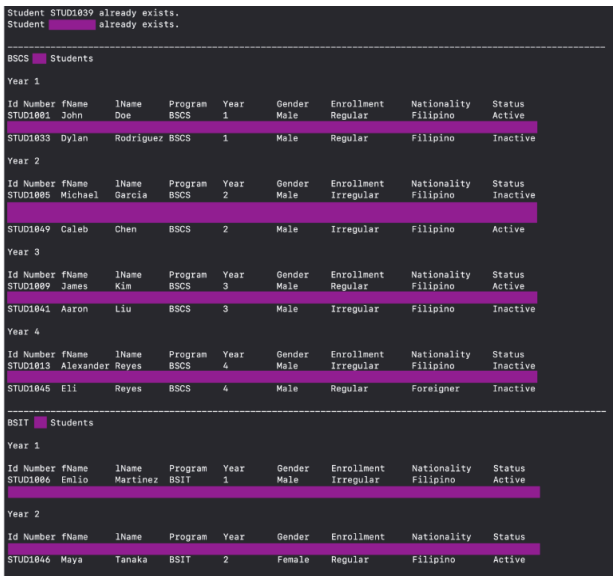
CIS2101 Data Structures and Algorithms
Midterm Exam - Practical
March 11, 2024

SET Structure	
typedef unsigned char personalInfo;	Each bit of the given set represents the personal information of the student: BITS 8 = Status: 0-Inactive, 1-Active 7 = Nationality: 0-Filipino, 1-Foreigner 6 = Enrollment Status: 0-Regular, 1-Irregular 5 = Gender: 0-Male, 1-Female 3-4 = Year Level: 00-1st, 01-2nd, 10-3rd, 11-4th 1-2 = Program: 00-CS, 01-IT, 10-IS, 11-MATH *For example:* *1001 1001 would represent an Active Regular 3rd Year Filipino Female IT Student*
Problem #1 Prototypes	
arrListStud populateStudentList(void);	Reads the file containing student records and returns student records to the calling function. PARTIAL CODE is provided.
void generateStudentFile(void);	Creates a file of student records.
char* getProgram(personalInfo I);	Returns the string equivalent of the program (BSCS, BSIT, BSIS, BSMATH) of the provided personalInfo.
int yearLevelHash(personalInfo I);	Returns the year level.
void displayArrListStud(arrListStud A);	Displays ID, Complete name, Program (Course) and year.

Expected Output for Problem #1 (other columns must also be displayed)
`Student Data from the file`
`Id Number fName lName`
`STUD1008 Olivia Hernandez`	

Problem #2 Prototype	
void initDCISMDict(dcismDict D);	Initializes the given dcismDict to be empty.
void convertToDCISMDict(dcismDict D, arrListStud SL);	Inserts the LIST of students in arrListStud to their proper place in the dcismDict.
void displayStudLL(studLL SL);	Displays the contents of a given studLL. PARTIAL CODE is provided.
void displayDCISMDict(dcismDict D);	Displays all the students in the dcismDict by program and year level. PARTIAL CODE is provided; Calls displayStudLL().
Expected Output for Problem #2	



Problem #3 Prototypes

studSet* removeInactiveStudents(dcismDict D);	Given dcismDict D, the function deletes student records that have the status "inactive" and place in an array of studSets. Deleted students will be stored in proper array of studSets based on their program (course). Array of studSets will be returned to the calling function.
void displayStudSets(studSet* S);	Displays the ID, Firstname and Lastname of inactive students for each program.

Expected Output for Problem #3