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| **Goal** | **SQL** | **Question** | **Answer** |
| List all fields in students table.  Fields in the SELECT portion are always separated by commas | SELECT \*  FROM students | What fields are returned? |  |
| Return only certain fields | SELECT sid,  name,  birth\_year  FROM students | Which fields are NOT returned? |  |
| Calculate student age | SELECT sid,  name,  birth\_year,  2018-birth\_year  FROM students | What is the name of the  column with the age  calculation? |  |
| Give the age field an alias | SELECT sid,  name,  birth\_year,  2018-birth\_year AS age  FROM students | What is the name of the  column with the age  calculation now? |  |
| Order the results | SELECT sid,  name,  birth\_year,  2018-birth\_year AS age  FROM students  ORDER BY age | What is the name and age of the  person in row 1? |  |
| Add the geometry and  show on the map | SELECT sid,  name,  birth\_year,  2018-birth\_year AS age,  geom  FROM students | Add this layer to the map,  with the name ‘students’.  **Symbolize the points using a**  **graduated color scale by student age** | Attach screen capture |
| Now change the geometry to 500m buffers instead  of points | SELECT sid,  name,  birth\_year,  2018-birth\_year AS age,  ST\_Buffer(geom,500) AS geom  FROM students | Add this layer to the map,  with the name ‘students\_buffer500’.  Make the buffers 50% transparent so you can see the overlap. | Attach screen capture |

PAGE 1 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Goal** | **SQL** | **Question** | **Answer** |
| List all fields in the students\_courses table | SELECT \*  FROM students\_courses | What fields are returned? |  |
| Return only certain fields | SELECT sid,  grade  FROM students\_courses | What does the sid field  represent? |  |
| Fetch the student names  From the students table | SELECT students\_courses.sid,  students\_courses.grade,  students.name  FROM students\_courses, students  WHERE students.sid=students\_courses.sid | How does the database know  which grades go with which  student? |  |
| COUNT how many classes  each student has | SELECT students\_courses.sid,  COUNT(students\_courses.grade),  students.name  FROM students\_courses,  students  WHERE students.sid=students\_courses.sid  GROUP BY students\_courses.sid,  students.name | Try removing the ‘GROUP BY’  portion of the statement…  what happens? |  |
| Calculate grade point average | SELECT students\_courses.sid,  AVG(students\_courses.grade),  students.name  FROM students\_courses,  students  WHERE students.sid=students\_courses.sid  GROUP BY students\_courses.sid,  students.name | What is the name and age of the  person in row 1? |  |
| MAKE A MAP of Students  with points colored by GPA | SELECT students\_courses.sid,  AVG(students\_courses.grade),  students.name,  students.geom  FROM students\_courses,  students  WHERE students.sid=students\_courses.sid  GROUP BY students\_courses.sid,  students.name,  students.geom | Add this layer to the map,  with the name ‘students\_gpa’.  Symbolize the points with a graduated color scale according to student gpa. | Attach screen capture |

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| **Goal** | **SQL** | **Question** | **Answer** |
| List all fields in the  courses table | SELECT \*  FROM courses | What fields are returned? |  |
| Return only certain fields. | SELECT cid,  course\_title,  classroom  FROM courses | What does the cid field  represent? |  |
| Fetch the student ids and  Grades From the students table | SELECT courses.cid,  courses.course\_title,  courses.classroom,  students\_courses.grade,  FROM courses, students\_courses  WHERE courses.cid= students\_courses.cid | Try removing the last line starting with ‘WHERE…‘.  What happens? |  |
| Now add the student name  and distance they have to  travel to class | SELECT courses.cid, courses.course\_title, courses.classroom, students\_courses.grade, students.name,  st\_distance(courses.geom,students.geom)  FROM courses, students\_courses, students  WHERE courses.cid= students\_courses.cid  AND students.sid=students\_courses.sid | Is the value of st\_distance the actual distance the student travels to class?  If not, what does this  value represent? Hint:  think non-human |  |
| Now calculate avg grade  and avg distance for each class  and make a map of the classroom locations. | SELECT courses.cid,  courses.course\_title,  courses.classroom,  courses.geom,  AVG(students\_courses.grade) AS avg\_grade,  AVG(  st\_distance(courses.geom,students.geom)  ) AS avg\_distance  FROM courses, students\_courses, students  WHERE courses.cid= students\_courses.cid  AND students.sid=students\_courses.sid  GROUP BY courses.cid,  courses.course\_title,  courses.classroom,  courses.geom | Add this layer to the map,  with the name ‘courses’.  Symbolize the points with a graduated color scale  according to average grade  Try adding an ‘ORDER BY’ clause… does there appear to be any relationship between avg  grade and average distance travelled by students? | Attach screen capture and answer questions. |

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