMENT

The EQUIPMENT entity contains simple attributes only, so we simply include in this relation the six attributes: Name, Type, Price, Status, DO_Purchase, and **Barcode_Number** which is underlined because it is a primary key.

DEPENDENT:

The DEPENDENT entity contains simple attributes only, so we simply include in this relation the four attributes: Full_Name, Relationship, Phone_Number, and **ID** which is underlined because it is a primary key.

CUSTOMER:

ID	Type	Phone_Number	Name

The CUSTOMER entity contains simple attributes only, so we simply include in this relation the four attributes: Name, Type, Phone_Number, and **ID** which is underlined because it is a primary key.

PLAN:

Reference_Number	Type	Status	Start_Date

The PLAN entity contains simple attributes only, so we simply include in this relation the four attributes: Type, Status, Start_Date, and **Reference_Number** which is underlined because it is a primary key. The PLAN entity also has the derived attributes *Fees* and *Duration* but are not represented in this relation.

AGENCY:

IO	Name	Phone_Number	Service	Agent	Representative

The AGENCY entity contains simple attributes only, so we simply include in this relation the six attributes: Name, Service, Agent, Representative, Phone_Number, and **IO** which is underlined because it is a primary key.

RECORD:

Volume_Number	DO_Publication	Title	Group_Number

The RECORD entity contains simple attributes only, so we simply include in this relation the four attributes: Title, DO_Publication, Group_Number, and **Volume_Number** which is underlined because it is a primary key.

- **ROOM:**

Room_Number	Extension_Number	Location	Name

The ROOM entity contains simple attributes only, so we simply include in this relation the four attributes: Name, Location, Extension_Number, and **Room_Number** which is underlined because it is a primary key.

- **GUEST:**

ID	Interview_Date	Full_Name	Phone_Number

The GUEST entity contains simple attributes only, so we simply include in this relation the four attributes: Full_Name, Interview_Date, Phone_Number, and **ID** which is underlined because it is a primary key.

- **JOURNAL:**

Issue_ID	Number_Pages	Title	DO_Publication

The JOURNAL entity contains simple attributes only, so we simply include in this relation the four attributes: Number_Pages, Title, DO_Publication, and **Issue_ID** which is underlined because it is a primary key.

- **MEDIA:**

The MEDIA entity contains simple attributes only, so we simply include in this relation the four attributes: Type, Status, ALT_Text, and **Title** which is underlined because it is a primary key.

- **ARTICLE:**

The ARTICLE entity contains simple attributes only, so we simply include in this relation the six attributes: Topic, Type, Author, Date, Title and **ID** which is underlined because it is a primary key. The ARTICLE entity has *Page* as a composite attribute of which only the simple attributes *Page_Number* and *Page_Section* are included in the relation.

STEP 2: Mapping of Weak Entity Types

In this step, the weak entity types are mapped into relations. As in Step 1, only the simple attributes are included in the relations and not multivalued or derived attributes. Furthermore, weak entity relation has a foreign key attribute which is the primary key of the owner entity type. The combination of the foreign key added and the partial key of the weak entity type represent the primary key of the relation. The only weak entity in our database design is ADVERTISEMENT.

1- ADVERTISEMENT:

Name	Company_Name	Type	Revenue	Journal_Issue_ID

The weak entity ADVERTISEMENT does not have any derived or multivalued attributes. The simple attributes: Company_Name, Type, Revenue, and the partial key Name (underlined for that reason) are included. Moreover, the *Journal_Issue_ID*, the primary key of the owner entity JOURNAL, is included. The partial key *Name* and *Journal_Issue_ID* are combined to represent the primary key of this relation.

XII-Step 3: Mapping of Binary 1:1 Relationship Types

To accomplish our goal, we can follow one of three approaches. The first approach, called foreign key approach is where we choose the entity on the total participation side of the relation, then we add as a foreign key the primary key of the other entity participating in this relation. The second approach, called merged relation approach is where we merge the two entities participating in the relationship into a single relation. This is only used when both participations are total and thus not useful in our case. The third approach, called cross-reference or relationship relation approach is where we create a third relation which will include the primary keys of both entities participating in the relationship. We are going to follow the foreign key approach because in our context, we will be picking out the “objects” as our foreign key, as contextually and logically speaking, this makes the most sense. (i.e., we care more about where each employee works than what employee each department contains). The binary one-to-one relationships that need to be mapped are WORKS_FOR and SUBSCRIBES_TO.

1- Employee (WORKS_FOR)

ID	First_Name	M_Initial	Last_Name	Phone_Number	Field
Street	City	Building	Floor	Gender	Position
Year_Hired	DOB	Email	Dep_Number		

Every employee works for a department. The “WORKS_FOR” relationship links the EMPLOYEE entity and the DEPARTMENT entity. On both sides of the participating entities, we have total participation. Thus, it does not matter where we add the foreign key that relates both entities; we have total participation on both sides. We chose the EMPLOYEE entity and added as a foreign key the primary key *Dep_Number* (renamed) from the DEPARTMENT entity.

2- Customer (SUBSCRIBES_TO)

ID	Type	Phone_number	Name	Plan

Every customer subscribes to a plan. The “SUBSCRIBES_TO” relationship links the CUSTOMER entity to the PLAN entity. Every customer subscribes to a plan (or they aren’t a customer), and every plan is subscribed to. Thus, it does not matter where we add the foreign key that relates both entities; we have total participation on both sides. We chose the CUSTOMER entity and added as a foreign key the reference number, simply renamed to *Plan*.

Step 4: Mapping of Binary 1: N Relationship Types

In this step, we are going to map the binary one-to-many relationships. We add a foreign key in the entity type at the many sides of the relationship. This foreign key is the primary key of the other entity type participating in this relationship. We must also include any other simple attribute of the one-to-many relationship. The one-to-many relationships that need to be mapped are: HAS1, HAS2, HAS3, HAS4, HAS5, HAS6, HAS7, MANAGES1, MANAGES2, WRITES, CONTACTS1, CONTACTS2, and CONTACTS3.

1- JOURNAL (HAS1)

Issue_ID	Number_Pages	Title	DO_Publication	Record_Number

Many journals belong to a record. The "HAS1" relationship links the JOURNAL entity and the RECORD entity. The JOURNAL entity is on the "many" side. Thus, we add to its relation the foreign key *Record_Number* which is the renamed primary key of the RECORD entity originally called *Volume_Number*.

2- ARTICLE (HAS2)

ID	Type	Topic	Author	Journal_Issue_ID
Date	Page_Number	Page_Section	Title	

Many articles belong to a journal. The "HAS2" relationship links the JOURNAL entity and the ARTICLE entity. The ARTICLE entity is on the "many" side. Thus, we add to its relation the foreign key *Journal_Issue_ID* which is the renamed primary key of the JOURNAL entity originally called *Issue_ID*.

3- MEDIA (HAS3)

Title	ALT_Text	Type	Status	Article_ID

Many pieces of media have an article they are used in. The “HAS3” relationship links the MEDIA entity and the ARTICLE entity. The MEDIA entity is on the “many” side. Thus, we add to its relation the foreign key *Article_ID* which is the renamed primary key of the ARTICLE entity originally called *ID*.

4- ADVERTISEMENT (HAS4)

Name	Comp_Name	Type	Revenue	Journal_Issue_ID

Every journal has many advertisements. The “HAS4” relationship links the ADVERTISEMENT entity and the JOURNAL entity. The ADVERTISEMENT entity is on the “many” side. Thus we add to its relation the foreign key *Journal_Issue_ID* which is the renamed primary key of the JOURNAL entity originally called *Issue_ID*. But since the ADVERTISEMENT relation schema already has the Journal_Issue_ID, **nothing changes** in this relation.

5- EQUIPMENT (HAS5)

Barcode_Number	DO_Purchase	Price	Name	Type	Status	Department_Number

Each piece of equipment belongs to a department. The “HAS5” relationship links the EQUIPMENT entity and the DEPARTMENT entity. The EQUIPMENT entity is on the “many” side. Thus we add to the relation the foreign key *Department_Number* which is the renamed primary key of the DEPARTMENT entity originally called *Number*.

6- DEPENDENT (HAS6)

ID	Full_Name	Phone_Number	Relationship	Employee_ID

An employee may depend on many people. The “HAS6” relationship links the DEPENDENT entity and the EMPLOYEE entity. The DEPENDENT entity is on the “many” side. Thus, we add to its relation the foreign key *Employee_ID* which is the renamed primary key of the EMPLOYEE entity originally called *ID*.

7- ROOM (HAS7)

Room_Number	Extension_Number	Location	Name	Department_Number

Every room belongs to one department. The “HAS7” relationship links the ROOM entity and the DEPARTEMENT entity. The ROOM entity is on the “many” side. Thus, we add to its relation the foreign key *Number* which is the primary key of the DEPARTMENT entity, and we rename it *Department_Number*.

8- CUSTOMER (CONTACTS1)

ID	Type	Phone_Number	Name	Employee_ID

Every customer is contacted by an employee. The “CONTACTS1” relationship links the CUSTOMER entity and the EMPLOYEE entity. The CUSTOMER entity is on the “many” side. Thus we add to its relation the foreign key *Employee_ID* which is the renamed primary key of the EMPLOYEE entity originally called *ID*.

9- GUEST (CONTACTS2)

ID	Interview_Date	Full_Name	Phone_Number	Employee_ID

Every guest is contacted by an employee. The “CONTACTS2” relationship links the GUEST entity and the EMPLOYEE entity. The GUEST entity is on the “many” side. Thus we add to its relation the foreign key *Employee_ID* which is the renamed primary key of the EMPLOYEE entity originally called *ID*.

10- AGENCY (CONTACTS3)

IO	Name	Phone_Number	Service	Agent	Representative	Employee_ID

Every agency is contacted by an employee. The “CONTACTS3” relationship links the AGENCY entity and the EMPLOYEE entity. The AGENCY entity is on the “many” side. Thus we add to its relation the foreign key *Employee_ID* which is the renamed primary key of the EMPLOYEE entity originally called *ID*.

11- RECORD (MANAGES1)

Title	DO_Publication	Group_Number	Volume_Number	Employee_ID

Every record is managed by an employee. The “MANAGES” relationship links the RECORD entity and the EMPLOYEE entity. The RECORD entity is on the “many” side. Thus, we add to its relation the foreign key *Employee_ID* which is the renamed primary key of the EMPLOYEE entity originally called *ID*.

12- JOURNAL (MANAGES2)

Issue ID	DO_Publication	Number_Pages	Volume_Number	Employee_ID

Every journal is managed by an employee. The “MANAGES” relationship links the JOURNAL entity and the EMPLOYEE entity. The JOURNAL entity is on the “many” side. Thus we add to its relation the foreign key *Employee_ID* which is the renamed primary of key of the EMPLOYEE entity originally called *ID*.

13- ARTICLE (WRITES)

ID	Type	Topic	Author
Date	Page_Number	Page_Section	Title

Many articles are written by an employee. The “WRITES” relationship links the ARTICLE entity and the EMPLOYEE entity. The ARTICLE entity is on the “many” side. Thus, we add to its relation the foreign key *Author* which is the renamed primary key of the EMPLOYEE entity originally called *ID*. But since the ARTICLE relation schema already has the *Author* attribute, nothing changes in this relation.

IX-FINAL STEP: Final Displays:

EMPLOYEE:

ID	First_Name	M_Initial	Last_Name	Phone_Number	Field
Street	City	Building	Floor	Gender	Position
Year_Hired	DOB	Email	Dep_Number		

DEPARTMENT:

Number	Name	Location	Head

EQUIPMENT

Barcode_Number	DO_Purchase	Price	Name	Type	Status

DEPENDENT:

ID	Full_Name	Phone_Number	Relationship

CUSTOMER:

ID	Type	Phone_Number	Name

PLAN:

Reference_Numbe	Type	Status	Start_Date

AGENCY:

IO	Name	Phone_Number	Service	Agent	Representative

RECORD:

Volume_Number	DO_Publication	Title	Group_Number

ROOM:

Room_Number	Extension_Numbe	Location	Name

GUEST:

ID	Interview_Date	Full_Name	Phone_Number

JOURNAL:

Issue_ID	Number_Pages	Title	DO_Publication

MEDIA:

Title	ALT_Text	Type	Status

ARTICLE:

ID	Type	Topic	Author
Date	Page_Number	Page_Section	Title

ADVERTISEMENT:

Name	Company_Name	Type	Revenue	Journal_Issue_ID

WORKS_FOR

ID	First_Name	M_Initial	Last_Name	Phone_Number	Field
Street	City	Building	Floor	Gender	Position
Year_Hired	DOB	Email	Dep_Number		

SUBSCRIBES_TO

ID	Type	Phone_number	Name	Plan

HAS1

Issue_ID	Number_Pages	Title	DO_Publication	Record_Number

HAS2

ID	Type	Topic	Author	Journal_Issue_ID
Date	Page_Number	Page_Section	Title	

HAS3

Title	ALT_Text	Type	Status	Article_ID

HAS4

Name	Company_Name	Type	Revenue	Journal_Issue_ID

HAS5

Barcode_Number	DO_Purchase	Price	Name	Type	Status	Department_Number

HAS6

ID	Full_Name	Phone_Number	Relationship	Employee_ID

HAS7

Room_Number	Extension_Number	Location	Name	Department_Number

CONTACTS1

ID	Type	Phone_Number	Name	Employee_ID

CONTACTS2

ID	Interview_Date	Full_Name	Phone_Number	Employee_ID

CONTACTS3

IO	Name	Phone_Number	Service	Agent	Representative	Employee_ID

MANAGES1

Title	DO_Publication	Group_Number	Volume_Number	Employee_ID

MANAGES2

Issue ID	DO_Publication	Number_Pages	Volume_Number	Employee_ID

WRITES

ID	Type	Topic	Author
Date	Page_Number	Page_Section	Title

X-Table Structure for Newspaper Company Database:

After designing the ER diagram for our newspaper company and mapping this diagram into relational database design, now it is time to start creating the actual tables for our database on the Oracle Database Server. We will start by creating all tables and then inserting data into these tables. Finally, we will execute some queries to display the importance of the database and especially in a newspaper company. None of the relationships are M:N so none have tables created for them.

