Feature 1: Add a course

Input – course name, program id, number of credits, grading format, whether the course is required, room type, number of sections

Output - if the course with same name does not exists, print out new course id. Otherwise, just update that course with the input.

Exec add\_course ('IS620',1, 3, 1, 1, 0, 1)

Feature 2: Add an instructor

Input - instructor name, department id, and instructor type (full time or part time)

Output - if an instructor with the same name exists at the same department with same instructor type print an error message. Otherwise, insert the instructor and print out the generated instructor id.

Exec add\_instructor(‘Dr Chen’,1, ‘full\_time’)

Feature 3: Allow an instructor to enter teaching preferences for a given year and semester

Input - instructor id, year, semester, course load, a list of courses the instructor is willing to teach, for each such course, the number of sections the instructor is willing to teach, and up to two days of week that the instructor cannot teach.

Output - Check special cases including the input instructor id is valid, the list of courses is smaller than the course load, and the number of blackout days is over two. Print an error message if one of these cases occurs. Otherwise, insert these input to appropriate tables.

Exec allow\_instructor(1, 2019, ‘spring’, 1, 1, ‘Monday and Tuesday’)

Feature 4: Allow a student to search for all courses offered in a given year, semester, and program.

Input - year, semester, program id

Output - The procedure prints the name of the course, number of credits, grading format, schedule id, section id, name of instructor, name of classroom, days of class, start and end time of each class, and whether the class is open or full. Order the results by course id and section number. Check whether input program id is valid.

Exec search(2019, ‘spring’, 1)

Feature 5: Compute the number of assigned courses

Input – year, semester

Output - This feature checks the number of scheduled courses taught by each instructor for that year and semester and store this number in the course\_load table.

Exec assigned\_course(2019, ‘spring’)

Feature 6: Assign the course to instructors

Input - ID of a course, year, and semester, assign the course to instructors who are willing to teach that course.

Output - Check whether the course needs more sections. If so assign new sections to instructor who is willing to teach that course and create schedule for this course, otherwise print a message there are enough sections.

Exec assign\_course(1, 2019, ‘spring’, 1)

Feature 7: Assign courses in a department

Input – year, semester

Output - This feature can call feature 6 to assign a course to instructors. This feature will go through every program in the department and tries to assign required courses first. If there are still instructors who have not reached their course load, this feature will assign the electives in these programs. Finally it will check whether all instructor has been assigned enough courses and print out the names of instructors who have not.

Exec assign\_course\_dept(2019, ‘spring’)

Feature 8: Assign room and time

Input - schedule id

Output - First check whether the schedule id is valid. If not print an error message. Next check whether the scheduled section already has a room and time block. If so print an error message saying that the course is already assigned. Otherwise find a room and a time block pair that satisfies the given conditions. If there are multiple (room, time block) pairs satisfying the condition, then you can compute a score for each pair and assign the section to the pair with the lowest score. If there are no pair satisfying the above conditions, print out cannot find such pair.

Exec room (1)

Feature 9: Assign rooms and time blocks for courses in a department

Input - department id, year, and semester

Output - This feature can call feature 8 to assign a section to a room and time block. This feature will go through every scheduled section in that department, year, and semester and assign for each section a room and time block. Please first schedule graduate courses and then undergraduate ones. For courses are all graduate or undergraduate, schedule required courses first.

Exec room\_dept(1, 2019, ‘spring’)

Feature 10: Enter special permission

Input - student id, schedule id

Output - First check whether both are valid. If not print a message. If both are valid enter special permission to special permission table. If not print a message. If both are valid enter special permission to special permission table.

Exec special permission (1, 1)

Feature 11: Check prerequisite

Input - schedule ID, student ID

Output - Returns one if the student has taken prerequisites of the scheduled course, 0 otherwise. Check if the schedule ID is valid first.

Exec prerequisite (1, 1)

Feature 12: Register a course

Input - schedule id

Output - First check whether the schedule id and student id are valid. Print an error message if it is invalid. Next, check whether the student has taken the same course before. Retaking a course is not allowed unless the student got a D before. Print an error message if this happens. Check whether the student has taken prerequisites of this class. If not and the student does not have special permission to enroll without prerequisite, print an error message. Finally check whether the class is still open. If so or the student has special permission to enroll in a closed class, add the student to registration table with enrolled status. Check whether the class reaches capacity now. If so update the status of schedule. If the class is full and there is still room on waiting list, put the student on the next position of the waiting list. If the waiting list is full as well, print an error message.

Exec register(1)

Feature 13: Drop a course

Input - student id, schedule id

Output - First check whether the student has registered for that scheduled section (the status could be enrolled or wait listed). If not, print a message the student is not registered with that course.

Exec drop(1, 1)

Feature 14: Print a course

Input – student id, year, semester

Output - Print course id, course name, section id, and status of all courses the student has registered in that year and semester. For any course the student is on the waiting list, also print out the waiting list position.

Exec print\_course(1, 2019, ‘spring’)

Feature 15: enrollment statistics

Input - department id, year, semester

Output - Print out total number of students enrolled for at least one course in any courses in that year and semester in programs in the department. Print out total number of courses in that department, year and semester, total number of course sections, #of students enrolled and wait listed in each course section along with course id, course name, and section id.

Exec enrollment statistics (1, 2019, ‘spring’)

Feature 16: Identify

Input – Year, semester

Output - Print out the id and name of classes, their waiting list length. For rooms, print out room id, room name, and #of scheduled class sections. For time blocks print out time block id, days of the week, and start time.

Exec schedule(2019, ‘spring’)