**Chapter 9b - Review Questions**

1. **What is the criterion for a table design to be in first normal form? How do you convert an un-normalized design to 1NF?**

* A table is in **first normal form (1NF)** if it does not contain a repeating group. To convert an unnormalized design to 1NF, you must expand the table’s primary key to include the primary key of the repeating group.

1. **What are the criteria for a table design to be in second normal form? How do you convert a 1NF design to 2NF?**

* To be in **second normal form (2NF)**, a table must first be in first normal form and all fields that are not part of the primary key must be dependent on the entire primary key. To convert from 1NF to 2NF, you would create a new record for each field and a possible combination of the fields in the primary key. For each new record, designate one field or combination of fields as a primary key. Place the remaining fields with the primary key on which they depend. When finished placing the fields, discard any record that does not contain any additional fields other than its primary key. The remaining records are the 2NF of the original record.

1. **What are the criteria for a table design to be in third normal form? How do you convert a 2NF design to 3NF?**

* A table is in **third normal form (3NF)** if it is in second normal form and if no non-key field is dependent on another non-key field. To convert a 2NF design to a 3NF you must remove all fields from the 2NF table that depend on another non-key field and place them in a new table that uses the non-key field as a primary key.

1. **Explain the difference between a logical record and a physical record.**

* A **logical record** is a set of field values that describes a single person, place, thing, or event. For example, a logical customer record contains specific field values for a single customer, including the customer number, name, address, telephone number, credit limit, and so on. Application programs see a logical record as a group of related fields, regardless of how or where the data is stored physically. A **physical record**, also known as a block, consists of one or more logical records and is the smallest unit of data accessed by the operating system. The system reads or writes one physical record at a time. When the system *reads* a physical record, it loads the data from storage into a buffer, which is a segment of computer memory. Programs and people deal with logical records; while computer operating systems and storage devices deal with physical records.

1. **How would a specific date, such as September 1, 2011, be represented as an absolute date?**

* An absolute date is the total number of days from some specific base date. To calculate the number of days between two absolute dates, you subtract one date from the other. For example, if the base date is January 1, 1900, then the absolute date value of September 1, 2011 is 40792.

**Chapter 9b - Personal Trainer, INC**

1. **Use sample data to populate the fields for at least three records in each table.**

* Sample data with populated fields for at least three records in each table.

**MEMBER**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Member\_ID** | **Lastname** | **Firstname** | **Address** | **Phone** |
| 111-11-1111 | Sagan | Carl | 101 Main St. | 111-1111 |
| 222-22-2222 | Smith | Joe | 202 Sun St. | 222-2222 |
| 333-33-3333 | Campos | Amanda | 303 Cajun St. | 333-3333 |

**INSTRUCTOR**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Instructor\_ID** | **Lastname** | **Firstname** | **Address** | **Phone** |
| 101 | Lopez | George | 404 Court St. | 444-4444 |
| 102 | Copeland | Jim | 505 5th St. | 555-5555 |
| 103 | Wade | Sam | 606 6th St. | 666-6666 |

**ACTIVITY**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Activity\_No** | **Course Name** | **Date** | **Hours** | **Tuition Fee** |
| A101 | Course 100 | 8/4/2014 | 18 | $45 |
| B202 | Course 200 | 9/2/2014 | 20 | $50 |
| C303 | Course 300 | 10/3/2014 | 22 | $55 |

**TRAINING RECORD**

|  |  |  |  |
| --- | --- | --- | --- |
| **Member\_ID** | **Activity\_No** | **Date** | **Fitness Level** |
| 111-11-1111 | A101 | 8/4/2014 | A-1 |
| 222-22-2222 | B202 | 9/2/2014 | A-2 |
| 333-33-3333 | C303 | 10/3/2014 | A-3 |

1. **Recommend a date format for the new system. Should Personal Trainer adopt a single international standard, or should the format be determined by the country in which the center is located? Write a message to Susan with your recommendation.**
   * Personal Trainer faces an issue that has become important as many companies enter the international marketplace. Should a small multinational company attempt to maintain a standard date format, or is it better to adapt to the formats used in the countries where it operates? Although the Personal Trainer situation involves dates, it could involve currency formats, numeric representations, weights and measures, or any other conventions that differ from one country to another. There is no standard answer to this question. Personal Trainer must use the local format in all external relationships in order to avoid confusion and operational problems in Canada and to maintain customer satisfaction. Many users might feel that the best approach is a program or macro that automatically translates dates into the format best understood by the recipient. For example, in a communication from Personal Trainer headquarters in Chicago to the Toronto supercenter about the Canada Day holiday on December 1, 2014, the date would appear in Canadian format as 1.12.2014 — even though the Chicago user entered it as 12/1/2014. Others might feel that Personal Trainer should adopt a consistent standard for all internal communications. If so, perhaps the ISO 9000 format would be acceptable.

**Chapter 9b - Case in Point 9.2: CYBER TOYS**

See attached table design.

I think that the table is too horizontally long and cramped up, almost informal like. I believe that Marcia should divide the table into smaller ones with their respective categories: Store #, Location, Managers and Technicians. Having a database with smaller tables would make the normalization process easier and more effective since they can have many relationships with one another. It would also be good for the company to have smaller tables to edit and maintain rather than having one big table to work with. I propose that Marcia should divide the table into smaller ones and normalize them to have a relationship with one another.