1- Employee:

```
CREATE TABLE  "EMPLOYEE"
   (    "ID" NUMBER(8,0) NOT NULL ENABLE,
        "FIRST_NAME" VARCHAR2(26) NOT NULL ENABLE,
        "M_INITIAL" CHAR(1) NOT NULL ENABLE,
        "LAST_NAME" VARCHAR2(26) NOT NULL ENABLE,
        "PHONE_NUMBER" VARCHAR2(13) NOT NULL ENABLE,
        "FIELD" VARCHAR2(20) NOT NULL ENABLE,
        "STREET" VARCHAR2(20) NOT NULL ENABLE,
        "CITY" VARCHAR2(20) NOT NULL ENABLE,
        "BUILDING" VARCHAR2(20) NOT NULL ENABLE,
        "FLOOR" NUMBER(*,0) NOT NULL ENABLE,
        "GENDER" CHAR(1) NOT NULL ENABLE,
        "POSITION" VARCHAR2(20) NOT NULL ENABLE,
        "YEAR_HIRED" NUMBER(*,0) NOT NULL ENABLE,
        "DOB" DATE NOT NULL ENABLE,
        "EMAIL" VARCHAR2(40) NOT NULL ENABLE,
        "DEP_NUMBER" NUMBER(*,0) NOT NULL ENABLE,
         PRIMARY KEY ("ID") ENABLE
   ) ;ALTER TABLE  "EMPLOYEE" ADD FOREIGN KEY ("DEP_NUMBER")
         REFERENCES  "DEPARTMENT" ("DEP_NUMBER") ENABLE;
```

2- Department:

```
CREATE TABLE  "DEPARTMENT"
   (    "DEP_NUMBER" NUMBER(*,0) NOT NULL ENABLE,
        "Name" VARCHAR2(40) NOT NULL ENABLE,
        "Location" VARCHAR2(100) NOT NULL ENABLE,
        "Head" VARCHAR2(30) NOT NULL ENABLE,
         PRIMARY KEY ("DEP_NUMBER") ENABLE
   ) ;
```

3- Equipment:

```
CREATE TABLE  "EQUIPMENT"
   (    "BARCODE_NUMBER" NUMBER(*,0),
        "DO_PURCHASE" DATE NOT NULL ENABLE,
        "PRICE" NUMBER(*,0) NOT NULL ENABLE,
        "NAME" VARCHAR2(500) NOT NULL ENABLE,
        "TYPE" VARCHAR2(30) NOT NULL ENABLE,
        "STATUS" CHAR(1),
        "DEPARTMENT_NUMBER" NUMBER(*,0),
         CHECK (PRICE>= 0) ENABLE,
         CHECK (STATUS IN('U','F','M','X','D','S')) ENABLE,
         PRIMARY KEY ("BARCODE_NUMBER") ENABLE
   ) ;ALTER TABLE  "EQUIPMENT" ADD FOREIGN KEY ("DEPARTMENT_NUMBER")
         REFERENCES  "DEPARTMENT" ("DEP_NUMBER") ENABLE;
```

4- Dependent:

```
CREATE TABLE  "DEPENDENT"
   (    "ID" NUMBER(10,0),
        "FULL_NAME" VARCHAR2(53) NOT NULL ENABLE,
        "PHONE_NUMBER" VARCHAR2(13) NOT NULL ENABLE,
        "RELATIONSHIP" VARCHAR2(26) NOT NULL ENABLE,
        "EMPLOYEE_ID" NUMBER(*,0),
         PRIMARY KEY ("ID") ENABLE
   ) ;ALTER TABLE  "DEPENDENT" ADD FOREIGN KEY ("EMPLOYEE_ID")
         REFERENCES  "EMPLOYEE" ("ID") ENABLE;
```

5- Customer:

```
CREATE TABLE  "CUSTOMER"
   (    "ID" NUMBER(*,0) NOT NULL ENABLE,
        "TYPE" VARCHAR2(30) NOT NULL ENABLE,
        "PHONE_NUMBER" VARCHAR2(13) NOT NULL ENABLE,
        "NAME" VARCHAR2(53) NOT NULL ENABLE,
        "PLAN" NUMBER(*,0) NOT NULL ENABLE,
        "EMPLOYEE_ID" NUMBER(*,0),
         PRIMARY KEY ("ID") ENABLE
   ) ;ALTER TABLE  "CUSTOMER" ADD FOREIGN KEY ("EMPLOYEE_ID")
         REFERENCES  "EMPLOYEE" ("ID") ENABLE;ALTER TABLE  "CUSTOMER" ADD FOREIGN KEY ("PLAN")
         REFERENCES  "PLAN" ("REFERENCE_NUMBER") ENABLE;
```

6- Plan:

```
CREATE TABLE  "PLAN"
   (    "REFERENCE_NUMBER" NUMBER(*,0),
        "TYPE" VARCHAR2(26) NOT NULL ENABLE,
        "STATUS" CHAR(1) NOT NULL ENABLE,
        "START_DATE" DATE NOT NULL ENABLE,
         CHECK (STATUS IN ('A','C','R','E')) ENABLE,
         PRIMARY KEY ("REFERENCE_NUMBER") ENABLE
   ) ;
```

7- Agency:

```
CREATE TABLE  "AGENCY"
   (    "IO" NUMBER(*,0),
        "NAME" VARCHAR2(53) NOT NULL ENABLE,
        "PHONE_NUMBER" VARCHAR2(13) NOT NULL ENABLE,
        "SERVICE" VARCHAR2(100),
        "AGENT" VARCHAR2(53) NOT NULL ENABLE,
        "REPRESENTATIVE" VARCHAR2(53) NOT NULL ENABLE,
        "EMPLOYEE_ID" NUMBER(*,0),
         PRIMARY KEY ("IO") ENABLE
   ) ;ALTER TABLE  "AGENCY" ADD FOREIGN KEY ("EMPLOYEE_ID")
         REFERENCES  "EMPLOYEE" ("ID") ENABLE;
```

8- Record:

```
CREATE TABLE  "RECORD"
   (    "VOLUME_NUMBER" NUMBER(*,0),
        "DO_PUBLICATION" DATE NOT NULL ENABLE,
        "TITLE" VARCHAR2(100) NOT NULL ENABLE,
        "GROUP_NUMBER" NUMBER(*,0),
        "EMPLOYEE_ID" NUMBER(*,0),
         PRIMARY KEY ("VOLUME_NUMBER") ENABLE
   ) ;ALTER TABLE  "RECORD" ADD FOREIGN KEY ("EMPLOYEE_ID")
         REFERENCES  "EMPLOYEE" ("ID") ENABLE;
```

9- Room:

```
CREATE TABLE  "ROOM"
   (    "ROOM_NUMBER" NUMBER(*,0),
        "EXTENSION_NUMBER" NUMBER(*,0) NOT NULL ENABLE,
        "LOCATION" VARCHAR2(200) NOT NULL ENABLE,
        "NAME" VARCHAR2(100) NOT NULL ENABLE,
        "DEPARTMENT_NUMBER" NUMBER,
         PRIMARY KEY ("ROOM_NUMBER") ENABLE
   ) ;ALTER TABLE  "ROOM" ADD FOREIGN KEY ("DEPARTMENT_NUMBER")
         REFERENCES  "DEPARTMENT" ("DEP_NUMBER") ENABLE;
```

10- Guest:

```
CREATE TABLE  "GUEST"
   (    "ID" NUMBER(*,0),
        "INTERVIEW_DATE" DATE NOT NULL ENABLE,
        "FULL_NAME" VARCHAR2(53) NOT NULL ENABLE,
        "PHONE_NUMBER" VARCHAR2(53) NOT NULL ENABLE,
        "EMPLOYEE_ID" NUMBER(*,0),
         PRIMARY KEY ("ID") ENABLE
   ) ;ALTER TABLE  "GUEST" ADD FOREIGN KEY ("EMPLOYEE_ID")
         REFERENCES  "EMPLOYEE" ("ID") ENABLE;
```

11- Journal:

```
CREATE TABLE  "JOURNAL"
   (    "ISSUE_ID" NUMBER(*,0),
        "NUMBER_PAGE" NUMBER(*,0) NOT NULL ENABLE,
        "TITLE" VARCHAR2(100) NOT NULL ENABLE,
        "DO_PUBLICATION" DATE NOT NULL ENABLE,
        "RECORD_NUMBER" NUMBER NOT NULL ENABLE,
        "EMPLOYEE_ID" NUMBER(*,0),
         PRIMARY KEY ("ISSUE_ID") ENABLE
   ) ;ALTER TABLE  "JOURNAL" ADD FOREIGN KEY ("RECORD_NUMBER")
         REFERENCES  "RECORD" ("VOLUME_NUMBER") ENABLE;ALTER TABLE  "JOURNAL" ADD FOREIGN KEY ("EMPLOYEE_ID")
         REFERENCES  "EMPLOYEE" ("ID") ENABLE;
```

12- Media:

```
CREATE TABLE  "MEDIA"
   (    "TITLE" VARCHAR2(100),
        "ALT_TEXT" VARCHAR2(1000),
        "TYPE" VARCHAR2(100) NOT NULL ENABLE,
        "STATUS" CHAR(1) NOT NULL ENABLE,
        "ARTICLE_ID" NUMBER(*,0) NOT NULL ENABLE,
         CHECK (STATUS IN ('U','A','S')) ENABLE,
         PRIMARY KEY ("TITLE") ENABLE
   ) ;ALTER TABLE  "MEDIA" ADD FOREIGN KEY ("ARTICLE_ID")
         REFERENCES  "ARTICLE" ("ID") ENABLE;
```

13- Article:

```
CREATE TABLE  "ARTICLE"
   (    "ID" NUMBER(*,0),
        "TYPE" VARCHAR2(26) NOT NULL ENABLE,
        "TOPIC" VARCHAR2(50) NOT NULL ENABLE,
        "AUTHOR" VARCHAR2(53) NOT NULL ENABLE,
        "PAGENUMBER" NUMBER(*,0) NOT NULL ENABLE,
        "PAGESECTION" VARCHAR2(50) NOT NULL ENABLE,
        "TITLE" VARCHAR2(50) NOT NULL ENABLE,
        "DAY" DATE NOT NULL ENABLE,
        "JOURNAL_ISSUE_ID" NUMBER(*,0) NOT NULL ENABLE,
         PRIMARY KEY ("ID") ENABLE
   ) ;ALTER TABLE  "ARTICLE" ADD FOREIGN KEY ("JOURNAL_ISSUE_ID")
         REFERENCES  "JOURNAL" ("ISSUE_ID") ENABLE;
```

14- Advertisement:

```
CREATE TABLE  "ADVERTISEMENT"
   (    "NAME" VARCHAR2(53) NOT NULL ENABLE,
        "COMPANY_NAME" VARCHAR2(53) NOT NULL ENABLE,
        "TYPE" VARCHAR2(53) NOT NULL ENABLE,
        "REVENUE" FLOAT(126) NOT NULL ENABLE,
        "JOURNAL_ISSUE_ID" NUMBER NOT NULL ENABLE,
         PRIMARY KEY ("NAME", "JOURNAL_ISSUE_ID") ENABLE
   ) ;ALTER TABLE  "ADVERTISEMENT" ADD FOREIGN KEY ("JOURNAL_ISSUE_ID")
         REFERENCES  "JOURNAL" ("ISSUE_ID") ENABLE;
```

XI-Table Descriptions:

After creating all the tables on the oracle database server, we can view the description of each table in order to make sure everything is fine and no mistakes were made during creation of table.
In our database we have the following tables created on the oracle database server:

1- Employee:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EMPLOYEE	ID	NUMBER	-	8	0	1	-	-	-
	FIRST_NAME	VARCHAR2	26	-	-	-	-	-	-
	M_INITIAL	CHAR	1	-	-	-	-	-	-
	LAST_NAME	VARCHAR2	26	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	13	-	-	-	-	-	-
	FIELD	VARCHAR2	20	-	-	-	-	-	-
	STREET	VARCHAR2	20	-	-	-	-	-	-
	CITY	VARCHAR2	20	-	-	-	-	-	-
	BUILDING	VARCHAR2	20	-	-	-	-	-	-
	FLOOR	NUMBER	22	-	0	-	-	-	-
	GENDER	CHAR	1	-	-	-	-	-	-
	POSITION	VARCHAR2	20	-	-	-	-	-	-
	YEAR_HIRED	NUMBER	22	-	0	-	-	-	-
	DOB	DATE	7	-	-	-	-	-	-
	EMAIL	VARCHAR2	40	-	-	-	-	-	-
	DEP_NUMBER	NUMBER	22	-	0	-	-	-	-

1 - 16

2- Department:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DEPARTMENT	DEP_NUMBER	NUMBER	22	-	0	1	-	-	-
	Name	VARCHAR2	40	-	-	-	-	-	-
	Location	VARCHAR2	100	-	-	-	-	-	-
	Head	VARCHAR2	30	-	-	-	-	-	-

1 - 4

3- Equipment:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EQUIPMENT	BARCODE_NUMBER	NUMBER	22	-	0	1	-	-	-
	DO_PURCHASE	DATE	7	-	-	-	-	-	-
	PRICE	NUMBER	22	-	0	-	-	-	-
	NAME	VARCHAR2	500	-	-	-	-	-	-
	TYPE	VARCHAR2	30	-	-	-	-	-	-
	STATUS	CHAR	1	-	-	-	✓	-	-
	DEPARTMENT_NUMBER	NUMBER	22	-	0	-	✓	-	-

1 - 7

4- Dependent:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
DEPENDENT	ID	NUMBER	-	10	0	1	-	-	-
	FULL_NAME	VARCHAR2	53	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	13	-	-	-	-	-	-
	RELATIONSHIP	VARCHAR2	26	-	-	-	-	-	-
	EMPLOYEE_ID	NUMBER	22	-	0	-	✓	-	-
									1 - 5

5- Customer:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
CUSTOMER	ID	NUMBER	22	-	0	1	-	-	-
	TYPE	VARCHAR2	30	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	13	-	-	-	-	-	-
	NAME	VARCHAR2	53	-	-	-	-	-	-
	PLAN	NUMBER	22	-	0	-	-	-	-
	EMPLOYEE_ID	NUMBER	22	-	0	-	✓	-	-
									1 - 6

6- Plan:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
PLAN	REFERENCE_NUMBER	NUMBER	22	-	0	1	-	-	-
	TYPE	VARCHAR2	26	-	-	-	-	-	-
	STATUS	CHAR	1	-	-	-	-	-	-
	START_DATE	DATE	7	-	-	-	-	-	-
									1 - 4

7- Agency:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
AGENCY	IO	NUMBER	22	-	0	1	-	-	-
	NAME	VARCHAR2	53	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	13	-	-	-	-	-	-
	SERVICE	VARCHAR2	100	-	-	-	✓	-	-
	AGENT	VARCHAR2	53	-	-	-	-	-	-
	REPRESENTATIVE	VARCHAR2	53	-	-	-	-	-	-
	EMPLOYEE_ID	NUMBER	22	-	0	-	✓	-	-
									1 - 7

8- Record:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
RECORD	VOLUME_NUMBER	NUMBER	22	-	0	1	-	-	-
	DO_PUBLICATION	DATE	7	-	-	-	-	-	-
	TITLE	VARCHAR2	100	-	-	-	-	-	-
	GROUP_NUMBER	NUMBER	22	-	0	-	✓	-	-
	EMPLOYEE_ID	NUMBER	22	-	0	-	✓	-	-
									1 - 5

9- Room:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ROOM	ROOM_NUMBER	NUMBER	22	-	0	1	-	-	-
	EXTENSION_NUMBER	NUMBER	22	-	0	-	-	-	-
	LOCATION	VARCHAR2	200	-	-	-	-	-	-
	NAME	VARCHAR2	100	-	-	-	-	-	-
	DEPARTMENT_NUMBER	NUMBER	22	-	-	-	✓	-	-
									1 - 5

10- Guest:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
GUEST	ID	NUMBER	22	-	0	1	-	-	-
	INTERVIEW_DATE	DATE	7	-	-	-	-	-	-
	FULL_NAME	VARCHAR2	53	-	-	-	-	-	-
	PHONE_NUMBER	VARCHAR2	53	-	-	-	-	-	-
	EMPLOYEE_ID	NUMBER	22	-	0	-	✓	-	-
									1 - 5

11- Journal:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
JOURNAL	ISSUE_ID	NUMBER	22	-	0	1	-	-	-
	NUMBER_PAGE	NUMBER	22	-	0	-	-	-	-
	TITLE	VARCHAR2	100	-	-	-	-	-	-
	DO_PUBLICATION	DATE	7	-	-	-	-	-	-
	RECORD_NUMBER	NUMBER	22	-	-	-	-	-	-
	EMPLOYEE_ID	NUMBER	22	-	0	-	✓	-	-
									1 - 6

12- Media:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MEDIA	TITLE	VARCHAR2	100	-	-	1	-	-	-
	ALT_TEXT	VARCHAR2	1000	-	-	-	✓	-	-
	TYPE	VARCHAR2	100	-	-	-	-	-	-
	STATUS	CHAR	1	-	-	-	-	-	-
	ARTICLE_ID	NUMBER	22	-	0	-	-	-	-
									1 - 5

