**CSBP 219 – Object Oriented Programming**

**Spring 2021**

**Project**

**Objective and Overview:**

* Learn about Object Composition and Array Lists
* Testing java Classes. Using GUI to test Java Classes

**Project Details:**

**CIT** College of Information technology has students, faculty, courses and departments. You are asked to create a program to manage all this information. Create a class **CIT** to represents the following:

* ArrayList of Students, each students is represented by class **Student.**
* ArrayList of Faculty, each faculty is represented by class **Faculty.**
* ArrayList of Course, each course is represented by class **Course.**

**Classes to be created and used in the CIT Class**

* **Student** which is composed by: student ID, person, address and phone and array of courses (ArrayList of the courses the students took or is taking. Represented by the class **StudentCourse**).
* **Person** represented by: first name, last name, date of birth, City of birth.
* **Address**: home number, street, city
* **Date**: for any date used in the CIT class.
* **Course**: course ID, course name, course Track, course Credit…
* **StudentCourse**: course ID, course Score, course GPA, course Session and course status (done, in progress, failed, dropped …)
* **Session** (Session name, Session year) for example fall 2020 or spring 2021.
* **Faculty** represented by: first name, last name, date of birth, City of birth, List of teaching courses and track.
* **Track**: Track id, track name.

**Requirements:**

* All The classes have default constructor with default parameters and empty one.
* A method ***print( )*** which prints the details of a class a nice format.
* A method ***setAll( )*** should set the data member values at once
* A method ***getAll( )*** should return the data member values at once (hint: it returns the toString method)
* You also need to implement many other methods as you are solving this project like a method that calculate the GPA, the total credits hours for a student.

**Write a CITDemo program where you do the following:**

* Fill the information of each class (students, courses, faculty) from input files that you have to design (students.in, faculty.in and courses.in)
* Using your **CITDemo** program we must be able to do any of the following using a **GUI** menu options selection:
  + Print a List of all or any student, faculty or course. (to screen or to file)
  + Print the details of all or any student, faculty or course. (to screen or to file)
  + Add new student, faculty or course with its related information.
  + Edit, update/change information’s of any student, faculty or course.
  + Search for a particular student, faculty or course among the arrays.
  + Delete student, faculty or course given a specific information.
  + Delete all students with a GPA less than a given value.
  + Display all students older than a given age.
  + Print the average GPA, total credits hours and total number of courses for all students sorted by GPA.
  + Count the number of students having a specific grade in a specific course.
  + List all the students that took a specific course and count them.
  + List of faculty that taught a specific course.
  + Exit