Worksheet # 1 (Optional and Ungraded) CIS2500 Winter2021

Submit a single file (either as txt, word or pdf file) with all your answers in the dropbox for W1. Name the file as lastnameFirstnameW1.txt (or lastnameFirstnameW1.pdf or lastnameFirstnameW1.docx).

Question 1: Assume you are given the following piece of code.

```
#define MAX_LEN_NAME 20

#include <stdio.h>
#include <string.h>
#include <stdlib.h>

typedef struct justATag {

  char name [MAX_LEN_NAME];
  char * supervisor;
  int numCoursesDone;
  float currentPercentage;
} gradStudent;
```

a. Declare a gradStudent called g1.

```
gradStudent g1;
```

b. Initialize g1 to the following: student named "Harry Dang", supervised by "Ria Jonas", has completed 3 courses with a current percentage of 87%.

```
strcpy(g1.name, "Harry Dang";
g1.supervisor = malloc(sizeof(char)*)strlen("Ria Jonas")+1));
strcpy(g1.supervisor, "Ria Jonas");
g1.numCoursesDone = 3;
g1.currentPercentage = 87.0;
```

c. Write the definition of a function called oneMoreDone - this function adds 1 to the number of courses done by Harry Dang, prompts the user to enter marks of the new course completed (max out of 100), and updates the currentPercentage accordingly. Think carefully to decide the prototype.

```
void oneMoreDone(gradStudent* g){
     float fl;

     printf("Enter the marks for the new subject:");
     scanf("%f", &fl);
     g->currentPercentage = (g->currentPercentage*g->numCoursesDone + fl)/(g->numCoursesDone + 1)
     g->numCoursesDone += 1;

}
```

d. Write the definition of a function called swapSupervisors that swaps the **supervisor names** of 2 grad students represented by g1 and g2 (assume g2 has also been initialized).

```
void swapSupervisors(gradStudent* g1, gradStudent* g2) {
     char temp[20];
     strcpy(temp, g1->supervisor);
     strcpy(g1->supervisor, g2->supervisor);
     strcpy(g2->supervisor, temp);
}
```

Question 2: Write a makefile that that uses the header file worksheet1.h and object files worksheet1_main.o , oneMoreDone.o, swapSupervisors.o and printGrad.o to create a target creates a target called worksheetW1. You may assume that all required source and object files are all stored in the current folder. File worksheet1_main.c has the main function, oneMoreDone.c has the function definition of function oneMoreDone, swapSupervisors.c has the function definition of function swapSupervisors and printGrad.c has the function definition of function printGrad. Function definition of printGrad is given as:

```
void printGrad (gradStudent g) {

   printf ("Name: %s\n", g.name);
   printf ("Supervisor: %s\n", g.supervisor);
   printf ("Number of Courses Done so far: %d\n", g.numCoursesDone);
   printf ("Current percentage: %.2f\n", g.currentPercentage);
}
```

```
main.o: main.c worksheet1.h
     gcc -Wall -std=c99 main.c -c

worksheetW1: printGrad.o oneMoreDone.o swapSupervisors.o main.o
     gcc -Wall -std=c99 main.o printGrad.o oneMoreDone.o swapSupervisors.o -o worksheetW1

printGrad.o: printGrad.c worksheet1.h
     gcc -Wall -std=c99 printGrad.c -c

oneMoreDone.o: oneMoreDone.c worksheet1.h
     gcc -Wall -std=c99 oneMoreDone.c -c

swapSupervisors.o: swapSupervisors.c worksheet.h
     gcc -Wall -std=c99 swapSupervisors.c -c

clean:
     rm *.o worksheetW1
```