13- Article:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ARTICLE	ID	NUMBER	22	-	0	1	-	-	-
	TYPE	VARCHAR2	26	-	-	-	-	-	-
	TOPIC	VARCHAR2	50	-	-	-	-	-	-
	AUTHOR	VARCHAR2	53	-	-	-	-	-	-
	PAGENUMBER	NUMBER	22	-	0	-	-	-	-
	PAGESECTION	VARCHAR2	50	-	-	-	-	-	-
	TITLE	VARCHAR2	50	-	-	-	-	-	-
	DAY	DATE	7	-	-	-	-	-	-
	JOURNAL_ISSUE_ID	NUMBER	22	-	0	-	-	-	-
									1 - 9

14- Advertisement:

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
ADVERTISEMENT	NAME	VARCHAR2	53	-	-	1	-	-	-
	COMPANY_NAME	VARCHAR2	53	-	-	-	-	-	-
	TYPE	VARCHAR2	53	-	-	-	-	-	-
	REVENUE	FLOAT	126	126	-	-	-	-	-
	JOURNAL_ISSUE_ID	NUMBER	22	-	-	2	-	-	-
									1 - 5

XII-Inserting Data:

1- Employee:

INSERT INTO EMPLOYEE VALUES(10000001,'Mohammad Ali ', 'H', 'Mansour','0096103030511','Head','Salim Salam','Beirut','Abraj Beirut',10,'M','Department head',2006,'9-9-1980','mohamad.ali@ssnews.lb',1);

INSERT INTO EMPLOYEE VALUES(10000002,'Rita ', 'G', 'Bou Saleh','0096176258752','Head','Mar Charbel','Fanar','Elie Ferdaous',12,'F','Department head',2010,'8-9-1986','rita.bousaleh@ssnews.lb',2);

INSERT INTO EMPLOYEE VALUES(10000003,'Josephine', 'J', 'Khoury','0096176745685','Head','Emile Lahoud','Dbaye','Garden House',2,'F','Department head',2004,'8-2-1970','josephine.khoury@ssnews.lb',3);

INSERT INTO EMPLOYEE VALUES(10000004,'Peter ', 'M', 'Smith','0096103147852','Head','Comodor','Beirut','Le Comodor Towers',4,'M','Department head',2015,'4-15-1988','peter.smith@ssnews.lb',4);

INSERT INTO EMPLOYEE VALUES(10000005,'Moustapha ', 'A', 'Kobeisi','0096181236541','Head','Sayid Hadi Street','Haret Hreik','Al Mahdi',7,'M','Department head',2012,'11-3-1984','moustapha.kobeisi@ssnews.lb',5);

INSERT INTO EMPLOYEE VALUES(10000006,'Rachel ', 'W', 'Zein','0096103345213','Head','Al Sayde','Fanar','Home Sweet Home',5,'F','Department head',2015,'12-1-1990','rachel.zein@ssnews.lb',6);

INSERT INTO EMPLOYEE VALUES(10000007,'Elie ', 'M', 'Bou Mansour','0096178951753','Head','Mar Mikhael','Beirut','Early Life',2,'M','Department head',2012,'7-9-1986','eli.boumansour@ssnews.lb',7);

```
INSERT INTO EMPLOYEE VALUES(10000008,'Lynn ', 'A',
'Abdallah','0096103965321','Head','Mar Elias','Beirut','Khodor',8,'F','Department head',2013,'8-7-
1982','lynn.abdallah@ssnews.lb',8);

INSERT INTO EMPLOYEE VALUES(10000009,'Youssef ', 'M',
'Chahrour','0096176564321','Head','Hamra','Beirut','Peanut',11,'M','Department head',2014,'9-10-
1980','youssef.chahrour@ssnews.lb',9);

INSERT INTO EMPLOYEE VALUES(10000010,'Mariebelle ', 'D',
'Antoine','0096103147852','Head','Mar mireille','Antellias','Palms',10,'F','Department
head',2016,'10-3-1990','mariebelle.antoine@ssnews.lb',10);
INSERT INTO EMPLOYEE VALUES(31254789,'Jean ', 'F',
'Kahwaji','009610345623','Reporter','Mar tikla','Antellias','Audi',11,'M','Staff',2012,'10-3-
1991','jean.kawaji@ssnews.lb',3);

INSERT INTO EMPLOYEE VALUES(38563956, 'Jaafar', 'S', 'Itani', '0096103748263',
'Photographer', 'Hamra', 'Beirut', 'Panorama', 3, 'M', 'Staff', 2009, '3-2-
1989','jaafar.itani@ssnews.lb, 3);

INSERT INTO EMPLOYEE VALUES(32759264, 'Lynn', 'A', 'Osta', '0096171829474',
'Photographer', 'Verdun', 'Beirut', 'Osta', 2, 'F', 'Staff', 2010, '6-4-1996','lynn.osta@ssnews.lb', 3);

INSERT INTO EMPLOYEE VALUES(35473905, 'Elie', 'R', 'Zaafaran', '0096103848383',
'Photographer', 'Fouad Chehab', 'Beirut', 'Oak', 5, 'M', 'Staff', 2012, '15-5-
1992','elie.zaafaran@ssnews.lb', 3);

INSERT INTO EMPLOYEE VALUES(32159224, 'Jean', 'D', 'Issa', '0096171748938',
'Photographer', 'Mariam Avenue', 'Baabda', 'Pines', 1, 'M', 'Staff', 2013, '24-2-
1999','jean.issa@ssnews.lb', 3);

INSERT INTO EMPLOYEE VALUES(39354735, 'Ali', 'C', 'Hassan', '0096103283859',
'Illustrator', 'Assaad El Assaad', 'Chiyah', 'Harmony', 9, 'M', 'Staff', 2015, '21-11-
1991','ali.hassan@ssnews.lb', 3);
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INSERT INTO EMPLOYEE VALUES(39254731, 'Sinan', 'K', 'Mounir', '0096181549326',
'Illustrator', 'Badaro', 'Chiyah', 'Vintage', 5, 'F', 'Staff', 2013, '3-12-
1984','sinan.mounir@ssnews.lb', 3);

INSERT INTO EMPLOYEE VALUES(34232122, 'George', 'L', 'Assaker', '0096171234958',
'Reporter', 'Annan', 'Burj El Brajneh', 'Annan', 4, 'M', 'Staff', 2014, '3-12-
1984','george.assaker@ssnews.lb', 3);

INSERT INTO EMPLOYEE VALUES(37848732, 'Mohammad', 'H', 'Khalife', '0096103586311',
'Accountant', 'Tarik Jdide', 'Beirut', 'Zahraa', 4, 'M', 'Staff', 2015, '12-14-
1982','mohammad.khalife@ssnews.lb', 8);

INSERT INTO EMPLOYEE VALUES(37852369, 'Mohammad', 'A', 'Yateem', '0096103456213',
'Operater', 'Old Saida Road', 'Saida', 'Yateem', 4, 'M', 'Staff', 2012, '7-14-
1989','mohamad.yateem@ssnews.lb', 9);

INSERT INTO EMPLOYEE VALUES(37845859, 'Jamil', 'M', 'Awada', '0096103785263',
'Operater', 'Menshyiye', 'Borj al Barajne', 'Awada', 6, 'M', 'Staff', 2019, '5-24-
1989','jamil.awada@ssnews.lb', 9);

INSERT INTO EMPLOYEE VALUES(32658926, 'Mohamad', 'H', 'Dhaini', '0096103030511',
'Operater', 'Salim Salam', 'Beirut', 'Abraj Beirut', 7, 'M', 'Staff', 2018, '9-17-
1989','mohamad.dhaini@ssnews.lb', 9);

INSERT INTO EMPLOYEE VALUES(37653412, 'Hanine', 'A', 'Khatib', '0096103452178',
'Record Holder', 'Tarik Jdide', 'Beirut', 'Khatib', 5, 'F', 'Staff', 2012, '5-28-
1989','hanine.khatib@ssnews.lb', 9);

INSERT INTO EMPLOYEE VALUES(37652314, 'Jad', 'A', 'Aridi', '0096103852741',
'Journalist', 'Tarik Jdide', 'Beirut', 'El Helo', 2, 'M', 'Staff', 2014, 1-14-1979','jad.aridi@ssnews.lb',
9);
```

INSERT INTO EMPLOYEE VALUES(31597538, 'Ahmad', 'M', 'Abdallah', '0096176852369','Customer Service', 'Aisha Bakar', 'Beirut', 'Beirut Towers', 6, 'M', 'Staff', 2018,'7-7-1982','ahmad.abdallah@ssn.lb',10);

INSERT INTO EMPLOYEE VALUES(31597538, 'Lynn', 'Y', 'Youness', '0096103789654','Customer Service', 'Cocodi', 'Beirut', 'Haifa', 3, 'F', 'Staff', 2015,'8-18-1990','lynn.youness@ssn.lb',10);

INSERT INTO EMPLOYEE VALUES(32516987, 'Wisal', 'M', 'Imdillah', '0096103256966','Interviewer', 'Hamra', 'Beirut', 'Gulie', 2, 'F', 'Media Personality', 2015,'01-15-1983','wissal.imdillah@ssn.lb',3);

2- Department:

INSERT INTO DEPARTMENT VALUES (1 , 'FINANCIAL' , 'BEIRUT CAMPUS, BLOCK A, 7TH FLOOR, NEAR WATER FOUNTAIN', 'Mohammad Ali Mansour');

INSERT INTO DEPARTMENT VALUES (2 , 'HUMAN RESOURCES' , 'BEIRUT CAMPUS, BLOCK B, 8TH FLOOR', 'Rita Bou Saleh');

INSERT INTO DEPARTMENT VALUES (3 , 'MEDIA' , 'BEIRUT CAMPUS, BLOCK C, 3RD FLOOR', 'Josephine Khoury');

INSERT INTO DEPARTMENT VALUES (10, 'CUSTOMER SERVICE' , 'BAABDA CAMPUS, BLOCK A, 2ND FLOOR, END OF FLOOR', 'Maribelle Antoine');

INSERT INTO DEPARTMENT VALUES (9, 'OPERATIONS' , 'BAABDA CAMPUS, BLOCK B, 7th FLOOR, NEAR INBOX', 'Yousef Chahrour');

INSERT INTO DEPARTMENT VALUES (8, 'MARKETING' , 'BAABDA CAMPUS, BLOCK A, 11th FLOOR', 'LYNN ABDALLAH');

INSERT INTO DEPARTMENT VALUES (7, 'IT' , 'BEIRUT CAMPUS, BLOCK A, 4th FLOOR, NEAR STUDIO', 'Elie Bou Mansour');

INSERT INTO DEPARTMENT VALUES (6, 'SALES' , 'BEIRUT CAMPUS, BLOCK B, 3RD FLOOR', 'Rachel Zein');

INSERT INTO DEPARTMENT VALUES (5 , 'ACCOUNTING' , 'BEIRUT CAMPUS, BLOCK C, GROUND FLOOR, BUILDING EXTREMITY', 'Moustafa Kobeissi');

INSERT INTO DEPARTMENT VALUES (4 , 'RELATIONS' , 'BEIRUT CAMPUS, BLOCK A, 9TH FLOOR', 'Peter Smith');

3- Equipment:

INSERT INTO EQUIPMENT VALUES(201200362102,'12/05/2009',300,'Toshiba 13 TV VCR VHS Combo Crt MV13P3,'Electronics','D',3);

INSERT INTO EQUIPMENT VALUES(45213698745,'06/02/2021',600,'2021 Upgraded USB Condenser Microphone for Computer, Great for Gaming, Podcast, LiveStreaming, YouTube Recording, Karaoke on PC, Plug & Play, with Adjustable Metal Arm Stand, Black','Electronics','F',3);

INSERT INTO EQUIPMENT VALUES(145236455231,'07/18/2020',5995,'Blackmagic Design URSA Mini Pro 12K Camcorder Body','Electronics','U',3);

INSERT INTO EQUIPMENT VALUES(125369658745,'05/06/2021',3600,'FIFISH V6 Expert Underwater Photography ROV Robot, VR Real-Time Tracking, 6000lm LED, 4K UHD Camera, True 360°, 200M Cable, Manual Spool, Industrial Case, Ultra Wide Angle, Drone (M200)','Electronics','U',3);

INSERT INTO EQUIPMENT VALUES(123652145896,'05/15/2019',500,'Cassida 6600 UV/MG – USA Business Grade Money Counter with UV/MG/IR Counterfeit Detection – Top Loading Bill Counting Machine w/ ValuCount, Add and Batch Modes – Fast Counting Speed 1,400 Notes/Min ','Electronics','U',1);

INSERT INTO EQUIPMENT VALUES(147852145287,'05/15/2020',1000,'TECKNET Bluetooth Trucker Headset with Microphone Noise Canceling Wireless On Ear Headphones,

Hands Free Telephone Headset for Cell Phone Computer Office Home Call Center Skype (Black)','Electronics','U',10);

INSERT INTO EQUIPMENT VALUES(12365412398,'05/05/2021',6000,'Dell EMC PowerEdge T440 5U Tower Server - 1 x Xeon Bronze 3204-16 GB RAM - 1 TB (1 x 1 TB) HDD - 12Gb/s SAS, Serial ATA/600 Controller - 2 Processor Support - 1 TB RAM Support - Gigabit Ethernet - 8',' Electronics','U',7);

INSERT INTO EQUIPMENT VALUES(147856932,'12/05/2018',1236,'12 Foot Conference Room Table | Modern, Stylish Boardroom Desk with Metal Frame & Legs | Easy-to-Assemble Meeting Room Table Keeps Your Cables & Wires Hidden','Furniture','U',4);

INSERT INTO EQUIPMENT VALUES(256398541256,'04/02/2017',500,'HP 24-inch All-in-One Desktop Computer','Electronics','U',2);

INSERT INTO EQUIPMENT VALUES(145236985421,'02/02/2020',230,'Avalon Bottom Loading Water Cooler Water Dispenser with BioGuard- 3 Temperature Settings - Hot, Cold & Room Water, Durable Stainless Steel Construction, Anti-Microbial Coating- UL/Energy Star Approved',' Appliances','U',6);

4- Dependent:

INSERT INTO DEPENDENT VALUES(10000000101, 'Jawad Mansour', 0096103526891, 'Father', 10000001);

INSERT INTO DEPENDENT VALUES(10000000202, 'Teressa Bou Saleh', 0096103526874, 'Mother', 10000002);

INSERT INTO DEPENDENT VALUES(10000000704, 'Charbel Bou Mansour', 0096103526894, 'Brother', 10000007);

INSERT INTO DEPENDENT VALUES(10000000502, 'Ali Kobeissi', 0096103030685, 'Father', 10000005);

INSERT INTO DEPENDENT VALUES(3784585902, 'Mohamad Awada', 0096103256987, 'Father', 37845859);

INSERT INTO DEPENDENT VALUES(3265892601, 'Hassan Dhaini', 0096103745821, 'Father', 32658926);

INSERT INTO DEPENDENT VALUES(37852369, 'Moussa Yateem', 0096178254136, 'Father', 37852369);

INSERT INTO DEPENDENT VALUES(3765231405, 'Hares Aridi', 0096103521463, 'Brother', 37652314);

INSERT INTO DEPENDENT VALUES(10000000601, 'Peter Zein', 0096176253968, 'Father', 10000006);

INSERT INTO DEPENDENT VALUES(3159753804, 'Mohamad Abdallah', 0096103652366, 'Father', 31597538);

5- Customer:

INSERT INTO CUSTOMER VALUES(12589634,'Entreprise','0096101523698','Al Barakat', 1000521,31597538);

