Exercise 1

- The following relations are given (primary keys are underlined, optional attributes are denoted with *):

  COURSE(<u>CourseCode</u>, CourseName, Credits)

  STUDENT(<u>RegNum</u>, StudentName, YearFirstEnrollment)

  EXAM REGISTRATION(<u>CourseCode</u>, <u>RegNum</u>, <u>Date</u>, Score)

  GRANT APPLICATION(<u>RegNum</u>, RequestDate)

  STUDENT RANKING(<u>RegNum</u>, TotalPoints)

  GRANT AVAILABILITY(<u>Grant#</u>, CourseCode, TeachingHours)

  GRANT ASSIGNMENT(<u>Grant#</u>, RegNum, TeachingHours)

  NOTIFICATION(<u>Not#</u>, Grant#, RegNum* , Message)

- The trigger application deals with the assignment of student grants for supporting teaching activities. Students applying for a student grant are inserted into a ranking (reported in table STUDENT RANKING). When a new grant becomes available, the student recipient of the grant is selected from the ranking. The same student may be the recipient of more than one grant, provided that she/he does not exceed 150 hours of teaching activities. Write the triggers managing the following tasks for the automatic assignment of student grants.

Exercise - Grant application

- A student applies for the assignment of a student grant (insertion into table GRANT APPLICATION). The application is accepted if (i) the student has acquired at least 120 credits on passed exams (i.e., on exams with score above 17) and (ii) the student is not yet in the ranking (i.e., in table STUDENT RANKING). If any of the two requirements is not satisfied, the application is rejected. If the application is accepted, the student is inserted in the ranking. The total points (attibute TotalPoints) of the student are given by the average score computed only on passed exams divided by the years elapsed from the student first enrollment (the current year is given by the variable YEAR(SYSDATE)).

Exercise - Grant assignment

- When a new grant becomes avilable (insertion into table GRANT AVAILABILITY), the recipient student is selected from the ranking. The recipient is the student with the highest ranking that satisfies the following requirements: (i) she/he has passed the exam for the course on which the grant is available, and (ii) she/he does not exceed 150 teaching hours overall (including also the new grant). Suppose that at most one student satisfies the above requirements. If the grant is assigned, table GRANT ASSIGNMENT should be appropriately modified. The result of the assignment process must be notified both in the positive case (the grant is assigned) and in the negative case (no appropriate student is available, in this case the RegNum attribute takes the NULL value). The Not# attribute is a counter, which is incremented for each new notification.