**NNAMDI AZIKIWE UNIVERSITY AWKA**

**DEPARTMENT OF ELECTRONIC AND COMPUTER ENGINEERING**

**SECOND SEMESTER 2015/2016 REGULAR EXAMINATION**

**ECE 542: Database Management System**

**Instruction:** See instructions at the beginning of each section. Time allowed: 3hrs

**SECTION A: Answer one question from this section**

1) The table below is a company’s information.

|  |  |  |
| --- | --- | --- |
| **Staff\_id** | **Name** | **Salary** |
| 301 | Uche Okafor | 125,300.00 |
| 302 | Udu Akor | 400,450.00 |
| 303 | Akidi Okeke | 150,055.00 |
| 304 | Emeka Nwaokekeogene | 75,000.00 |
| 305 | Skipper Adimora | 136,580.00 |
| 306 | Achimalor Imo | 395,050.00 |
| 307 | Edenaede Ngene | 201,730.00 |
| 308 | Peace Njideka | 272,967.00 |

You were asked to use Oracle Structured Query Language (Oracle SQL) to develop a database which will contain the company’s information as shown in the table above.

1. Write an instruction to create a table called **nkonye** in the database, using any default table space.
2. Write separate instructions to put in all the objects in the table (row by row).
3. Use an appropriate Data Manipulation Language (DML) to remove the items in lines 2 and 4.
4. As a database administrator, show your director the items in the database.
5. Use one line of instruction to wipe out the table in the database.

2 a) What is Join in Oracle?

List and explain the types of Join (Do not give example).

b) Use one line of Oracle SQL instruction to change **EMEKA** to **emeka.**

Use one line of Oracle SQL instruction to change **decimal** to **decibel.**

**SECTION B: Answer two questions from this section. Question one is compulsory**

1a) For each of the following pairs of related entities, indicate whether (under typical circumstances) there is a one-to- many or a many-to-many relationship. Then, using the crows foot notation, draw a diagram for each of the relationships.

1. STUDENT and COURSE (where a student registers at least 8 courses and courses can be registered by any number of students)
2. DOCTOR and PATIENTS (where any patient can see one or no doctor and doctors may attend to from zero to at most 5 patient per time)
3. MOVIE and DVD (where a DVD contains only one movie and the DVD may or may not be available in any number of quantity)
4. INSTRUCTOR and COURSE (where instructors must teach at least a course and each course can only be taught by a single instructor)

b) Define the following terms

i) Metadata ii) database application iii) Conceptual data model iv) Constrain v) Entity.

c) Given the ER diagram below interpret it to a statement hence explain what is depicted by the diagram. Also what is the participation and cardinality constraints of the ERD?

MOVIE

**Movie Name**

DVD

**Copy Number**

Is Stocked As

2a) A doctor (denoted by Dr\_id, Dr\_firstname, Dr\_lastname) can be scheduled for many appointments (app\_tag, app\_time, app\_date, app\_reason, Dr\_id, Pat\_no), but may not have any scheduled at all. Each appointment is scheduled with exactly one doctor. A patient (denoted by Pat\_no, Pat\_firstname, Pat\_lastname, Pat\_cityaddres) can schedule one or more appointments. One appointment is scheduled with exactly one patient. An appointment must generate exactly one bill (billNo, date, Amt, Pat\_no, app\_tag), a bill is generated by only 1 appointment. One payment (receipt\_no, date, time, billno), is applied to exactly one bill, and one bill can be paid off over time by several payments. A bill can be outstanding, having nothing yet paid on it at all. One patient can make many payments, but a single payment is made by only one patient. Some patients are insured by an insurance company (ins\_name, policy\_type, contact, phone\_no, clams\_no). If they are insured, they can only carry insurance with one company. An insurance company can have many patients carry their policies. For patients that carry insurance, the insurance company will make payments, each single payment is made by exactly one insurance company.

1. Represent the above using the conceptual model
2. Draw an ER diagram to fully depict the above scenario capturing every form of constraints. Clearly specify any assumptions made.

2b. Define the term integrity constrains

2c. List and explain 9 advantages of Database approach

3a. Prepare a conceptual schema and an ERD for a real estate firm that lists properties for sale. The following describes this organization:

* The firm has a number of sales offices in several states. Office Number and Location of sales office must be captured in the database.
* Each sales office is assigned one or more employees. Employees have Employee ID and Employee Name. An employee must be assigned to only one sales office.
* For each sales office, there is always one employee assigned to manage that office. An employee may manage only the sales office to which he or she is assigned.
* The firm lists properties for sale. Properties have Property ID and Location. Specifics of property location like Address, City, State, and Zip Code needs to be captured separately.
* Each unit of property must be listed with one (and only one) of the sales offices. A sales office may have any number of property listed or may have no property listed.
* Each unit of property has one or more owners. Owners are captured using Owner ID and Owner Name. An owner may own one or more units of property. The date when an owner assumes ownership of a property needs to also be captured.

3b. List and explain the components of the database environment

3c. What is the difference between a weak entity and strong entity.

**SECTION C: COMPULSORY OBJECTIVES Answer all**

**1.** Which of the following SQL commands is an example of a DML command?

**A.** SELECT **B.** CREATE **C.** INSERT **D.** GRANT

**2.** You have just started a database transaction by inserting a row into a table. Which of the following actions will end this transaction?

**A.** Inserting another row

**B.** Issuing a COMMIT command

**C.** Issuing an END TRANSACTION command

**D.** Deleting the row you just inserted

**3.** You are designing an application that will enforce business rules through table design. One of the tables in the application contains information about parts that are used to manufacture your product. When creating the PARTS table, what could you do to make certain that each part receives a part number and that each part number will be unique?