INSERT INTO CUSTOMER VALUES(14563289,'Entreprise','0096101452369','Tales Times',2000042,31597538);

INSERT INTO CUSTOMER VALUES(15236987,'Entreprise','0096101458726','Union Entreprise', 3000901,31597538);

INSERT INTO CUSTOMER VALUES(12547896,'Entreprise','0096101523689','Spinneys',1000482,31597538);

INSERT INTO CUSTOMER VALUES(14526985,'Entreprise','0096101456789','Al Hassan Market', 2000142,31597538);

INSERT INTO CUSTOMER VALUES(24567891,'Standalone','006103456789','Youssef Solh',1000442,34632170);

INSERT INTO CUSTOMER VALUES(25647893,'Standalone','0096176456789','Giulia Beydoun',3000834,34632170);

INSERT INTO CUSTOMER VALUES(2758963,'Standalone','0096103541287','Hassan Awada',1000429,34632170);

INSERT INTO CUSTOMER VALUES(24512963,'Standalone','0096178521463','Tala Youness',2000334,34632170);

INSERT INTO CUSTOMER VALUES(25614258,'Standalone','0096103521496','Ursula Daouk',3000284,34632170);

6- Plan:

INSERT INTO PLAN VALUES(1000442, 'STANDARD', 'A','5-24-2021');

INSERT INTO PLAN VALUES(3000834, 'STANDARD', 'R','7-12-2021');

INSERT INTO PLAN VALUES(1000521, 'ENTREPRISE', 'R','2-27-2021');

INSERT INTO PLAN VALUES(2000042, 'ENTREPRISE', 'E','12-20-2021');

INSERT INTO PLAN VALUES(1000429, 'STANDARD', 'R','9-4-2021');

INSERT INTO PLAN VALUES(2000334, 'STANDARD', 'A','8-16-2021');

INSERT INTO PLAN VALUES(3000901, 'ENTREPRISE', 'C','6-9-2021');

INSERT INTO PLAN VALUES(3000284, 'STANDARD', 'A','7-15-2021');

INSERT INTO PLAN VALUES(1000482, 'ENTREPRISE', 'E','3-12-2021');

INSERT INTO PLAN VALUES(2000142, 'ENTREPRISE', 'A','2-18-2021');

7- Agency:

INSERT INTO AGENCY VALUES(965235, 'Mourad Agency', 0096101458632, 'Media' , 'Azzam Abed El Helo', 'Nadine Abou made', 32658926);

INSERT INTO AGENCY VALUES(967471, 'Batoul Agency', 0096101583986, 'Cleaning' , 'Noura Hallib', 'Nadi Shamoun', 32658926);

INSERT INTO AGENCY VALUES(966371, 'Max Agency', 0096101452369, 'Equipement Procuring' , 'Ali Chehade', 'Fadi Amad', 32658926);

INSERT INTO AGENCY VALUES(963709, 'Berjawi Media', 0096101234959, 'Stock Imagery' , 'Mohammad Issa', 'Micheline Ahmad', 37852369);

INSERT INTO AGENCY VALUES(961429, 'Hasanen Loan', 0096101859423, 'Financing' , 'George Khabez', 'Hussein Ashkar', 37852369);

INSERT INTO AGENCY VALUES(966271, 'Barbar Catering', 0096101484242, 'Company Catering' , 'Hassan Mahdi', 'Assi El Hellani', 37852369);

INSERT INTO AGENCY VALUES(974728, 'Lazarus Media', 0096101845324, 'Event Imagery' , 'Ahmad Itani', 'Jad Abou Ibrahim', 37852369);

INSERT INTO AGENCY VALUES(962415, 'Al Mawared', 0096101483123, 'Shipment Forwarding' , 'Hassan Korkomaz', 'Rani Koteiche', 37852369);

INSERT INTO AGENCY VALUES(965100, 'Ali Madad Cleaning', 0096101249248, 'Janitorial' , 'Charbel El Hajj', 'Elias Khoury', 37845859);

INSERT INTO AGENCY VALUES(964772, 'Zeineddine Tech', 0096101482429, 'IT' , 'Antoine Fawaz', 'Zeineddine Chahrour', 37845859);

8- Record:

INSERT INTO RECORD VALUES(1,'7-4-2020','Disaster strikes...',6, 37653412);

INSERT INTO RECORD VALUES(2,'5-24-2019','Fairouz Legacy',8, 37653412);

INSERT INTO RECORD VALUES(3,'5-11-2017','Record size fish caught on Lebanese Waters',4, 37653412);

INSERT INTO RECORD VALUES(4,'11-30-2021','UN rep slams Lebanon central bank chief over economic crisis',1, 37653412);

INSERT INTO RECORD VALUES(5,'9-16-2019','Best Mana2ish in town reviewed',2, 37653412);

INSERT INTO RECORD VALUES(6, '9-10-2021', 'A retelling of the Beirut Port Explosion', 4, 37653412);

INSERT INTO RECORD VALUES(7, '8-8-2018', 'A look at the rising cases of underage marriage', 3, 37653412);

INSERT INTO RECORD VALUES(8, '7-12-2019', 'Will the lira's value drop against the dollar?', 7, 37653412);

INSERT INTO RECORD VALUES(9, '2-14-2005', 'Rafic Hariri Assassination', 8, 37653412);

INSERT INTO RECORD VALUES(10, '10-17-2019', 'Beginning of a new era...', 1, 37653412);

9- Room:

INSERT INTO ROOM VALUES(1,001, 'BEIRUT CAMPUS, BLOCK A, 7TH FLOOR', 'Copy Room', 1);

INSERT INTO ROOM VALUES(30,030, 'BEIRUT CAMPUS, BLOCK B, 8TH FLOOR', 'HR Executive Office', 2);

INSERT INTO ROOM VALUES(40,040, 'BEIRUT CAMPUS, BLOCK C, 3RD FLOOR', 'Audio Studio', 3);

INSERT INTO ROOM VALUES(56,056, 'BEIRUT CAMPUS, BLOCK C, GROUND FLOOR', 'Files Room', 5);

INSERT INTO ROOM VALUES(68,068, 'BEIRUT CAMPUS, BLOCK A, 9TH FLOOR', 'Meeting Room', 4);

INSERT INTO ROOM VALUES(79,079, 'BEIRUT CAMPUS, BLOCK B, 3RD FLOOR', 'Toilets', 6);

INSERT INTO ROOM VALUES(98,098, 'BEIRUT CAMPUS, BLOCK A, 4TH FLOOR', 'Servers Room', 7);

INSERT INTO ROOM VALUES(102,102, 'BAABDA CAMPUS, BLOCK A, 11TH FLOOR', 'Innovation Room', 8);

INSERT INTO ROOM VALUES(113,113, 'BAABDA CAMPUS, BLOCK B, 7TH FLOOR', 'Operations Room', 9);

INSERT INTO ROOM VALUES(140,140, 'BAABDA CAMPUS, BLOCK A, 2ND FLOOR', 'Call Center', 10);

10- Guest:

INSERT INTO GUEST VALUES(10106,'10/02/2021','Dan Azzi', '00961236545',34232122);

INSERT INTO GUEST VALUES(600,'12/05/2018','George Aridi','0096103256652',34232122);

INSERT INTO GUEST VALUES(10108,'11/03/2021','Lea Assaad','0096178582965',31254789);

INSERT INTO GUEST VALUES(605, '12/15/2018','Nancy Ajram','0096103256222',31254789);

INSERT INTO GUEST VALUES(10100,'05/06/2021','George Kerdahi','0096103652365',31254789);

INSERT INTO GUEST VALUES(10102,'06/06/2021','Saad Hariri','0096103256363',31254789);

INSERT INTO GUEST VALUES(10098, '03/05/2021','Mia Khalife','000011452369',34232122);

INSERT INTO GUEST VALUES(999,'02/05/2020','Dima Sadek','0096103652145',34232122);

INSERT INTO GUEST VALUES(523,'08/02/2017','Michel Aoun','0096103258417',34232122);

INSERT INTO GUEST VALUES(85,'12/02/2010 ','Fadi Sarkis','0096103652145',34232122);

11- Journal:

INSERT INTO JOURNAL VALUES(100402, 183, 'Lebanon Daily', '10-17-2019', 10, 37652314);

INSERT INTO JOURNAL VALUES(100403, 192, 'Morning in Beirut', '9-16-2019', 5, 37652314);

INSERT INTO JOURNAL VALUES(100404, 205, 'Sidon Stories', '5-11-2017', 3, 37652314);

INSERT INTO JOURNAL VALUES(200602, 171, 'Tripoli Tales', '8-8-2018', 7, 37652314);

INSERT INTO JOURNAL VALUES(200603, 203, 'Sabah El Ful', '5-24-2019', 2, 37652314);

INSERT INTO JOURNAL VALUES(200604, 228, 'Ektisad Arabi', '11-30-2021', 4, 37652314);

INSERT INTO JOURNAL VALUES(300802, 199, 'Kosas Wa Hkayat', '9-10-2021', 6, 37652314);

INSERT INTO JOURNAL VALUES(300803, 193, 'Mehwar El Yom', '7-4-2020', 1, 37652314);

INSERT INTO JOURNAL VALUES(300804, 246, 'Montada El Demokrati', '2-14-2005', 9, 37652314);

INSERT INTO JOURNAL VALUES(300805, 225, 'Lobnan Wal 3alam', '7-12-2019', 8, 37652314);

12- Media:

INSERT INTO MEDIA VALUES('Nahr El Kaleb Topdown', 'A top down view of Nahr El Kaleb in a polluted state', 'Photo', 'U', 961001);

INSERT INTO MEDIA VALUES('Mushroom Cloud over Beirut', 'A front view of the mushroom cloud that resulted from the port explosion', 'Photo', 'U', 961232);

INSERT INTO MEDIA VALUES('Hypco Gas Station - Zarif', 'A front view of Hypco gas station located in Zarif', 'Photo', 'A', 961313);

INSERT INTO MEDIA VALUES('Wadih El Sheikh February 2017 Performance', 'Footage of Wadih El Sheikh performing in Beirut in February', 'Video', 'S', 961003);

INSERT INTO MEDIA VALUES('Lasagna Casserole', 'Top down view of freshly baked lasagna with basil on top', 'Photo', 'U', 961043);

INSERT INTO MEDIA VALUES('Anghami HQ', 'Front view of Anghami's headquarters in Dubai', 'Photo', 'U', 9611150);

INSERT INTO MEDIA VALUES('Stock Dollar Sign', 'Stock image of a cartoonized dollar sign', 'Illustration', 'S', 961200);

INSERT INTO MEDIA VALUES('Sheep being led by shepherd', 'The front cover of a story', 'Illustration', 'U', 961450);

INSERT INTO MEDIA VALUES('Bulletholes in fish marketplace', 'Photo of a ruined marketplace in Sidon', 'Photo', 'U', 961504);

INSERT INTO MEDIA VALUES('St Kitts and Nevis Island', 'Aerial photo of an island in the Carribean', 'Photo', 'U', 961812);

13- Article:

INSERT INTO ARTICLE VALUES(961001, 'Research', 'Environment','Layla Zeidan', 18, 'Bi2atuna','Naher El Kaleb Pollution','10-17-2019',100402);

INSERT INTO ARTICLE VALUES(961232, 'Case Studies', 'Politics','Gebran Ayoub', 4, 'Law','August 4, Doomsday...','7-4-2020',300803);

INSERT INTO ARTICLE VALUES(961313, 'Report', 'Economics','Youssef Khalil', 6, 'Commodities','Benzine Alyawm','9-16-2019',100403);

INSERT INTO ARTICLE VALUES(961003, 'Report', 'Politics','Dalia Hawa', 19, 'Events','Reports of a mysterious event','2-14-2005',300804);

INSERT INTO ARTICLE VALUES(961043, 'Methods', 'Life Style','Antoine El Helo', 15, 'Cooking','Italian Lasagna','7-12-2019',300805);

INSERT INTO ARTICLE VALUES(961150, 'Research', 'Economics','Abdallah Al Wahabi', 7, 'Start ups','Anghami is booming in the Gulf Area','11-30-2021',200604);

INSERT INTO ARTICLE VALUES(961200, 'Report', 'Finance','Fadia Tello', 8, 'Currency','Dollar to the MOOON!','5-24-2019',200603);

INSERT INTO ARTICLE VALUES(961450, 'Letter', 'Fiction','Grace Abou Khaled', 19, 'Stories','Sheep on a ship ','8-8-2018',200602);

INSERT INTO ARTICLE VALUES(961504, 'Report', 'Latest Events','Khaled Khalil', 2, 'Events','Saida under heavy fire','5-11-2017',100404);

INSERT INTO ARTICLE VALUES(961812, 'Research', 'Facts','Jamil Awada', 13, 'Travel','A passport for 150K$','9-10-2021',300802);

INSERT INTO ARTICLE VALUES(966525, 'Interview', 'Politics','Wissal Idmillah', 6, 'Middle East','A new perspective on Yemen and its surroundings','10-28-2021',252145);

INSERT INTO ARTICLE VALUES(966424, 'Report', 'Politics','Wissal Idmillah', 10, 'Middle East','Hunger arises in Yemen','10-25-2021',252145);

INSERT INTO ARTICLE VALUES(966945, 'Research', 'Economics','Wissal Idmillah', 9, 'Middle East','GDP Decline in Yemen due to blockage','10-23-2021',252145);

INSERT INTO ARTICLE VALUES(961517, 'Report', 'Politics','Wissal Idmillah', 5, 'Middle East','Challenges for the new Lebanese Government','10-20-2021',252145);

INSERT INTO ARTICLE VALUES(961042, 'Report', 'Politics','Wissal Idmillah', 2, 'Middle East','Politicized Student elections in Universities','10-19-2021',252145);

INSERT INTO ARTICLE VALUES(961526, 'Interview', 'Politics','Wissal Idmillah', 4, 'Middle East','A look at Lebanon with Paula Yaacoubian','10-22-2021',252145);

14- Advertisement:

INSERT INTO ADVERTISEMENT VALUES('Samsung S20', 'Samsung', 'Product', 20000,100402);

INSERT INTO ADVERTISEMENT VALUES('Repair Your iPhone', 'Apple Clinic','Service', 3000, 100403);

INSERT INTO ADVERTISEMENT VALUES('Barista in need', 'Starbucks','Job Offer', 1000,100404);

INSERT INTO ADVERTISEMENT VALUES('Metaverse', 'META','Self Advertising', 13000, 200602);

INSERT INTO ADVERTISEMENT VALUES('Apple Season','Lebanese Farmers','Product', 0, 200603);

INSERT INTO ADVERTISEMENT VALUES('2006 used Honda for sale', 'Ahmad Itani', 'Product', 150,200604);

INSERT INTO ADVERTISEMENT VALUES('Back to school offers', 'Fairco', 'Self Advertising', 2000,300802);

INSERT INTO ADVERTISEMENT VALUES('Dog for adoption','Faten Mokadem', 'Charity', 0,300803);

INSERT INTO ADVERTISEMENT VALUES('Duplex in Sodeco', 'Murex Holding', 'Real Estate',900,300804);

INSERT INTO ADVERTISEMENT VALUES('Mourad Pest Control Services','Ali Mourad', 'Service', 300,300805);

XIII-Final Tables State:

1- Employee:

