Siyi Guo 737008 Database System Assignment2

1. Count the number of students in each course at the University. Print the course name, as well as the number of students. (1 mark)

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| SELECT Course.name, Count(Student.id) AS Number\_of\_Student  FROM Student INNER JOIN Course  ON Student.course = Course.id  GROUP BY Course.name; |
|  |
| 4 Rows |

2. Is there any subject failed by more than one student? List the subject code as well as the number of failures. (1 mark)

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| SELECT CONCAT(area, yearlevel, code) AS Subject, COUNT(student) AS Number\_of\_Student  FROM StudentTakesSubject  WHERE result < 50 || result IS NULL  GROUP BY CONCAT(area, yearlevel, code)  HAVING COUNT(Student) > 1; |
|  |
| 3 Rows |

3. For the students who have completed at least one subject at undergraduate level, how many points does each student need to complete their degree? (2 marks)

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| SELECT Student, Course.creditpoints - SUM(if(result >= 50 , Subject.creditpoints, 0)) AS Credit\_to\_Complete  FROM Course INNER JOIN Student INNER JOIN StudentTakesSubject STS INNER JOIN Subject  ON Course.id = Student.course AND Student.id = STS.student  AND STS.area = Subject.area AND STS.yearlevel = Subject.yearlevel AND STS.code = Subject.code  WHERE STS.yearlevel < 9  GROUP BY Student |
|  |
| 9 Rows |

4. List the student number, lastname, course and GPA of students who have completed more than 4 subjects at undergraduate level? (To calculate GPA you need to (1) multiply the student’s result per subject by their credit points, (2) sum them up for all the subjects 3 the student has taken and (3) divide it by the sum of the credit points these subjects are worth) (2 marks)

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| SELECT id as student\_number, lastname, course, SUM(result \* creditpoints) / SUM(creditpoints) as GPA  FROM Student INNER JOIN StudentTakesSubject STS INNER JOIN Subject  ON id = student AND STS.area = Subject.area AND STS.code = Subject.code AND Subject.yearlevel = STS.yearlevel  WHERE STS.yearlevel < 9  GROUP BY id  HAVING COUNT(STS.yearlevel) > 4; |
|  |
| 5 Rows |

5. Which lecturer awarded the highest mark and what subject(s) was it (print the lecturer’s full name, the mark and the entire subject code e.g. “INFO20003”)? (2 marks)

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| SELECT CONCAT(firstname, " ", lastname) AS fullname, result, CONCAT(STS.Area, STS.yearlevel, STS.code) AS subjec\_code  FROM Lecturer INNER JOIN Subject INNER JOIN StudentTakesSubject STS  ON id = lecturer  AND Subject.area = STS.area AND Subject.code = STS.code AND Subject.yearlevel = STS.yearlevel  WHERE result = (SELECT MAX(result) FROM StudentTakesSubject); |
|  |
| 1 Row |

6. For each student who has completed COMP10001 print their name, result and their academic grade (H1,H2A etc). (2 marks)

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| SELECT CONCAT(firstname, ' ', lastname) AS name, result,  (CASE  WHEN result >= 80 THEN "H1"  WHEN result >= 75 THEN "H2A"  WHEN result >= 70 THEN "H2B"  WHEN result >= 65 THEN "H3"  WHEN result >= 50 THEN "P"  WHEN result = 49 THEN "NH"  WHEN result >= 0 THEN "N"  ELSE "UNKNOWN"  END) AS AcademicGrade  FROM Student INNER JOIN StudentTakesSubject  ON Student.id = StudentTakesSubject.student  WHERE area = "COMP" && yearlevel = 1 && code = 0001; |
|  |
| 5 Rows |

7. Find the names of lecturers who teach at both undergraduate and postgraduate level. (3 marks)

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| SELECT id AS lecturer\_id, CONCAT(firstname, ' ', lastname) AS lecturer\_name  FROM Lecturer INNER JOIN Subject  ON id = lecturer  WHERE id IN (SELECT id FROM Lecturer INNER JOIN Subject ON id = lecturer WHERE yearlevel >= 9)  AND yearlevel <9 |
|  |
| 2 Rows |

8. List the lecturers who teach across all study areas. (3 marks)

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| SELECT Lecturer.id AS lecturer\_id, CONCAT(firstname, ' ', lastname) AS lecturer\_name  FROM Lecturer INNER JOIN Subject INNER JOIN StudyArea  ON Lecturer.id = Subject.lecturer AND StudyArea.id = area  GROUP BY Lecturer.id  HAVING COUNT(DISTINCT area) = (SELECT COUNT(DISTINCT name) FROM StudyArea) |
|  |
| 1 Row |

9. Have any students from Gilberton suburb enrolled into Bachelor of Science course repeated a subject at undergraduate level? (3 marks)

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| SELECT Student, CONCAT(firstname, ' ', lastname) AS Student\_name  FROM StudentTakesSubject STS INNER JOIN Student INNER JOIN Suburb  ON STS.student = Student.id AND Student.postcode = Suburb.postcode  WHERE Student.course = "B-SCI" AND Suburb.name = "Gilberton" AND yearlevel < 9  GROUP BY Student  HAVING COUNT(DISTINCT CONCAT(area, yearlevel, STS.code)) < COUNT(CONCAT(area, yearlevel, STS.code)) |
|  |
| 1 Row |

10. The Dean has asked you to design a table that will record the student evaluations for each lecturer for each subject he has taught in each academic semester. You are to write the DDL to create the table including all suitable attributes and write the references to the Foreign Keys. (1 mark)

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| CREATE TABLE `Evaluation` (  `lecturer\_id` mediumint(8) unsigned NOT NULL,  `area` char(4) NOT NULL,  `yearlevel` tinyint(3) unsigned NOT NULL,  `code` char(4) NOT NULL,  `student\_id` mediumint(8) unsigned NOT NULL,  `evaluation\_score` tinyint(3) NOT NULL,  `comment` text,  PRIMARY KEY(`lecturer\_id`),  KEY `fk\_Evaluation\_Student` (`student\_id`),  KEY `fk\_Evaluation\_Subject1\_idx` (`area`,`yearlevel`,`code`),  CONSTRAINT `fk\_Evaluation\_Lecture` FOREIGN KEY (`lecturer\_id`) REFERENCES `Lecturer` (`id`) ON DELETE NO ACTION ON UPDATE NO ACTION,  CONSTRAINT `fk\_Evaluation\_Student` FOREIGN KEY (`student\_id`) REFERENCES `Student` (`id`) ON DELETE NO ACTION ON UPDATE NO ACTION,  CONSTRAINT `fk\_Evaluation\_Subject1` FOREIGN KEY (`area`, `yearlevel`, `code`) REFERENCES `Subject` (`area`, `yearlevel`, `code`) ON DELETE NO ACTION ON UPDATE NO ACTION  ) ENGINE=InnoDB DEFAULT CHARSET=utf8; |
|  |
| 0 Rows |