**Module 8**

**Database Industry Careers**

Module Review Questions

Problems

1. Which of the following is a common job responsibility for someone in the database industry?

a. network security

b. data security

c. application programming

d. web app development

2. Which of the following would generally *not* be a typical responsibility of the DBA?

a. data security

b. data entry

c. data disaster planning

d. data dictionary maintenance

3. Which of the following technical job titles typically does *not* report to the DBA?

a. data analyst

b. data operations manager

c. application programmer

d. system DBA

4. Which of the following is typically *not* a responsibility of a data analyst?

a. data visualization

b. writing SQL

c. big data analysis

d. transaction data analysis

5. Which of the following is typically *not* a primary responsibility of a data scientist?

a. data security

b. statistical analysis

c. big data analysis

d. data visualization

6. Which of the following is *not* a currently popular database industry credential?

a. Microsoft Access MOS

b. Microsoft Technology Associate

c. Oracle Certified Professional, MySQL

d. Universal Relational Database Designer

Critical Thinking Questions

1. What policies have you seen your school or college take to protect your privacy?

Answers will vary, but might include the following:

* Login to admission, financial, and grade information requires a username and strong password.
* Passwords must be periodically changed.
* Access to school-provided computer resources is dependent on scans, ID cards, or logins.
* Access to school-provided computer resources sunsets the semester after a student is no longer enrolled at the school.
* Professors cannot communicate with students other than with school-provided LMS (learning management systems) or school-provided emails.
* Professors cannot communicate with anyone other than the actual student about grades or any other aspect of college life.

1. What mission-critical applications must your college or university protect?

Mission-critical applications involve those that are necessary to the life of the organization. Certainly the admissions and payment systems are mission-critical at any college, but could potentially be unavailable during certain low-enrollment periods of time for maintenance.

The same could be said of the LMS (learning management system). Between semesters, the LMS would not be considered mission-critical although during the course of a semester, it certainly could not be unavailable for more than a few hours to both students and faculty.

Internal payroll, HR, and other administrative systems could also be considered mission-critical, but they too are highly sensitive to the regular activities of the college within a month or semester.

JC Consulting Case Exercises

For the following exercises, you do not use the JCConsulting database.

Problems

1. Which of the following types of external data might be valuable to JC Consulting, but is not currently stored in their internal Access database?

a. clicks on their home page

b. hashtag references in tweets

c. company name references in blog postings

d. Each of these types of external data might be helpful for JC Consulting to analyze.

2. JC Consulting is a small business without a dedicated DBA. An employee with which of the following skills would probably be the best candidate to train for the position?

a. marketing background and excellent management skills

b. computer information systems background and excellent written skills

c. construction background and excellent mechanical skills

d. sales background and excellent speaking skills

3. JC Consulting is a small business without a dedicated DBA. An employee with which job title is most likely to be in charge of the database?

a. operations manager

b. sales manager

c. personnel manager

d. construction manager

4. What skills would someone need at JC Consulting to analyze the potential revenue by ZipCode?

a. how to build summary queries

b. how table relationships are set up

c. how fields are organized within each table

d. An employee would need all of these skills to successfully analyze potential revenue by ZipCode for JC Consulting.

5. JC Consulting just hired a new summer intern in his first year of college to gather social media information about the company. The intern wants to be called a “data scientist.” Is this an appropriate title for the intern?

a. Yes. Data scientists deal with big data from social media feeds so anyone who is working with social media is also a data scientist.

b. No. Data scientists typically have post-graduate degrees in statistics or math.

c. Yes. The title of data scientist can be appropriately applied to anyone who works in the data industry.

d. No. You must be skilled in Hadoop to be appropriately given the title of “data scientist.”

6. Which of the following would be the most appropriate industry credential to earn for the person responsible for the JCConsulting database?

a. Microsoft Access MOS

b. Microsoft Technology Associate

c. Oracle Certified Professional, MySQL

d. IBM Certified Database Administrator - DB2

Critical Thinking Questions

1. Is it as important for a small business like JC Consulting to have a disaster recovery plan as it is for a large corporation? Please site three different examples to support your position.

Yes. Disaster recovery planning is just as important for a small business as a large business because without a good plan in place, when disaster strikes that affects the central computer system, a small business could be completely destroyed if it didn’t have a current offsite backup.

If the emergency is a fire, all employees need to know where to gather, and emergency phone numbers need to be available to make sure all employees are secure and safe.

If the emergency is of a personal medical nature, all employees need to know where life-saving equipment and first aid materials are readily available.

1. How might JC Consulting use the cloud?

JC Consulting might be able to back up their entire computer system “in the cloud,” thus providing themselves with a scalable, readily-available and offsite backup system. They might also use cloud services for other applications within the business such as accounting and HR services.

