

Birzeit University

Department of Electrical & Computer Engineering

First Semester, 2022/2023

ENCS3130 Linux Laboratory

Python Project – MyAdvisor

In this project, you are required to write a python script that suggests course schedules for university students. In this project, we will focus on computer engineering students. The script will parse the study plan and list of elective courses to determine which courses computer engineering students must pass in order to graduate. The script will also parse the available courses from the course browser for the first, second, and summer semesters. The script will then parse the courses that the student has already passed from their student records. Based on this information, the script will suggest a course schedule for the student to follow until graduation. The student can specify preferences such as the maximum number of credits he or she wants to register for during the first, second, and summer semesters. The student can also choose the number of free days per week for each semester.

Inputs

1. **Study Plan:** A text file that contains the courses in the study plan of the Computer Engineering Program. The format of the text file will be as shown in figure 1. The study plan of the computer engineering program is in a file called “CEStudyPlan.txt”.

```
Year,Semster,CourseCode,Prerequisists
4,1,ENCS4130,ENCS3320
4,1,ENCS4210,Y4
4,2,ENCS4330,ENCS3130,ENCS3390
4,2,CULS331
4,2,ENCS53xx
4,3,ENCS4300
5,1,ENCS5200
5,1,ENCS5140,ENCS4330
5,1,CULS332
5,1,ENCS53xx
5,1,UE
5,2,ENCS51xx
```

Figure 1: CE Study Plan. Y4: fourth level, UE: University Elective
ENCS53xx: any elective course that starts with ENCS53

2. **Elective and Concentration Courses:** A text file that includes all elective courses for the CE program. The format of the text file will be as in figure 2. The list of Elective and Concentration Courses for the computer engineering program is in a file called “Electives.txt”.

```
Group,CourseCode,Prerequisists
1,ENCS5321,ENCS3320
1,ENCS5323,ENEE3309,ENCS3320
2,ENCS5331,ENCS4370,ENCS3390
2,ENCS5332,ENCS3330
3,ENCS5141,ENCS3340
4,ENCS5327,ENCS4320
0,ENCS5334,ENCS3310,ENCS3330
0,ENCS5335,ENCS3310,ENCS3330
```


Procedure:

1. Print on the screen the student **Study Plan** as shown below:

year	Semester	Courses
1	1	MATH1411, PHYS141, PHYS111, ENME120, ARAB135, ENGC1201,
1	2	MATH1321, PHYS132, PHYS112, COMP133, ENME121, ARAB136, ENGC1202,
2	1	ENCS2340, COMP2310, COMP233, MATH331, ENEE2307, ENGC2201,
2	2	ENCS2380, COMP2421, ENCS2110, ENEE2312, ENEE2304, ENGC2202,
3	1	ENCS3310, ENEE3309, ENCS3390, MATH234, ENEE2360, ENCS3130, ENCS4110,
3	2	ENCS4370, ENCS3340, ENCS3330, ENCS3320, ENEE2103, ENEE4113, BUSA2302
4	1	COMP333, ENCS4380, ENCS4310, ENCS4320, ENCS4130, ENCS4210,
4	2	COMP433, ENCS4330, CULS331, ENCS53xx, ENCS53xx,
4	3	ENCS4300,
5	1	ENCS5200, ENCS5140, CULS332, ENCS53xx, UE,
5	2	ENCS5300, ENCS53xx, ENCS51xx, ENCS5150, UE,

Figure 7: Print the Study Plan on screen

2. Ask the user to enter the name and location of the **Student Records** text file. If the file does not exist, raise an error and ask the user to enter the name and location again. No need to verify the file content.
3. Print on the screen the student study plan **but change the color of the passed courses to green** as shown below:

