

Homework 3

NASA Space Exploration Database

Due Date: December 17, 2018

Cutoff Date: December 19, 2018

Lateness: Projects will not be accepted after the cutoff date.

Objective

- Create database for NASA missions, spaceships and astronauts
- Create reports
- Manage concurrency
- Manage security

Database requirements

Include at least the following in your NASA database

- Mission: Objective of the space flight
 - Mission name, launch site, landing site and mission duration
 - Mission objective. For instance, climate, gravity, weather, Mars, GPS satellite launch, Hubble space telescope. A mission can have many objectives
- Astronauts: Humans assigned to missions
 - [Astronaut name](#), country and gender
 - Spouse and children. Astronauts can have many children.
 - Mission assignments. Astronauts can be assigned to many missions.
- Spaceships: Vehicle to accomplish the mission
 - Spaceship name
 - Spaceships can be assigned to one or many missions. For instance, the [Space Shuttle Discovery completed 39 missions.](#)
 - A spaceship can be robotic or carry [human astronauts](#).
- Include at least one sequence number to create unique values.
- Normalize your tables to third normal form.

You must enter at least the following information into your database

- At least 5 missions
- At least 10 astronauts
- At least 5 spaceships

Query

For the following questions:

- Generate SQL commands to answer the following queries.
- Replace underlined items with values of your own choosing.
- Disable the auto commit flag at the top of the window before performing all operations.
- Be very descriptive when explaining your results. For instance, use appropriate terminology, print screens and SQL

1. Identify all Space Shuttle missions by the Discovery. Display the mission start date, end date, launch site, landing site and mission objectives.
2. Identify missions by astronaut. Display three columns: Astronaut name, number of missions and total mileage. Display one row for each astronaut. Display names in alphabetical order.
3. Identify all missions to Pluto launched from Vandenberg Air Force Base in the last 10 years. Display the spaceship name, start and end date of mission and objectives. Order the output by date.
4. Identify the missions by launch site since 2000. Display four columns: Launch site name, site country, site state and number of missions. Display one row for each launch site.
5. Reassign astronaut Sally Ride from Space Shuttle mission STS-7 to STS-8. Identify the SQL required to implement.
6. Identify astronauts who have a Computer Science degree. Use a nested select to answer this question.
7. Cancel Space Shuttle mission STS-7. Identify the SQL to implement.
8. Identify astronauts without missions in the last 5 years. Display the astronaut name and country. Use a nested select to answer this question.
9. In one SQL window, reassign Astronaut A to mission 1. Don't commit. In another SQL window, delete mission 1. Don't commit. Explain your results. Resolve the problem. Disable the auto commit flag at the top of the window before performing this operation.
10. In one SQL window, delete the astronaut Sally Ride. Don't commit. In another SQL window, assign astronaut Sally Ride to a new mission. Don't commit. Explain your results. Resolve the problem. Create a backup table before implementing. To create a backup table, enter CREATE TABLE <NEWTABLE> AS SELECT * FROM <ORIGINALTABLE>; COMMIT; Then you can rename a table using the RENAME TABLE commit. Disable the auto commit flag at the top of the window before performing this operation.
11. In one SQL window, rename the Space Shuttle Enterprise to Excelsior. Don't commit. In another SQL window, change the Space Shuttle Enterprise to Lexington. Don't commit. Quit both Oracle sessions. Login to Oracle and display all information for the Space Shuttle Enterprise. Explain your results. Disable the auto commit flag at the top of the windows before performing this operation.
12. Use the SQL DESCRIBE operation to display the structure for all tables.
13. Display the Oracle version by entering


```
select *
from product_component_version;
```

Extra Credit Question (optional):

14. Utilize Oracle SQL security roles to limit access to only display astronaut data. This security role will be able to only display data and not add, delete or change astronaut data. Identify the SQL operations to implement and demonstrate the functionality of the security roles.
15. Utilize Oracle SQL security roles to allow the adding of new missions, but prevent the deletion or changes to missions. Identify the SQL operations to implement and demonstrate the functionality of the security roles.

Other requirements

- Output for all questions must include at least one row displayed.
- Normalize your tables to third normal form.
- All multi value columns must be saved to their own table.
- Include at least one sequence number to create unique values.
- Identify and create primary keys for each table.
- Create foreign keys to enforce referential integrity.
- Include the question, SQL command to answer the question and output from the SQL command.
- Include the SQL commands to create tables, insert data, alter column names and alter column types.
- Create descriptive column labels for all output.
- Clearly label each question and answer.
- Use appropriate terminology.

Formatting

- Format all output. For instance, all numbers will display with commas and create descriptive labels for all columns.
- Your project must include the question and SQL operations to answer the question
- The column output should be displayed in a non-proportional font such as courier. This will display the columns vertically straight.
- All columns in your search must display on one line. Don't wrap columns to two lines.
- Your project must be typed.
- All pages of your output must include your name, class, date and project number in the header of each page.
- The first page of your project must include your name, the last four digits of your student id, class, the submission date and the project number.

Background

- [Astronaut Sally Ride](#)
- [Jet Propulsion Laboratory missions](#)
- [NASA Solar System missions](#)
- [Space Shuttle missions](#)
- [Human spaceflights](#)

Academic Integrity

Projects and examinations must represent your own work. Group projects and exams are not permitted. Although you are encouraged to ask other students for information, you should neither copy another student's project nor permit another student to see your work. You can be asked to perform specific procedures and operations in the presence of the instructor. A student who submits a project that is too similar to another student's work will receive a ZERO for the project. Additional penalties may be imposed. Students found guilty of any form of academic dishonesty such as plagiarism or cheating on an exam or computer project are subject to discipline, including, but not limited to, failure in the course and suspension or dismissal from the College. You are required to comply with the [CUNY Policy on Academic Integrity](#).

Submission

- All pages of your project must be combined into one MS Word or one Adobe PDF file. Files not submitted in this format will be rejected.
- An electronic copy of your project will be submitted to Blackboard on the due date. The file name will be in the format: [last name] [first name] Project3.docx or [last name] [first name] Project3.pdf. For example, *Smith Sally Project3.pdf*. Submit one MS Word or one Adobe PDF file. Files not submitted in this format will be rejected.
- Do not submit hardcopies of the project.
- No projects will be accepted if left under my office door, my office mailbox or delivered to any other member of the department.
- Projects will not be accepted after the cutoff date.
- Late points will be deducted for projects submitted after the due date. Five points will be deducted each calendar day submitted after the due date.