EDIT	ID	FIRST_NAME	M_INITIAL	LAST_NAME	PHONE_NUMBER	FIELD	STREET	CITY	BUILDING	FLOOR	GENDER	POSITION	YEAR_HIRED	DOB	EMAIL	DEP_NUMBER
	10000001	Mohammad Ali	H	Mansour	0096103030511	Head	Salim Salam	Beirut	Abraj Beirut	10	M	Department head	2006	09/09/1980	mohamad.ali@ssnew.lb	1
	10000002	Rita	G	Bou Saleh	0096176258752	Head	Mar Charbel	Fanar	Elie Ferdaous	12	F	Department head	2010	08/09/1986	rita.bousaleh@ssnews.lb	2
	10000003	Josephine	J	Khoury	0096176745685	Head	Emile Lahoud	Dbaye	Garden House	2	F	Department head	2004	08/02/1970	josephine.khoury@ssnews.lb	3
	10000004	Peter	M	Smith	0096103147852	Head	Comodor	Beirut	Le Comodor Towers	4	M	Department head	2015	04/15/1988	peter.smith@ssnews.lb	4
	10000005	Moustapha	A	Kobeisi	0096181236541	Head	Sayid Hadi Street	Haret Hreik	Al Mahdi	7	M	Department head	2012	11/03/1984	moustapha.kobeisi@ssnews.lb	5
	10000006	Rachel	W	Zein	0096103345213	Head	Al Sayde	Fanar	Home Sweet Home	5	F	Department head	2015	12/01/1990	rachel.zein@ssnews.lb	6
	10000007	Elie	M	Bou Mansour	0096178951753	Head	Mar Mikhael	Beirut	Early Life	2	M	Department head	2012	07/09/1986	eli.boumansour@ssnews.lb	7
	10000008	Lynn	A	Abdallah	0096103965321	Head	Mar Elias	Beirut	Khodor	8	F	Department head	2013	08/07/1982	lynn.abdallah@ssnews.lb	8
	10000009	Youssef	M	Chahrour	0096176564321	Head	Hamra	Beirut	Peanut	11	M	Department head	2014	09/10/1980	youssef.chahrour@ssnews.lb	9
	10000010	Mariebelle	D	Antoine	0096103147852	Head	Mar Mireille	Antellias	Palms	10	F	Department head	2016	10/03/1990	mariebelle.antoine@ssnews.lb	10
	31254789	Jean	F	Kahwaji	009610345623	Reporter	Mar Tikla	Antellias	Audi	11	M	Staff	2012	10/03/1991	jean.kawaji@ssnews.lb	3
	37852369	Mohammad	A	Yateem	0096103456213	Operater	Old Saida Road	Saida	Yateem	4	M	Staff	2012	07/14/1989	mohamad.yateem@ssnews.lb	9
	37845859	Jamil	M	Awada	0096103785263	Operater	Menshiye	Borj al Barajne	Awada	6	M	Staff	2019	05/24/1989	jamil.awada@ssnews.lb	9
	32658926	Mohamad	H	Dhaini	0096103030511	Operater	Salim Salam	Beirut	Abraj Beirut	7	M	Staff	2018	09/17/1989	mohamad.dhaini@ssnews.lb	9
	37652314	Jad	A	Aridi	0096103852741	Journalist	Tarik Jdide	Beirut	El Helo	2	M	Staff	2014	01/14/1979	jad.aridi@ssnews.lb	9

row(s) 1 - 15 of 27

EDIT	ID	FIRST_NAME	M_INITIAL	LAST_NAME	PHONE_NUMBER	FIELD	STREET	CITY	BUILDING	FLOOR	GENDER	POSITION	YEAR_HIRED	DOB	EMAIL	DEP_NUMBER
	38563956	Jaafar	S	Itani	0096103748263	Photographer	Hamra	Beirut	Panorama	3	M	Staff	2009	03/02/1989	jaafar.itani@ssnews.lb	3
	32759264	Lynn	A	Osta	0096171829474	Photographer	Verdun	Beirut	Osta	2	F	Staff	2010	06/04/1996	lynn.osta@ssnews.lb	3
	35473905	Elie	R	Zaafaran	0096103848383	Photographer	Fouad Chehab	Beirut	Oak	5	M	Staff	2012	01/05/1992	elie.zaafaran@ssnews.lb	3
	32159224	Jean	D	Issa	0096171748938	Photographer	Mariam Avenue	Baabda	Pines	1	M	Staff	2013	04/02/1999	jean.issa@ssnews.lb	3
	39354735	Ali	C	Hassan	0096103283859	Illustrator	Assaad El Assaad	Chiyah	Harmony	9	M	Staff	2015	01/11/1991	ali.hassan@ssnews.lb	3
	39254731	Sinan	K	Mounir	0096181549326	Illustrator	Badaro	Chiyah	Vintage	5	F	Staff	2013	03/12/1984	sinan.mounir@ssnews.lb	3
	34232122	George	L	Assaker	0096171234958	Reporter	Annan	Burj El Brajneh	Annan	4	M	Staff	2014	03/12/1984	george.assaker@ssnews.lb	3
	37848732	Mohammad	H	Khalife	0096103586311	Accountant	Tarik Jdide	Beirut	Zahraa	4	M	Staff	2015	12/14/1982	mohammad.khalife@ssnews.lb	5
	37653412	Hanine	A	Khatib	0096103452178	Record Keeper	Tarik Jdide	Beirut	Khatib	5	F	Staff	2012	05/28/1989	hanine.khatib@ssnews.lb	9
	31597538	Ahmad	M	Abdallah	0096176852369	Customer Service	Aisha Bakar	Beirut	Beirut Towers	6	M	Staff	2018	07/17/1982	ahmad.abdallah@ssn.lb	10
	34632170	Lynn	Y	Youness	0096103789654	Customer Service	Cocodi Street	Beirut	Haifa Building	3	F	Staff	2015	08/18/1990	lynn.youness@ssn.news	10
	32516987	Wisal	M	Idmillah	0096103256966	Interviewer	Hamra	Beirut	Gulie	2	F	Media Personality	2015	01/15/1983	wisal.idmillah@ssn.lb	3

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2- Department:

DEP_NUMBER	Name	Location	Head
1	FINANCE	BEIRUT CAMPUS, BLOCK A, 7TH FLOOR, NEAR WATER FOUNTAIN	Mohammad Ali Mansour
2	HUMAN RESOURCES	BEIRUT CAMPUS, BLOCK B, 8TH FLOOR	Rita Bou Saleh
3	MEDIA	BEIRUT CAMPUS, BLOCK C, 3RD FLOOR	Josephine Khoury
4	RELATIONS	BEIRUT CAMPUS, BLOCK A, 9TH FLOOR	Peter Smith
5	ACCOUNTING	BEIRUT CAMPUS, BLOCK C, GROUND FLOOR, BUILDING EXTREMITY	Moustafa Kobeissi
6	SALES	BEIRUT CAMPUS, BLOCK B, 3RD FLOOR	Rachel Zein
7	IT	BEIRUT CAMPUS, BLOCK A, 4th FLOOR, NEAR STUDIO	Elie Bou Mansour
8	MARKETING	BAABDA CAMPUS, BLOCK A, 11th FLOOR	Lynn Abdallah
9	OPERATIONS	BAABDA CAMPUS, BLOCK B, 7th FLOOR, NEAR INBOX	Yousef Chahrour
10	CUSTOMER SERVICE	BAABDA CAMPUS, BLOCK A, 2ND FLOOR, END OF FLOOR	Maribelle Antoine

3- Equipment:

EDIT	BARCODE_NUMBER	DO_PURCHASE	PRICE	NAME	TYPE	STATUS	DEPARTMENT_NUMBER
	201200362102	12/05/2009	300	Toshiba 13 TV VCR VHS Combo Crt MV13P3	Electronics	D	3
	45213698745	06/02/2021	600	2021 Upgraded USB Condenser Microphone for Computer, Great for Gaming, Podcast, LiveStreaming, YouTube Recording, Karaoke on PC, Plug & Play, with Adjustable Metal Arm Stand, Black	Electronics	F	3
	145236455231	07/18/2020	5995	Blackmagic Design URSA Mini Pro 12K Camcorder Body	Electronics	U	3
	125369658745	05/06/2021	3600	FIFISH V6 Expert Underwater Photography ROV Robot, VR Real-Time Tracking, 6000lm LED, 4K UHD Camera, True 360°, 200M Cable, Manual Spool, Industrial Case, Ultra Wide Angle, Drone (M200)	Electronics	U	3
	123652145896	05/15/2019	500	Cassida 6600 UV/MG – USA Business Grade Money Counter with UV/MG/IR Counterfeit Detection – Top Loading Bill Counting Machine w/ ValuCount, Add and Batch Modes – Fast Counting Speed 1,400 Notes/Min	Electronics	U	1
	147852145287	05/15/2020	1000	TECKNET Bluetooth Trucker Headset with Microphone Noise Canceling Wireless On Ear Headphones, Hands Free Telephone Headset for Cell Phone Computer Office Home Call Center Skype (Black)	Electronics	U	10
	12365412398	05/05/2021	6000	Dell EMC PowerEdge T440 5U Tower Server - 1 x Xeon Bronze 3204-16 GB RAM - 1 TB (1 x 1 TB) HDD - 12Gb/s SAS, Serial ATA/600 Controller - 2 Processor Support - 1 TB RAM Support - Gigabit Ethernet - 8	Electronics	U	7
	147856932	12/05/2018	1236	12 Foot Conference Room Table | Modern, Stylish Boardroom Desk with Metal Frame & Legs | Easy-to-Assemble Meeting Room Table Keeps Your Cables & Wires Hidden	Furniture	U	4
	256398541256	04/02/2017	500	HP 24-inch All-in-One Desktop Computer,	Electronics	U	2
	145236985421	02/02/2020	230	Avalon Bottom Loading Water Cooler Water Dispenser with BioGuard- 3 Temperature Settings - Hot, Cold & Room Water, Durable Stainless Steel Construction, Anti-Microbial Coating- UL/Energy Star Approved	Appliances	U	6

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4- Dependent:

EDIT	ID	FULL_NAME	PHONE_NUMBER	RELATIONSHIP	EMPLOYEE_ID
	1000000101	Jawad Mansour	0096103526891	Father	10000001
	1000000202	Teressa Bou Saleh	0096103526874	Mother	10000002
	32516987	Abdallah Idmilla	009667489374	Father	32516987
	1000000704	Charbel Bou Mansour	0096103526894	Brother	10000007
	1000000502	Ali Kobeissi	0096103030685	Father	10000005
	3784585902	Mohamad Awada	0096103256987	Father	37845859
	3265892601	Hassan Dhaini	0096103745821	Father	32658926
	3785236901	Moussa Yateem	0096178254136	Father	37852369
	3765231405	Hares Aridi	0096103521463	Brother	37652314
	1000000601	Peter Zein	0096176253968	Father	10000006
	3159753804	Mohamad Abdallah	0096103652366	Father	31597538

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5- Customer:

EDIT	ID	TYPE	PHONE_NUMBER	NAME	PLAN	EMPLOYEE_ID
	24567891	Standalone	006103456789	Youssef Solh	1000442	34632170
	25647893	Standalone	0096176456789	Giulia Beydoun	3000834	34632170
	2758963	Standalone	0096103541287	Hassan Awada	1000429	34632170
	24512963	Standalone	0096178521463	Tala Youness	2000334	34632170
	25614258	Standalone	0096103521496	Ursula Daouk	3000284	34632170
	12589634	Entreprise	0096101523698	Al Barakat	1000521	31597538
	14563289	Entreprise	0096101452369	Tales Times	2000042	31597538
	15236987	Entreprise	0096101458726	Union Entreprise	3000901	31597538
	12547896	Entreprise	0096101523689	Spinneys	1000482	31597538
	14526985	Entreprise	0096101456789	Al Hassan Market	2000142	31597538

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6- Plan:

EDIT	REFERENCE_NUMBER	TYPE	STATUS	START_DATE
	1000442	STANDARD	A	05/24/2021
	3000834	STANDARD	R	07/12/2021
	1000521	ENTREPRISE	R	02/27/2021
	2000042	ENTREPRISE	E	12/20/2021
	1000429	STANDARD	R	09/04/2021
	2000334	STANDARD	A	08/16/2021
	3000901	ENTREPRISE	C	06/09/2021
	3000284	STANDARD	A	07/15/2021
	1000482	ENTREPRISE	E	03/12/2021
	2000142	ENTREPRISE	A	02/18/2021

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7- Agency:

EDIT	IO	NAME	PHONE_NUMBER	SERVICE	AGENT	REPRESENTATIVE	EMPLOYEE_ID
	965235	Mourad Agency	96101458632	Media	Azzam Abed El Helo	Nadine Abou made	32658926
	967471	Batoul Agency	96101583986	Cleaning	Noura Hallib	Nadi Shamoun	32658926
	966371	Max Agency	96101452369	Equipment Procuring	Ali Chehade	Fadi Amad	32658926
	963709	Berjawi Media	96101234959	Stock Imagery	Mohammad Issa	Micheline Ahmad	37852369
	961429	Hasanen Loan	96101859423	Financial	George Khabez	Hussein Ashkar	37852369
	966271	Barbar Catering	96101484242	Company Catering	Hassan Mahdi	Assi El Hellani	37852369
	974728	Lazarus Media	96101845324	Event Imagery	Ahmad Itani	Jad Abou Ibrahim	37852369
	962415	Al Mawared	96101483123	Shipment Forwarding	Hassan Korkomaz	Rani Koteiche	37852369
	965100	Ali Madad Cleaning	96101249248	Janitorial	Charbel El Hajj	Elias Khoury	37845859
	964772	Zeineddine Tech	96101482429	IT	Antoine Fawaz	Zeineddine Chahrour	37845859

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8- Record:

EDIT	VOLUME_NUMBER	DO_PUBLICATION	TITLE	GROUP_NUMBER	EMPLOYEE_ID
	1	07/04/2020	Disaster strikes...	6	37653412
	2	05/24/2019	Fairouz Legacy	8	37653412
	3	05/11/2017	Record size fish caught on Lebanese waters	4	37653412
	4	11/30/2021	UN rep slams Lebanon central bank chief over economic crisis	1	37653412
	5	09/16/2019	Best Mana2ish in town reviewed	2	37653412
	6	09/10/2021	A retelling of the Beirut Port Explosion	4	37653412
	7	08/08/2018	A look at the rising cases of underage marriage	3	37653412
	8	07/12/2019	Will the lira's value drop against the dollar?	7	37653412
	9	02/14/2005	Rafic Hariri Assassination	8	37653412
	10	10/17/2019	Beginning of a new era...	1	37653412
	25	10/27/2021	People's Parliament 2 | Fourth session: the interrogation of George Kordahi	13	32516987

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9- Room:

EDIT	ROOM_NUMBER	EXTENSION_NUMBER	LOCATION	NAME	DEPARTMENT_NUMBER
	1	1	BEIRUT CAMPUS, BLOCK A, 7TH FLOOR	Copy Room	1
	30	30	BEIRUT CAMPUS, BLOCK B, 8TH FLOOR	HR Executive Office	2
	40	40	BEIRUT CAMPUS, BLOCK C, 3RD FLOOR	Audio Studio	3
	56	56	BEIRUT CAMPUS, BLOCK C, GROUND FLOOR	Files Room	5
	68	68	BEIRUT CAMPUS, BLOCK A, 9TH FLOOR	Meeting Room	4
	79	79	BEIRUT CAMPUS, BLOCK B, 3RD FLOOR	Toilets	6
	98	98	BEIRUT CAMPUS, BLOCK A, 4TH FLOOR	Servers Room	7
	102	102	BAABDA CAMPUS, BLOCK A, 11TH FLOOR	Innovation Room	8
	113	113	BAABDA CAMPUS, BLOCK B, 7TH FLOOR	Operations Room	9
	140	140	BAABDA CAMPUS, BLOCK A, 2ND FLOOR	Call Center	10

row(s) 1 - 10 of 10

10- Guest:

