# CSE108 – Computer Programming Laboratory

# (Spring 2021)

# Lab # 7

### April 30, 2021

**Hand-in Policy**: Via Teams. No late submissions will be accepted. File name that you submit should as following : StudentNo.c
**Collaboration Policy**: No collaboration is permitted.
**Grading**: This homework will be graded on the scale of 100.

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1. **int check_palindrome(int a[], int n):** Write a function that checks if a given array is a palindrome. The function will be called in the main function of your program. The main function will accept a set of numbers from the user. It will in turn call check_palindrome and print **"Your input is a palindrome",** or **"Your input is not a palindrome"** depending on the output. Your check_palindrome function must be **recursive**. You cannot use any additional arrays in your answer.
   Assume that the user cannot enter more than 50 numbers.
   **Hint:** Palindrome is a sequence that if reversed looks identical to the original sequence. For example, {1,1,2,3,2,1,1} and {10,10} are palindromes and {1,2,4,1,2} is not.

2. **int search_element(int arr[], int input_number):** Write a function that checks if an input number is in the given array and return 1 if so and 0 otherwise. You should write a simple test code as part of your main function such that a random integer array of 20 entries is generated and another random integer is sought in this array. You can generate your random numbers between 0 and 100. If you want to add different parameters for this function, it is okey. Your function must be **recursive**.

3. **float cos(int n, float x ):** Write a function implementing the cosine of a given value using the following formula:

$$cos(n,x) = (1 - \frac{x^2}{(2n-1)2n}(1 - \frac{x^2}{(2n+1)(2n+2)}(1 - \frac{x^2}{(2n+3)(2n+4)} \cdots (1 - \frac{x^2}{(2MAX-1)(2MAX)}(1)))))$$

   Write a simple test code as part of your main function. You can define MAX as a suitable number. Your function must be **recursive**.