**A.** Place a Unique constraint on the part number column of the PARTS table.

**B.** Place a Not Null constraint on the part number column of the PARTS table.

**C.** Place a Primary Key constraint on the part number column of the PARTS table.

**D.** Place a Foreign Key constraint on the part number field of the PARTS table.

**4.** Which of the following is not an advantage of SQL over traditional programming languages?

**A.** SQL statements use English-like commands.

**B.** A user can choose from several interfaces when interacting with SQL.

**C.** SQL has sophisticated condition testing and looping capabilities.

**D.** Users do not have to know how or where their data is physically stored in order to access it.

**5.** How much free disk space is required to install Oracle Database 10*g*?

**A.** 1.5MB **B.** 15GB **C.** 1.5KB **D.** 1.5GB

**6.** You’ve just been hired as a DBA for a large company. During the interview process, you were shown the job description for the position. Which of the following tasks might have been included on this job description?

**A.** Install and configure Oracle 10*g* software.

**B.** Implement database installations according to OFA guidelines.

**C.** Use OFA-compliant naming conventions for database files and directories.

**D.** Any of the above may have been included on the DBA job description.

**7.** Which of the following is not one of the differences between SQL\*Plus and *i*SQL\*Plus?

**A.** *i*SQL\*Plus is accessed via a web browser, but SQL\*Plus must be run from a client or on the server.

**B.** *i*SQL\*Plus output is displayed in a separate window from the commands, but SQL\*Plus displays everything in one window.

**C.** *i*SQL\*Plus can use SQL and PL/SQL to access the database, as can SQL\*Plus.

**D.** *i*SQL\*Plus can only be used to access databases on Windows servers, but SQL\*Plus can be used to access databases on Unix or Windows servers.

**8.** Which of the following is an example of an environment variable that might be defined on a Unix system prior to starting the OUI?

**A.** ORACLE\_DIR **B.** $ORACLE\_HOME **C.** $ORA\_HOME **D.** $ORACLE\_HM

**9.** The DBA\_TABLES data dictionary view contains a column called OWNER that shows the user name of the account who owns each table. What SQL clause would you add to a query on DBA\_TABLES to view only those tables owned by a user called APPS?

**A.** WHERE **B.** GROUP BY **C.** HAVING **D.** ALTER

**10.** You have just logged on to the database as the user APPS and need to know which tables you own or have been granted access to. Which of the following data dictionary views would you query to see a listing of these tables?

**A.** DBA\_TABLES **B.** USER\_TABLES **C.** ALL\_TABLES **D.** MY\_TABLES

**11.** You want to configure the instance so that the sizes of the Shared Pool, Buffer Cache, Large Pool, and Java Pool are automatically managed by Oracle. Which initialization parameter do you need to set to allow this to happen?

**A.** SGA\_TARGET **B.** SHARED\_POOL\_SIZE **C.** LARGE\_POOL\_SIZE

**D.** DB\_CACHE\_SIZE

**12.** Which of the following is not considered part of an Oracle database?

**A.** Datafiles **B.** Redo logs **C.** PFILE and SPFILE **D.** Control files

**13.** Which of the following statements is not always true?

**A.** Every database has at least three tablespaces.

**B.** Every database has at least three datafiles.

**C.** Every database has at least three multiplexed redo logs.

**D.** At least three types of segments can exist in a database.

**14.** The LRU algorithm is used to manage what part of the Oracle architecture?

**A.** Users who log on to the database infrequently and may be candidates for being dropped.

**B.** The datafile that stores the least amount of information and will need the least frequent backup.

**C.** The tables that users rarely access so that they can be moved to a less active tablespace.

**D.** The Shared Pool and Database Buffer Cache portions of the SGA.

**15.** Two structures make up an Oracle server: an instance and a database. Which of the following best describes the difference between an Oracle instance and a database?

**A.** An instance is made up of memory structures and processes, whereas a database is composed of physical files.

**B.** An instance is only used during database creation; after that, the database is all that is needed.

**C.** An instance is started whenever the demands on the database are high, but the database is used all the time.

**D.** An instance is configured using a PFILE, whereas a database is configured using an SPFILE.

**16.** Which of the following is the proper order of Oracle’s storage hierarchy, from smallest to largest?

**A.** Operating system block, database block, segment, extent

**B.** Operating system block, database block, extent, segment

**C.** Segment, extent, database block, operating system block

**D.** Segment, database block, extent, operating system block

**17.** You’ve been asked to install Oracle 10*g* on a new Unix server. You’re likely to ask the Unix system administrator to do all but which of the following for you in order to get the new server ready for Oracle?

**A.** Modify the server’s kernel parameters.

**B.** Create a new Unix user to own the Oracle software.

**C.** Create the mount points and directory structure using the OFA model.

**D.** Determine which directory will be used for $ORACLE\_HOME.

**18.** Oracle’s OFA model specifies a naming convention for all but which of the following?

**A.** User names **B.** Mount points **C.** Directory paths **D.** Database filenames

**19.** The Oracle Universal Installer is started by executing which program?

**A.** emctl **B.** runInstaller **C.** ouistart **D.** isqlplusctl

**20.** On Unix systems, the script root.sh must be executed during the installation process. What is the purpose of this script?

**A.** It creates the root user in the database.

**B.** It creates the root directory for the server.

**C.** It grants root superuser privileges to the Oracle Unix account.

**D.** It copies files and sets permissions on files outside $ORACLE\_HOME.