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| **Course Number and Name:**  CSE 4308  Database Management Systems Lab | |
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| **Report Submission Date:**  06 October, 2022 | **Name of Lab Instructor:**  Md. Bakhtiar Hasan, Lecturer, CSE  Zannatun Naim Sristy, Lecturer, CSE |

**Lab 5: Views and Roles**

**Overview:**

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| This lab required us to use our knowledge of writing queries to create views with specific information and creating roles that can be limited to the data they access. Both roles and views hide data and restrict access to it. All the basics of view and roles were given in the lab manual and any additional help required was taken from internet resources.  On the next pages, I have mentioned the following :   * the problem statement, * the problem analysis, * problems faced (if any) during solution of the tasks, and * the queries and their results on the SQL command line. |

**Task 1**

**Problem Statement:**

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| Create a view named Advisor\_Selection that shows the ID, name and department name of instructors. |

**Analysis of the problem:**

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| Advisor\_Selection is created by selecting the required attributes stated in the problem statement from the instructor table. |

**Any problems faced and how it was solved:**

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| There were no problems faced since the query was straightforward and simple. |

**Results:**

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**Task 2**

**Problem Statement:**

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| Create another view named Student\_Count using Advisor\_Selection and advisor to show the name of the instructor and the number students assigned under them. |

**Analysis of the problem:**

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| View creation is same as in Task 1. Student count is calculated from advisor table by first grouping i\_id (id of the instructor) and then using‘count’ function on the s\_id (student id) attribute. Name of instructor is then selected from Advisor\_Selection table. |

**Any problems faced and how it was solved:**

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| Since Advisor\_Selection contained information about all instructors, instructors who were not advisors also showed up in results where s\_id was shown to be blank. This was solved using an additional condition that checked that the ID in Advisor\_Selection was present in advisor i.e. only those instructors that were advisors were selected. Another way of solving this could have been using a check statement. |

**Results:**

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**Task 3(a)**

**Problem Statement:**

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| (Create role) Students should be able to view information regarding advisors and courses. |

**Analysis of the problem:**

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| Students should be able to see the information from the view Advisor\_Selection and the table course which would require select permission. |

**Any problems faced and how it was solved:**

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| There were no problems faced since the query was straightforward and simple. |

**Results:**

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**Task 3(b)**

**Problem Statement:**

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| (Create role) Course teachers should be able to view information about the students and courses. |

**Analysis of the problem:**

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| Course Teachers should be able to see the information from the tables student and course which would require select permission on these tables. |

**Any problems faced and how it was solved:**

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| There were no problems faced since the query was straightforward and simple. |

**Results:**

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**Task 3(c)**

**Problem Statement:**

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| (Create role) Head of the Departments should have all the privileges that a course teacher has. Additionally, s/he should be able to add new instructors. |

**Analysis of the problem:**

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| The role Head of Department should be granted the role of course teacher that already exists and an additional permission of select and insert on instructor table. |

**Any problems faced and how it was solved:**

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| There were no problems faced since the query was straightforward and simple. |

**Results:**

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**Task 3(d)**

**Problem Statement:**

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| (Create role) Administrator should be able to see information about department and instructors. They should also be able to update the department budget. |

**Analysis of the problem:**

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| Administrator would require select on the tables department and instructors and update on the specific attribute budget in the department table. |

**Any problems faced and how it was solved:**

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| There were no problems faced since the query was straightforward and simple. |

**Results:**

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**Task 4**

**Problem Statement:**

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| Create users under these roles and write relevant SQL queries to demonstrate that the imposed access control works. |

**Analysis of the problem:**

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| Different users are created and the roles previously created are granted to the users. Different tests are done to check if the restrictions work as expected. |

**Any problems faced and how it was solved:**

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| After creating a user and granting the particular role, the user still could not login. This was solved by granting ‘resource’ and ‘create session’ privileges to those users.  After testing a particular user, attempting to create another user and grant him roles failed since the database current user was the previously tested user. Each time logging in as S200042133 solved the problem but since it was a tedious solution, all the user creation and granting of roles was done beforehand and testing was done altogether at the end. |

**Results:**

**(create user for student)**

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**(creating user for course teacher)**

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**(creating user for Head of Department)**

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**(creating user for Administrator)**

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**(Test for Student)**

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**(Test for Course Teacher)**

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**(Test for Head of Department)**

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**(Test for Administrator)**

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