year	Semester	Courses
1	1	MATH1411, PHYS141, PHYS111, ENME120, ARAB135, ENGC1201,
1	2	MATH1321, PHYS132, PHYS112, COMP133, ENME121, ARAB136, ENGC1202,
2	1	ENCS2340, COMP2310, COMP233, MATH331, ENEE2307, ENGC2201,
2	2	ENCS2380, COMP2421, ENCS2110, ENEE2312, ENEE2304, ENGC2202,
3	1	ENCS3310, ENEE3309, ENCS3390, MATH234, ENEE2360, ENCS3130, ENCS4110,
3	2	ENCS4370, ENCS3340, ENCS3330, ENCS3320, ENEE2103, ENEE4113, BUSA2302
4	1	COMP333, ENCS4380, ENCS4310, ENCS4320, ENCS4130, ENCS4210,
4	2	COMP433, ENCS4330, CULS331, ENCS53xx, ENCS53xx,
4	3	ENCS4300,
5	1	ENCS5200, ENCS5140, CULS332, ENCS53xx, UE,
5	2	ENCS5300, ENCS53xx, ENCS51xx, ENCS5150, UE,

Figure 8: Print the Study Plan on the screen and identify the passed courses in green color

4. Ask the user to input any preferences. The preferences in this project are
 - a. The minimum number of free days per week for each semester (Friday and Sunday are holidays and are not counted as free days. So one free day means the student wants to come to university only in 4 days),
 - b. The maximum number of credits the student wants to register during the first, second, and summer semesters.
5. Ask the user about the number of semesters that the script should do the schedule planning for.
6. Based on the input data (prerequisites, student studying plan, day and time of the courses offered) and student preferences, the program should determine the suggested courses' schedule for the requested number of semesters or until graduation (if the number of semesters is more than the semesters required to graduation).
 - a. The highest priority in selecting the courses must be based on the student's studying plan,
 - b. The next priority for selecting the courses is to fulfill in advance the requirements of courses in the student studying plan,
 - c. The lowest priority is to achieve the preferences set by the student.
 - d. If the preferences cannot be achieved, the program should print a message and suggest a course schedule that agrees with the student studying plan but not the preferences.

- e. For every semester, the script should print on the screen
 - i. the course schedule
 - ii. the Study Plan such that all courses registered before the current semester are in green color, and the courses scheduled in the current semester are in red color as below

year	Semester	Courses
1	1	MATH1411, PHYS141, PHYS111, ENME120, ARAB135, ENGC1201,
1	2	MATH1321, PHYS132, PHYS112, COMP133, ENME121, ARAB136, ENGC1202,
2	1	ENCS2340, COMP2310, COMP233, MATH331, ENEE2307, ENGC2201,
2	2	ENCS2380, COMP2421, ENCS2110, ENEE2312, ENEE2304, ENGC2202,
3	1	ENCS3310, ENEE3309, ENCS3390, MATH234, ENEE2360, ENCS3130, ENCS4110,
3	2	ENCS4370, ENCS3340, ENCS3330, ENCS3320, ENEE2103, ENEE4113, BUSA2302
4	1	COMP333, ENCS4380, ENCS4310, ENCS4320, ENCS4130, ENCS4210,
4	2	COMP433, ENCS4330, CULS331, ENCS53xx, ENCS53xx,
4	3	ENCS4300,
5	1	ENCS5200, ENCS5140, CULS332, ENCS53xx, UE,
5	2	ENCS5300, ENCS53xx, ENCS51xx, ENCS5150, UE,

Figure 9: Print the Study Plan on the screen and identify the passed courses in green color, and registered courses in red

7. The script should ask the user whether to save these schedules to a text file or not.
 - a. If yes, the script should write them to a text file called "SuggestedCourses.txt".
 - b. If not, the program should ask the user whether to exit or continue.
 - i. if continue, the script should return to step 2 in this procedure.
 - ii. if exist, the script should terminate.

Submission:

Please submit the following:

1. Python script program
2. Report: The report must include:
 - a. The code, idea, and a screenshot from each step n the procedure with its variations.
 - b. At least 2 test examples with different Student Records (different levels).

Notes:

- Write the code for the python script to satisfy the requirements described above and name the script MyAdvisor.py
- Make sure your code is clean and well-indented; variables have meaningful names, etc.
- Make sure your script has enough comments inserted to add clarity.
- Work in groups of at most two students
- Deadline: Sunday, 12 February 2023 at 11:59 pm. Please submit your project (code + report) through Ritaj as a reply to this message.
- This project is per group effort: instances of cheating will result in you failing the lab.