EDIT	ID	INTERVIEW_DATE	FULL_NAME	PHONE_NUMBER	EMPLOYEE_ID
	10106	10/02/2021	Dan Azzi	00961236545	34232122
	600	12/05/2018	George Aridi	0096103256652	34232122
	10108	11/03/2021	Lea Assaad	0096178582965	31254789
	605	12/15/2018	Nancy Ajram	0096103256222	31254789
	10100	10/27/2021	George Kerdahi	0096103652365	32516987
	10102	06/06/2021	Saad Hariri	0096103256363	31254789
	10098	03/05/2021	Mia Khalife	000011452369	34232122
	999	02/05/2020	Dima Sadek	0096103652145	34232122
	523	08/02/2017	Michel Aoun	0096103258417	34232122
	85	12/02/2010	Fadi Sa'kis	0096103652145	34232122

row(s) 1 - 10 of 10

11- Journal:

EDIT	ISSUE_ID	NUMBER_PAGE	TITLE	DO_PUBLICATION	RECORD_NUMBER	EMPLOYEE_ID
	100402	183	Lebanon Daily	10/17/2019	10	37652314
	100403	192	Morning in Beirut	09/16/2019	5	37652314
	100404	205	Sidon Stories	05/11/2017	3	37652314
	200602	171	Tripoli Tales	08/08/2018	7	37652314
	200603	203	Sabah El Ful	05/24/2019	2	37652314
	200604	228	Ektisad Arabi	11/30/2021	4	37652314
	300802	199	Kosas Wa Hkayat	09/10/2021	6	37652314
	300803	193	Mehwar El Yom	07/04/2020	1	37652314
	300804	246	Montada El Demokrati	02/14/2005	9	37652314
	300805	225	Lobnan Wal 3alam	07/12/2019	8	37652314
	252145	204	Al Waha	10/27/2021	25	32516987

row(s) 1 - 11 of 11

12- Media:

EDIT	TITLE	ALT_TEXT	TYPE	STATUS	ARTICLE_ID
	Nahr El Kaleb Topdown	A top down view of Nahr El Kaleb in a polluted state	Photo	U	961001
	Mushroom Cloud over Beirut	A front view of the mushrcom cloud that resulted from the port explosion	Photo	U	961232
	Hypco Gas Station - Zarif	A front view of Hypco gas station located in Zarif	Photo	A	961313
	Wadih El Sheikh February 2017 Performance	Footage of Wadih El Sheikh performing in Beirut in February	Video	S	961003
	Lasagna Casserole	Top down view of freshly baked lasagna with basil on top	Photo	U	961043
	Anghami HQ	Front view of Anghami s headquarters in Dubai	Photo	U	961150
	Stock Dollar Sign	Stock image of a cartoonized dollar sign	Illustration	S	961200
	Sheep being led by shepherd	The front cover of a story	Illustration	U	961450
	Bulletholes in fish marketplace	Photo of a ruined marketplace in Sidon	Photo	U	961504
	St Kitts and Nevis Island	Aerial photo of an island in the Carribean	Photo	U	961812
	Wissal Idmillah and George Kerdahi Interview 10-27-2021	Footage of George Kerdahi claiming that the Saudi-Yemeni War is meaningless	Video	U	966525

row(s) 1 - 11 of 11

13- Article:

EDIT	ID	TYPE	TOPIC	AUTHOR	PAGENUMBER	PAGESECTION	TITLE	DAY	JOURNAL_ISSUE_ID
	961001	Research	Environment	Layla Zeidan	18	Bi2atuna	Naher El Kaleb Pollution	10/17/2019	100402
	961232	Case Studies	Politics	Gebran Ayoub	4	Law	August 4, Doomsday...	07/04/2020	300803
	961313	Report	Economics	Youssef Khalil	6	Commodities	Benzine Alyawm	09/16/2019	100403
	961003	Report	Politics	Dalia Hawa	19	Events	Reports of a mysterious event	02/14/2005	300804
	961043	Methods	Life Style	Antoine El Helo	15	Cooking	Italian Lasagna	07/12/2019	300805
	961150	Research	Economics	Abdallah Al Wahabi	7	Start ups	Anghami is booming in the Gulf Area	11/30/2021	200604
	961200	Report	Finance	Fadia Tello	8	Currency	Dollar to the MOON!	05/24/2019	200603
	961450	Letter	Fiction	Grace Abou Khaled	19	Stories	Sheep on a ship	08/08/2018	200602
	961504	Report	Latest Events	Khaled Khalil	2	Events	Saida under heavy fire	05/11/2017	100404
	961812	Research	Facts	Jamil Awada	13	Travel	A passport for 150K$	09/10/2021	300802
	966945	Research	Economics	Wissal Idmillah	9	Middle East	GDP Decline in Yemen due to blockage	10/23/2021	252145
	961517	Report	Politics	Wissal Idmillah	5	Middle East	Challenges for the new Lebanese Government	10/20/2021	252145
	961042	Report	Politics	Wissal Idmillah	2	Middle East	Politicized Student elections in Universities	10/19/2021	252145
	961526	Interview	Politics	Wissal Idmillah	4	Middle East	A look at Lebanon with Paula Yaacoubian	10/22/2021	252145
	966525	Interview	Politics	Wissal Idmillah	6	Middle East	A new perspective on Yemen and its surroundings	10/28/2021	252145

row(s) 1 - 15 of 16

EDIT	ID	TYPE	TOPIC	AUTHOR	PAGENUMBER	PAGESECTION	TITLE	DAY	JOURNAL_ISSUE_ID
	966424	Report	Politics	Wissal Idmillah	10	Middle East	Hunger arises in Yemen	10/25/2021	252145

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14- Advertisement:

EDIT	NAME	COMPANY_NAME	TYPE	REVENUE	JOURNAL_ISSUE_ID
	Samsung S20	Samsung	Product	20000	100402
	Repair Your iPhone	Apple Clinic	Service	3000	100403
	Barista in need	Starbucks	Job Offer	1000	100404
	Metaverse	META	Self Advertising	13000	200602
	Apple Season	Lebanese Farmers	Product	0	200603
	2006 used Honda for sale	Ahmad Itani	Product	150	200604
	Back to school offers	Fairco	Self Advertising	2000	300802
	Dog for adoption	Faten Mokadem	Charity	0	300803
	Duplex in Sodeco	Murex Holding	Real Estate	900	300804
	Mourad Pest Control Services	Ali Mourad	Service	300	300805

row(s) 1 - 10 of 10

XIV-Queries:

On the 27th of October, Lebanese Media Minister George Kordahi stirred controversy amongst the Lebanese and Saudi nations by making offensive comments regarding the war in Yemen. The controversial statement made by the guest in an interview with one of our reporters Wisal Idmilla resulted in major backlash by the Saudi Government, leading to the withdrawal of Lebanese and Saudi Ambassadors from each other's grounds, among other devastating sanctions. Being the organization responsible for holding the interview and keeping all records of it, the Saudi Government has sent agents to our headquarters to investigate the matter and proceed with the necessary procedures to compile proof for the court hearing as well as deliver punishment to those involved.

1)

1. The agent has requested details regarding the interviewer and the interviewee. We will do so by first selecting the interview from the guest list.

   - **SQL QUERY:**

```
SELECT G.INTERVIEW_DATE, G.FULL_NAME, G.EMPLOYEE_ID
FROM Guest G
WHERE Full_Name='George Kerdahi';
```

   - **OUTPUT:**

INTERVIEW_DATE	FULL_NAME	EMPLOYEE_ID
10/27/2021	George Kerdahi	32516987

2. Afterwards, we will retrieve the interviewer using the Employee_ID foreign key from the Guest table, as every guest has a unique interviewer responsible for their day. We were also ordered to extract the dependent's information in case she does not answer to her phone.

   - **SQL QUERY:**

```
SELECT E.ID, E.FIRST_NAME, E.LAST_NAME, E.PHONE_NUMBER, E.FIELD, E.STREET, E.CITY, E.BUILDING, E.FLOOR, E.DEP_NUMBER, DEP.FULL_NAME, DEP.PHONE_NUMBER
FROM EMPLOYEE E, GUEST G, DEPENDENT DEP
WHERE G.FULL_NAME = 'George Kerdahi' AND E.ID = G.EMPLOYEE_ID AND E.ID = DEP.EMPLOYEE_ID;
```

   - **OUTPUT:**

ID	FIRST_NAME	LAST_NAME	PHONE_NUMBER	FIELD	STREET	CITY	BUILDING	FLOOR	DEP_NUMBER	FULL_NAME	PHONE_NUMBER
32516987	Wisal	Idmillah	0096103256966	Interviewer	Hamra	Beirut	Gulie	2	3	Abdallah Idmilla	009667489374

3. The agent has stated that the author will be held liable for Defamation in case she does not cooperate with their demands. She was given the following condition: If 30% of her work in the journal published on 10/27/2021 or more is tied with the Saudi-Yemeni war, she must be fired immediately and have all her writings deleted. Else, she will only have to apologize to officials and the Saudi nation for "falsely" antagonizing the Kingdom of Saudi Arabia.

- **SQL QUERY:**

```
SELECT (SUM(COUNT(*)*100/ (Select COUNT(*) FROM ARTICLE WHERE JOURNAL_ISSUE_ID = 252145))) AS PERCENTAGE
FROM JOURNAL J, ARTICLE A
WHERE J.EMPLOYEE_ID = 32516987 AND to_char(J.DO_PUBLICATION,'MM-DD-YYYY') = '10-27-2021' AND A.JOURNAL_ISSUE_ID = 252145 AND A.TITLE LIKE '%Yemen%'
GROUP BY ID;
```

- **OUTPUT:**

PERCENTAGE
50

4. It was found that 50% of her work was incriminating. Thus, the agents contacted the department head and ordered them to fire her. Furthermore, all her work is deleted, including records and pieces of media attached to it.

- **SQL QUERY (in order):**

```
DELETE FROM MEDIA
WHERE TITLE LIKE '%Wissal Idmillah%George Kerdahi%Interview%';


DELETE FROM ARTICLE
WHERE AUTHOR LIKE '%Wissal Idmillah%';


DELETE FROM JOURNAL
WHERE EMPLOYEE_ID = 32516987;


DELETE FROM RECORD
WHERE EMPLOYEE_ID = 32516987;


DELETE FROM GUEST
WHERE EMPLOYEE_ID = 32516987;


DELETE FROM EMPLOYEE
WHERE ID = 32516987;
```

- **OUTPUT (in order):**

```
1 row(s) deleted.


6 row(s) deleted.


1 row(s) deleted.


1 row(s) deleted.


1 row(s) deleted.


1 row(s) deleted.
```

5. Finally, the agents requested the agencies associated with the organization belonging to the Arab world from each country in the region.

- **SQL QUERY:**

```
SELECT SUBSTR (IO,0,3) AS PREFIX, COUNT(*)
FROM AGENCY
GROUP BY SUBSTR(IO,0,3)
```

- **OUTPUT:**

PREFIX	COUNT(*)
965	2
967	1
974	1
962	1
961	1
966	2
963	1
964	1

2) The financial department has requested a breakdown of the revenue generated from the advertisements placed on our journals to maximize profit so calculate the minimum amount generated, maximum and average.

- **SQL QUERY:**

```
SELECT MIN(REVENUE), MAX(REVENUE), CAST(AVG(REVENUE) AS DECIMAL (10,2)) AS AVERAGE
FROM ADVERTISEMENT AD,JOURNAL J
WHERE J.DO_PUBLICATION >='1-1-2021';
```

- **OUTPUT:**

S

MIN(REVENUE)	MAX(REVENUE)	AVERGAE
0	50000	7556.67

3) The organization needs funds and has decided to sell of their unused equipment. Calculate the total amount of revenue generated by this sale

- **SQL QUERY:**

```
SELECT SUM(PRICE)
FROM EQUIPMENT
WHERE STATUS = 'F' OR STATUS= 'D';
```

- **OUTPUT:**

SUM(PRICE)
900

4)

1- Demonstrators crowded in Beirut and caused a roadblock, leading to heavy traffic and many people unable to attend work. Retrieve the number of employees residing in Beirut unable to come to work today.

- **SQL QUERY:**

```
SELECT SUM(COUNT(*)) AS ABSENT
FROM EMPLOYEE
WHERE CITY != 'Beirut'
GROUP BY CITY
```

- **OUTPUT:**

ABSENT
12

2- Unfortunately a lot of employees couldn't make it. Calculate the average number of employees lost per department so we can gauge our work for the day.

- **SQL QUERY:**

```
SELECT ROUND(AVG(COUNT(*)),0) as AVERAGE
FROM EMPLOYEE
WHERE CITY != 'Beirut'
GROUP BY DEP_NUMBER;
```

- **OUTPUT:**

AVERAGE
3

5) The organization offers an internship program for aspiring writers. An intern is a writer who still hasn't published any work and is working alongside an experienced writer to learn, grow and develop their skillset. Retrieve all the interns in the organization.

- **SQL QUERY:**

```
SELECT CONCAT(E.FIRST_NAME, CONCAT(' ', E.LAST_NAME)) AS INTERNS
FROM EMPLOYEE E
WHERE E.FIELD = 'Writer' AND NOT EXISTS
(SELECT * FROM ARTICLE WHERE AUTHOR = CONCAT(E.FIRST_NAME,CONCAT('',E.LAST_NAME)));
```

- **OUTPUT:**

INTERNS
Joseph Aatwe
Mohammad Ayoub
Zahraa Ali

6) School students have decided to visit our offices to get as much writing on the Lebanese Civil War as possible, as part of their project. Specifically, they're interested in volumized publishing (i.e., work that has a sequel and is split into parts, usually done so to express continuity). Find all the work related to the Lebanese Civil War that is split into multiple parts.

- **SQL QUERY:**

```
SELECT TITLE, DO_PUBLICATION, GROUP_NUMBER
FROM RECORD
WHERE DO_PUBLICATION >= '1-1-1975' AND DO_PUBLICATION <= '1-1-1991' AND GROUP_NUMBER IN (SELECT GROUP_NUMBER
                FROM RECORD
                GROUP BY GROUP_NUMBER
                HAVING COUNT(*) >= 2)
```

- **OUTPUT:**

TITLE	DO_PUBLICATION	GROUP_NUMBER
Lebanon bleeds: Part 1	04/05/1985	1975
Lebanon bleeds: Part 2	04/05/1985	1975
Lebanon bleeds: Part 3	04/05/1985	1975
My life under fire: Part 1	07/14/1990	19751
My life under fire: Part 2	07/14/1990	19751

7) Our customers regularly forget to renew their plans, and leave them to expire. It is of utmost importance that we regularly follow up with our customers on their subscriptions. Find all of the phone numbers of the customers whose plans are either expired or up for renewal.

- **SQL QUERY:**

```
SELECT NAME, PHONE_NUMBER FROM CUSTOMER WHERE PLAN IN
 (SELECT REFERENCE_NUMBER FROM PLAN WHERE STATUS = 'R' OR STATUS = 'E')
```

- **OUTPUT:**

NAME	PHONE_NUMBER
Hassan Awada	0096103541287
Spinneys	0096101523689
Al Barakat	0096101523698
Tales Times	0096101452369
Giulia Beydoun	0096176456789

8) As part of our inclusion program, the organization has stepped up in hiring more women in the past decade than ever before. Foreign organizations wish to know just how much we did our part in representing women. Find the percentage of women hired in the past decade.