Pitt Fitness Case Exercises

Problems

1. Pitt Fitness realizes that the company needs to be on top of all trends in fitness centers to keep up with the competition. To ensure they stay on the cutting edge, the company would like to employ a person who could help the business make faster and better data-driven decisions. What position should they advertise for?
   1. CSO
   2. data analyst
   3. SQL programmer
   4. CIO
2. Pitt Fitness employs a person who defines and models data requirements, business rules, and database policies. This employee installs, configures, and tests database hardware and software. What is this employee’s title?
   1. chief security officer
   2. chief information officer
   3. database administrator
   4. big data administrator
3. Who at Pitt Fitness determines access privileges for users and enters the appropriate authorization rules in the DBMS?
   1. chief security officer
   2. chief information officer
   3. database administrator
   4. big data administrator
4. Pitt Fitness suspects their system contains software that enables someone to surreptitiously record keystrokes. What might their system be infected with?
   1. spyware
   2. keyware
   3. recorders
   4. keystroke crackers
5. Pitt Fitness requires that all employees come into the main office (Shadyside) on a Saturday to practice a step-by-step plan to minimize the effects of a natural disaster. For example, if a freak tornado hit the city of Pittsburgh, Pitt Fitness’s computer systems might be incapacitated. What type of planning is this practice?
   1. tornado watch
   2. natural disaster
   3. disaster recovery
   4. crisis mitigation
6. Assume that a destructive storm hit the city of Pittsburgh and it took 20 hours for Pitt Fitness’s computer specialists to return the system to normal working operation. Twenty hours, the length of time this would normally take in a disaster situation, would be considered the \_\_\_\_\_.
   1. recovery time objective (RTO)
   2. recovery point objective (RPO)
   3. recovery computer objective (RCO)
   4. recovery system objective (RSO)
7. As a backup system, Pitt Fitness replicates their DBMS to multiple hard drives that can process reservations if another hard drive fails. What is this system for backup called?
   1. HD
   2. RAID
   3. REPLICATE
   4. multiplicity
8. In the summer months, Pitt Fitness often suffers from power outages due to thunderstorms. What would be a good investment to prevent losing data during power outages?
   1. a dedicated electrical line
   2. a lightning rod
   3. an uninterruptible power supply
   4. moving their computers outside the city
9. Considering Pitt Fitness is a privately held company, which of the following data archiving laws must they comply with?
   1. Sarbanes-Oxley
   2. Patriot Act
   3. FERPA
   4. None of the choices is required of the company.
10. What is the repository at Pitt Fitness that contains the log of database maintenance, license keys, and updates to the system?
    1. DB Diary
    2. check list register
    3. run-book
    4. captain notes

Critical Thinking Questions

1. The database administrator at Pitt Fitness wants to develop and test new applications. What is the safest way to do this, considering the company has customers reserving classes frequently?

Answer: The DBA needs to create a test system or sandbox so that programmers can develop and test new applications without affecting the processing of the customers’ reservations.

1. Considering that Pitt Fitness is a small company, what type of backup site would be appropriate for their smaller budget?

Answer: A warm or cold site, where there are rooms equipped with hardware and software.

Sports Physical Therapy Case Exercises

Problems

1. The Sports Physical Therapy group has hired a student intern who is an expert in using the software Tableau. What position should that intern fill?
   1. data analyst
   2. database administrator
   3. SQL programmer
   4. Python programmer
2. Sports Physical Therapy is looking to hire an employee that is certified in Microsoft Office to help run the Access database, analyze data with Excel, and use other Office tools. What certification should the Human Resources Department look for?
   1. OCA
   2. SQL
   3. MOS
   4. HANA
3. If you consider that Sports Physical Therapy is a large organization employing many computer personnel, who is the employee that the database administrator most likely reports to?
   1. chief executive officer
   2. chief information officer
   3. chief personnel officer
   4. chief data analyst
4. An employee at Sports Physical Therapy who had access to the database management system has been fired for inappropriate conduct. Immediately, their database privileges must be rescinded. What is the SQL command that will accomplish this?
   1. REVOKE
   2. RESCIND
   3. REMOVE
   4. REPLACE
5. Because Sports Physical Therapy deals with sensitive health data, only certain employees should be able to access the sensitive data. What is the process of granting specific rights and privileges to a user?
   1. encryption
   2. authentication
   3. authorization
   4. views
6. The database at Sports Physical Therapy that contains the health records of the patients is essential to the survival of the business and all the business processes. In terms of disaster planning, this would be considered a system that is \_\_\_\_\_.
   1. highly critical
   2. unbelievably critical
   3. mission critical
   4. critical
7. Which of the following laws most likely governs the data archiving of the database at Sports Physical Therapy, considering it is a privately held company?
   1. HIPAA
   2. FERPA
   3. SOX
   4. Patriot Act
8. Sports Physical Therapy regularly uses hardware, software, and databases in a \_\_\_\_\_\_\_\_\_\_\_ system and tests and develops applications in a \_\_\_\_\_\_\_\_\_\_\_\_ system.
   1. test, live
   2. test, sandbox
   3. production, test
   4. production, live
9. Sports Physical Therapy is always striving to improve their database systems. What do you call the process of creating and deleting indexes, minimizing the complexity of each view to only what is needed, and changing the table design?
   1. tuning the design
   2. upgrading the design
   3. cleansing the design
   4. perfecting performance
10. Employees at Sports Physical Therapy are concerned about protecting their networks, devices, and data from digital attacks. What is the process of this protection called?
    1. cybersecurity
    2. stealth bombarding
    3. computer wrapping
    4. malware repulsion

Critical Thinking Questions

1. Considering that Sports Physical Therapy constantly deals with health information, who would be the best person to hire to handle the government regulations and compliance? This person would report to the DBA.

Answer: The task-oriented DBA or database operations manager.

1. What sorts of big data might be important for Sports Physical Therapy? Research physical therapy clinics online to find out more information about what they might find vital to be competitive.

Answer: Some examples might be blogs about sports injuries, reviews of clinics and of treatments, tweets by sports people and their injuries and recoveries.