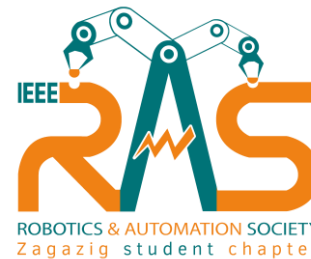


Embedded Systems Track

C Language

Arrays - Pointers



Assignment 1

- Arrays and pointers:
 - Write a program in C to count a total number of duplicate elements in an array.
 - Write a program in C to print all unique elements in an array.
 - Write C code that defines a function taking array as input argument and count the frequency of each element of an array.
 - Write a program in C to add numbers using call by reference.

Assignment 2

Write a C code that define 3 int variables x,y and z and 5 pointers to integers p,q and r. set distinct values to the three variables and set the addresses of the variables into the three pointers then apply the next:

- a- Print with labels the values of x, y, z, p, q, r, *p, *q, *r.
- b- Print the message: Swapping pointers.
- c- Execute the swap code: `r = p; p = q; q = r;`
- d- Print with labels the values of x, y, z, p, q, r, *p, *q, *r.

Assignment 3

Write a C code to check the type of the sign representation technique of your compiler

The Code sequence is:

- 1- Define an unsigned integer variable and assign to it -1
- 2- print the variable using %u specifier (%u used to print the unsigned values)
- 3- The printed variable shall be one of the following:

-> 0b10000000000000000000000000000001 (Decimal 2147483649) -> **Sign Magnitude**
-> 0b11111111111111111111111111111110 (Decimal 4294967294) -> **1's Complement**
-> 0b11111111111111111111111111111111 (Decimal 4294967295) -> **2's Complement**

Assignment 4

○ **Strings :**

- Write a program in C to input a string and print it.
- Write a program in C to separate the individual characters from a string.
- Write a program in C to compare two strings without using string library functions.
- Write a program in C to copy one string to another string.

Notes

- The objective of this assignment is to clearly understand and exercise concepts of arrays and pointers and to use them in functions implementations to deliver needed output
- Secondary objective is to get to know about strings and how to manipulate them in your code.
 - **NOTE !!!** this is one of the most important concepts to learn and apply in your drivers in upcoming stages so we will see string manipulation in next assignments again 😊