- **SQL QUERY:**

```
SELECT (SUM(COUNT(*)*100/(Select COUNT(*) FROM EMPLOYEE WHERE GENDER = 'F'))) AS PERCENTAGE
FROM EMPLOYEE
WHERE YEAR_HIRED >= 2012
Group BY ID;
```

- **OUTPUT:**

PERCENTAGE
21

XV-Normalization Up to The BCNF Normal Form:

After creating all relations, we should improve them by normalizing according to several normal forms. Here we are going to normalize our database up to the fourth normal form which is the BoyceCodd Normal Form. On each relation we are going to apply the four normal forms. We start with the first then second then third and at last the BCNF normal form. Let us first start by a general description to each normal form.

First Normal Form:

This form does not allow multivalued attributes, composite attributes, and their combinations to exist in a relation.

1. Only attribute values permitted are single atomic values.
2. Domain of an attribute must only include atomic values and the value of an attribute in a tuple must be a single value from the domain of that attribute.
3. Disallows having a set of values as an attribute value for a single tuple.

Second Normal Form:

The Second normal form is based on the concept of full functional dependency. Before explaining the second form let us define some concepts used in this form and other forms also.

- Functional Dependencies: A constraint between two sets of attributes from the database. The values of the Y component of a tuple in relation R depend on or are determined by the values of an X component. We say that Y is functionally dependent on X.
- Prime attribute: An attribute that is a member of a candidate key in a relation R. An attribute is called non-prime if it is not a prime attribute that is, if it is not a member of any candidate key.
- Full functional dependency: A functional dependency X →Y is a full functional dependency if removal of any attribute A from X means that the dependency does not hold anymore.
- Partial Dependency: A functional dependency X →Y is a partial functional dependency if removal of an attribute A from X means that the dependency still holds.

- A relation schema R is in the second normal form if every nonprime attribute in R is fully functionally dependent on every key of R and every nonprime attribute A in R is not partially dependent on any key in R.

Third Normal Form:

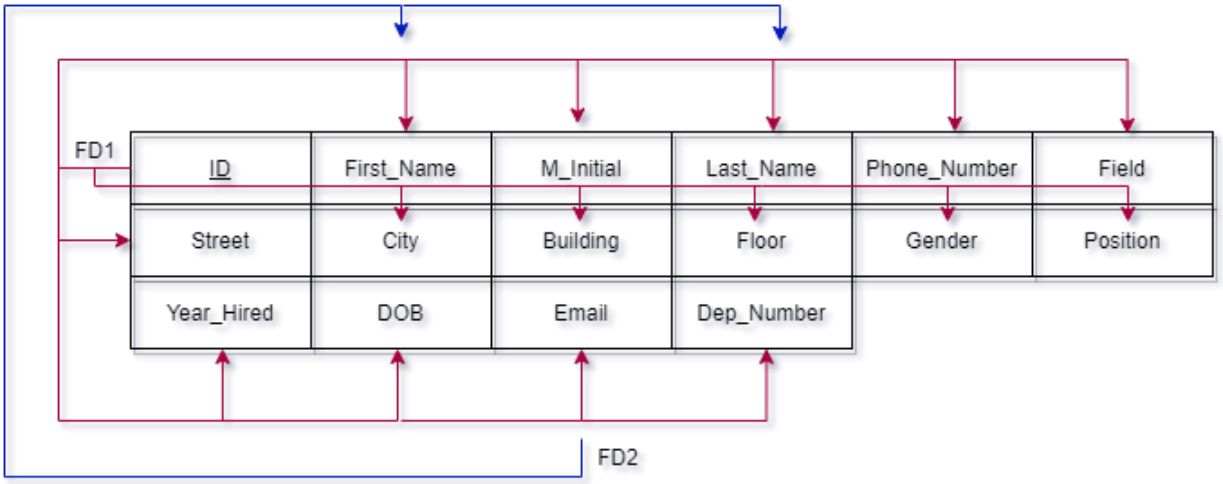
The third normal form is based on the concept of transitive dependency. So let us first define a transitive
dependency.

- Transitive Dependency: A functional dependency X →Y in a relation schema R is a transitive dependency if there exists a set of attributes Z in R that is neither a candidate key nor a subset of any key of R, and both X →Z and Z →Y hold.
- A relation schema R is in the third normal form if it satisfies the second normal form, and no nonprime attribute of R is transitively dependent on the primary key. For every nontrivial functional dependency X →Y either X should be a super key or Y is a prime attribute.

Boyce-Codd Normal Form:

The Boyce-Codd normal form is a stricter form than the third normal form. The BCNF differs from the definition of the third normal form in only one condition. The third normal form allows the right-hand side of the functional dependency to be a prime attribute while BCNF does not allow that.

EMPLOYEE:

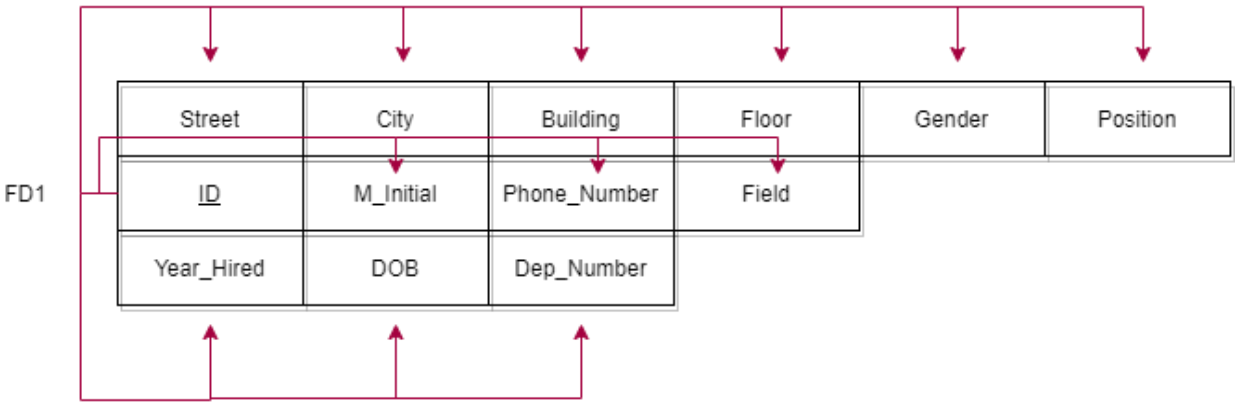


A. The EMPLOYEE relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

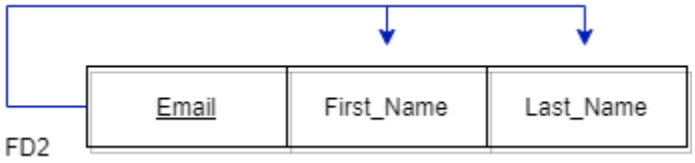
B. The EMPLOYEE relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key “ID”.

C. Although the EMPLOYEE relation schema satisfies the conditions of the 2NF, it does not satisfy that of the 3NF because the non-superkey and non-prime attribute “Email” determines the non-prime attributes “First_Name” and “Last_Name” (FD2: Email → First_Name and Last_Name) , in other words, the non-prime attributes “First_Name” and “Last_Name” are transitively dependent on another non-prime attribute “Email”. Thus, a separate table will have to be created in which these non-prime attributes are stored as following:

EMPLOYEE_ONE

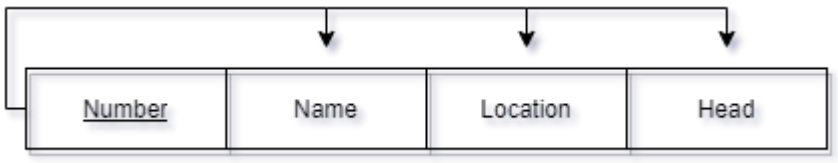


EMPLOYEE_TWO



D. The EMPLOYEE relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

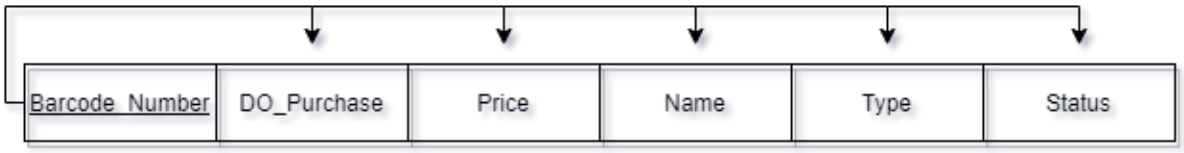
DEPARTMENT:



A. The DEPARTMENT relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The DEPARTMENT relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Number".
C. The DEPARTMENT relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Number".

D. The DEPARTMENT relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

EQUIPMENT



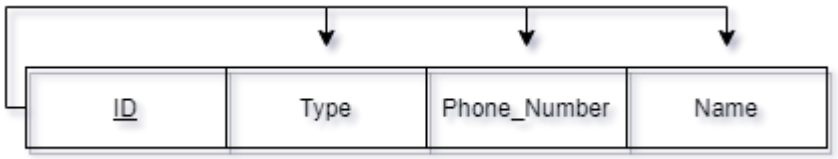
A. The EQUIPMENT relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The EQUIPMENT relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Barcode_Number".
C. The EQUIPMENT relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Barcode_Number".
D. The EQUIPMENT relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

DEPENDENT:

A. The DEPENDENT relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The DEPENDENT relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".
C. The DEPENDENT relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".

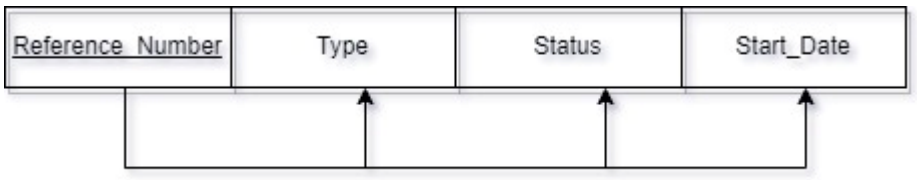
D. The DEPENDENT relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

CUSTOMER:



A. The CUSTOMER relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The CUSTOMER relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".
C. The CUSTOMER relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".
D. The CUSTOMER relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

PLAN:

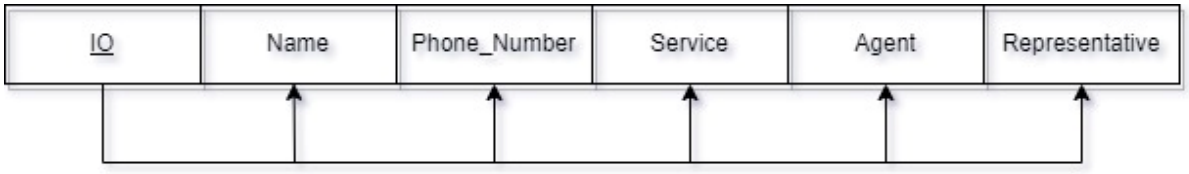


A. The PLAN relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The PLAN relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Reference_Number".

C. The PLAN relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Reference_Number".

D. The PLAN relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

AGENCY:



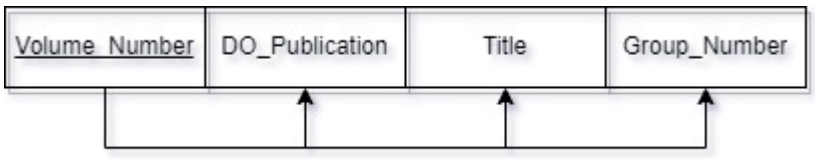
A. The AGENCY relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The AGENCY relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "IO".

C. The AGENCY relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "IO".

D. The AGENCY relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

RECORD:



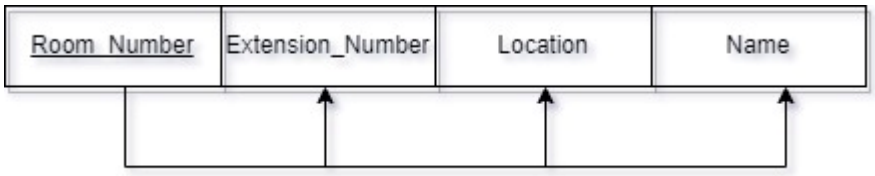
A. The RECORD relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The RECORD relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Volume_Number".

C. The RECORD relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Volume_Number".

D. The RECORD relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key

ROOM:



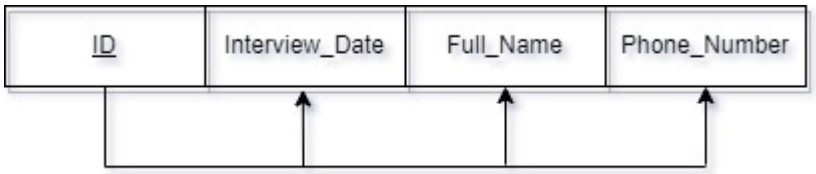
A. The ROOM relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The ROOM relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Room_Number".

C. The ROOM relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Room_Number".

D. The ROOM relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

GUEST:



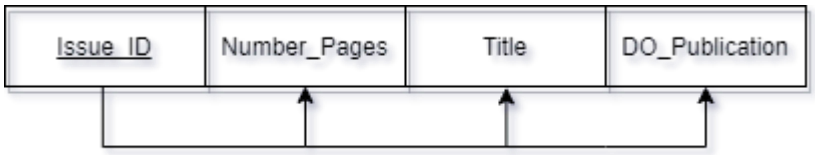
A. The GUEST relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The GUEST relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".

C. The GUEST relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".

D. The GUEST relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

JOURNAL:



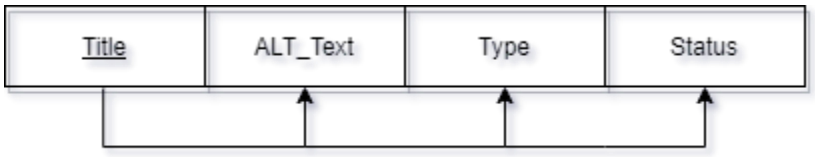
A. The JOURNAL relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The JOURNAL relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Issue_ID".

C. The JOURNAL relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Issue_ID".

D. The JOURNAL relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

MEDIA:



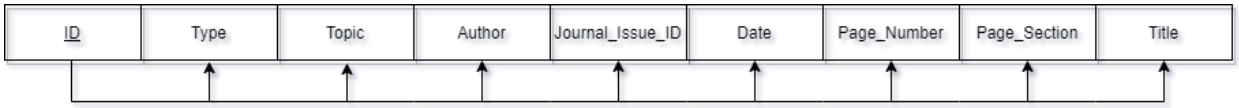
A. The MEDIA relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The MEDIA relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Title".

C. The MEDIA relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Title".

D. The MEDIA relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

ARTICLE:



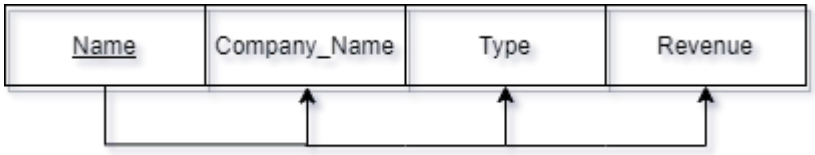
E. The ARTICLE relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

F. The ARTICLE relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".

G. The ARTICLE relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".

H. The ARTICLE relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

ADVERTISEMENT:



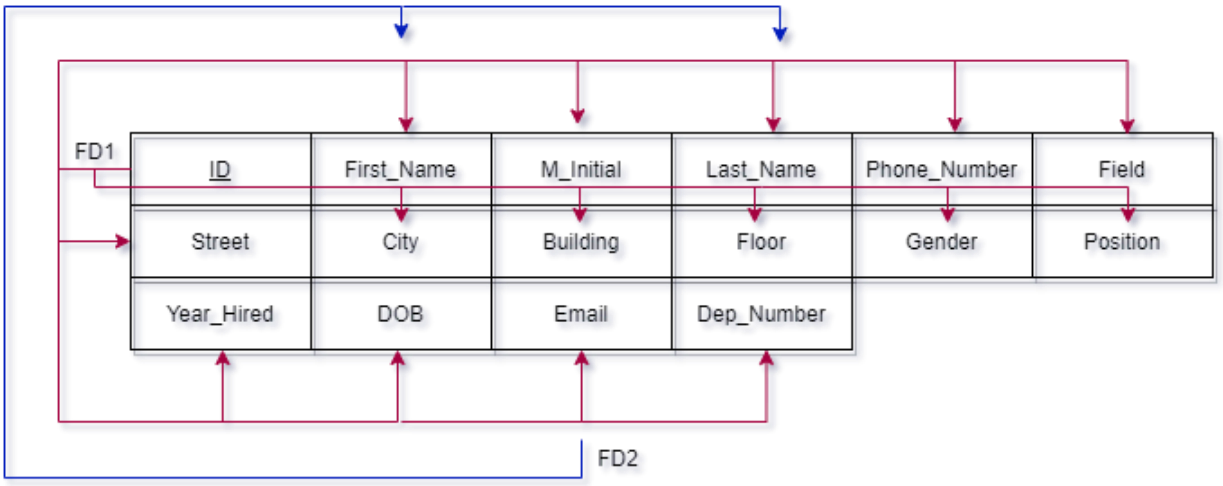
A. The ADVERTISEMENT relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The ADVERTISEMENT relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Name".

C. The ADVERTISEMENT relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Name".

D. The ADVERTISEMENT relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

WORKS_FOR

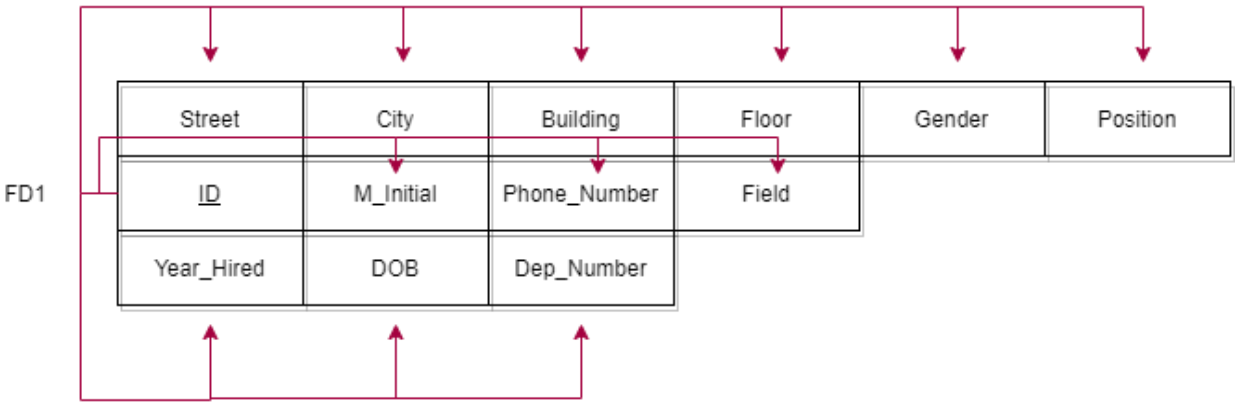


A. The WORKS_FOR relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

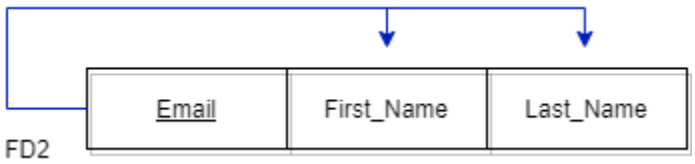
B. The WORKS_FOR relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".

C. Although the WORKS_FOR relation schema satisfies the conditions of the 2NF, it does not satisfy that of the 3NF because the non-superkey and non-prime attribute "Email" determines the non-prime attributes "First_Name" and "Last_Name" (FD2: Email → First_Name and Last_Name) , in other words, the non-prime attributes "First_Name" and "Last_Name" are transitively dependent on another non-prime attribute "Email". Thus, a separate table will have to be created in which these non-prime attributes are stored as following:

WORKS_FOR_ONE

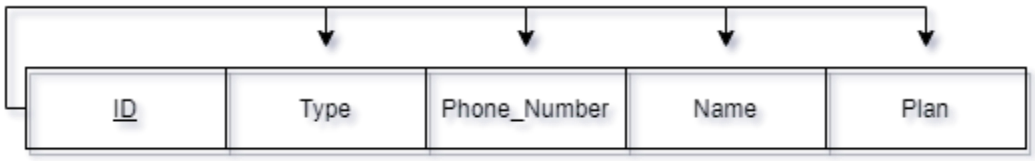


WORKS_FOR_TWO



D. The WORKS_FOR relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

- **SUBSCRIBES_TO**



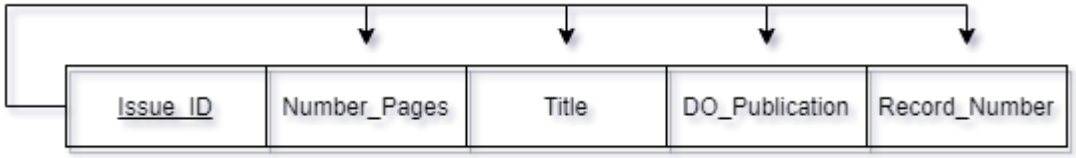
A. The SUBSCRIBES_TO relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The SUBSCRIBES_TO relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".

C. The SUBSCRIBES_TO relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".

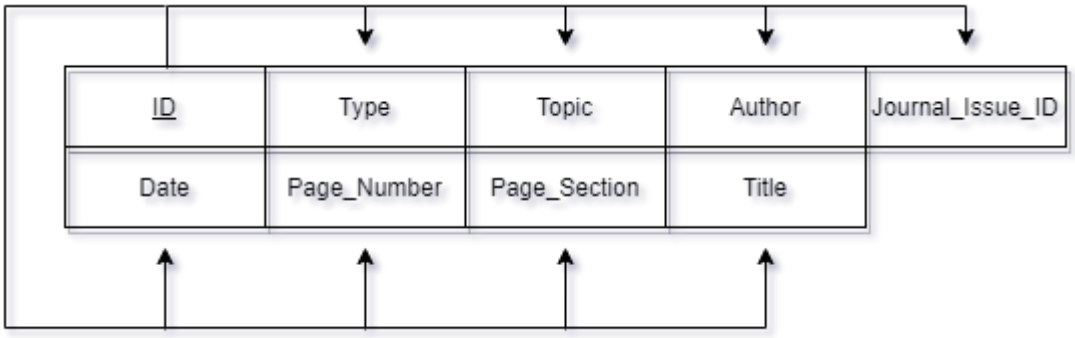
D. The SUBSCRIBES_TO relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

HAS1



A. The HAS1 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The HAS1 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Issue_ID".
C. The HAS1 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Issue_ID". (Note: Records can have different publishing dates than journals)
D. The HAS1 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key

HAS2

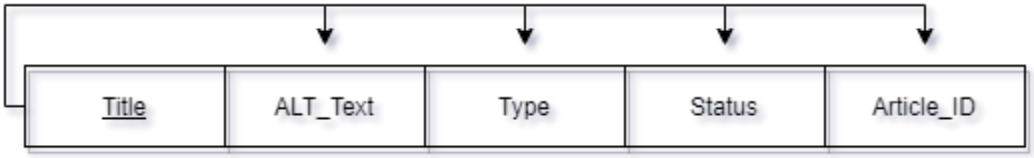


A. The HAS2 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The HAS2 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".
C. The HAS2 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".

(Note: Articles can be published on dates different than the journal)

D. The HAS2 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

HAS3



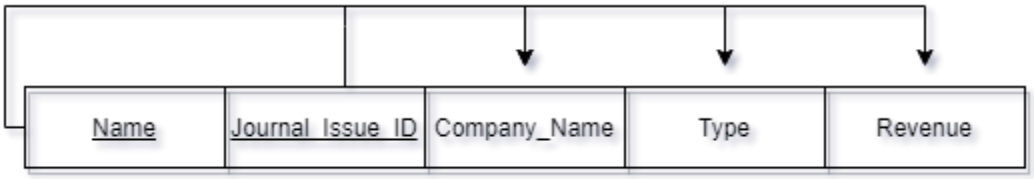
A. The HAS3 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The HAS3 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Title".

C. The HAS3 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Title".

D. The HAS3 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

HAS4



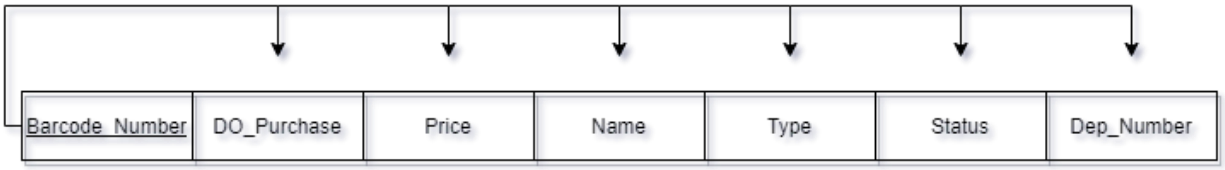
A. The HAS4 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The HAS4 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key {"Name", "Journal_Issue_ID}.

C. The HAS4 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key {"Name", "Journal_Issue_ID"}.

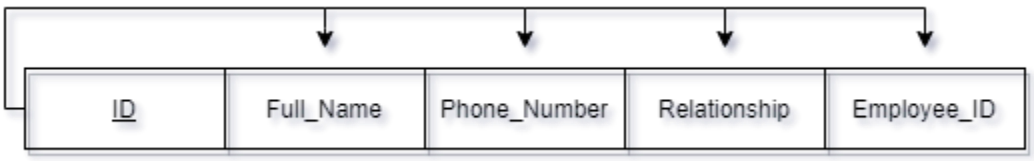
D. The HAS4 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

HAS5



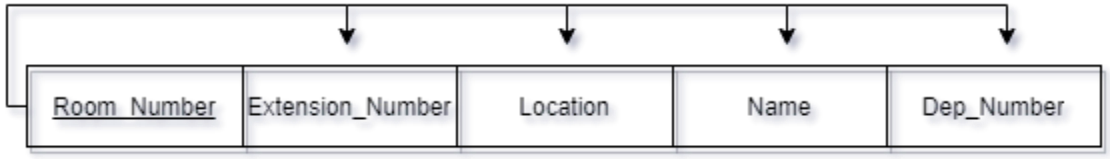
A. The HAS5 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The HAS5 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Barcode_Number".
C. The HAS5 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Barcode_Number".
D. The HAS5 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

HAS6



A. The HAS6 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.
B. The HAS6 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".
C. The HAS6 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".
D. The HAS6 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

HAS7



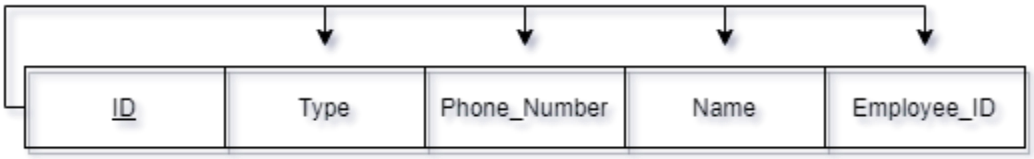
A. The HAS7 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The HAS7 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Room_Number".
(Note: Rooms do not have to be in the same location as departments)

C. The HAS7 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Room_Number".

D. The HAS7 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

- **CONTACTS1**



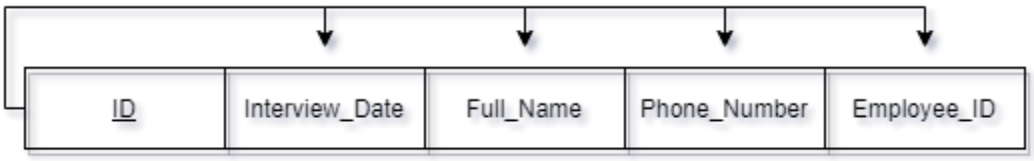
A. The CONTACTS1 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The CONTACTS1 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".
(Note: Rooms do not have to be in the same location as departments)

C. The CONTACTS relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".

D. The CONTACTS1 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

- **CONTACTS2**



A. The CONTACTS2 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The CONTACTS2 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".

C. The CONTACTS2 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".

D. The CONTACTS2 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

- **CONTACTS3**

A. The CONTACTS3 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The CONTACTS3 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "IO".

C. The CONTACTS3 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "IO".

D. The CONTACTS3 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

- **MANAGES1**

A. The MANAGES1 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The MANAGES1 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Volume_Number".

C. The MANAGES1 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Volume_Number".

D. The MANAGES1 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

- **MANAGES2**

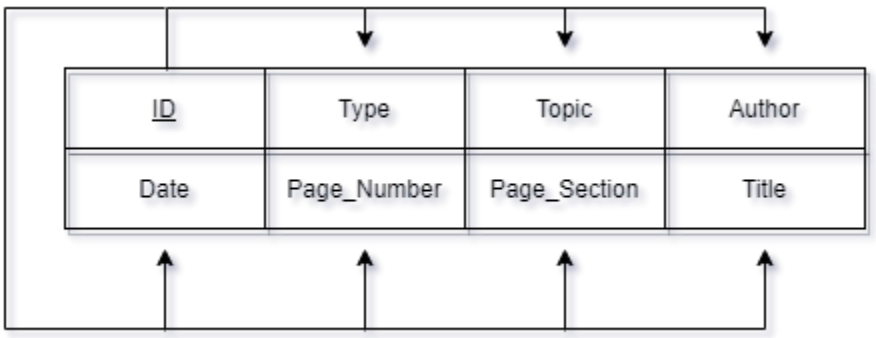
A. The MANAGES2 relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The MANAGES2 relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "Issue_ID".

C. The MANAGES2 relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "Issue_ID".

D. The MANAGES2 relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

- **WRITES**



A. The WRITES relation schema satisfies all conditions of the 1NF because it has neither multivalued attributes nor composite attributes. All attributes are single and atomic.

B. The WRITES relation schema satisfies all conditions of the 2NF because every nonprime attribute is fully functionally dependent on the primary key "ID".

C. The WRITES relation schema satisfies all conditions of the 3NF because it satisfies the 2NF and there are no non-prime attributes that are transitively dependent on the primary key "ID".

D. The WRITES relation schema satisfies all conditions of the BCNF because there exists no functional dependency X→A where X is not a super key or A is a prime attribute and X not a super key.

XVI-Conclusion:

For an organization as complex and fast-paced as a newspaper agency, it is crucial for a database to be functioning reliably and efficiently to keep track of the hundreds of employees, transactions and journals that are in circulation every day. Our database model effectively gives an organization the structure it needs to maintain this reliability and efficiency while considering many factors that could be overlooked. Specifically, we believe our model covers all the necessities as well as provides the finer details. The system is life-like, having been inspired by an actual newspaper organization. But like all things, there is much room for improvement that we are sure Professor Ramzi Haraty will provide in detail. Overall, we believe our system and its organization has its strengths and could prove a viable solution for organizations everywhere.

In this report, the group members have tried to efficiently model how a professional and high-quality newspaper company database should be designed, defined, and implemented. The whole process should be divided into distinct stages or phases because of how fragile and complex databases are. The first phase, Phase I, was to design the actual entities and relationships that make up the database. These entities and relationships though were defined at a higher level; Phase II is where the higher-level descriptions are converted into relation schemas. Phase III in addition to Phase IV will further convert these relation schemas into SQL code, fill the database with data, and normalize the database.

XVII-Instructor Comments: