

Lab – Exploring of CS

Plan for Today Lecture

- Function and array (cont.)
- Exercises
- Kahoot game
- Course revision
- Some info about the final examination

Exercise 1

- Write a program to:
 - Let user input 5 integer numbers
 - Find the largest number and smallest number among the five numbers using if, if else and nested if else statements.
 - Print out: "Smallest number is 1"
 - "Largest number is 9"

Exercise 2

- Write and run a program that:
- Lets user input a positive integer value for K a
- Computes $K! = 1 * 2 * 3 * \dots * (K-1) * K$
- Displays the result out. "The result is 190"

Exercise 3

- Write a program to:
 - Let user input 5 integer numbers
 - Find the middle number among the 5 numbers.
 - Print out: "The middle number is 3"
- Middle number: 2 8 4 3 6 -> 4
4 2 7 5 6 -> 5

Exercise 4

- The Fibonacci sequence is 0, 1, 1, 2, 3, 5, 8, 13,..., where the first two terms are 0 and 1, and each term thereafter is the sum of the two preceding terms, that is, $\text{Fib}_n = \text{Fib}_{n-1} + \text{Fib}_{n-2}$. Using this information, write a program that calculates the n th number in a Fibonacci sequence, where n is entered into the program by the user.
- The user input a number n
- Calculate the Fibonacci of n
- Print out: “Fibonacci of 3 is 2”

Exercise 5

- Write a C++ program to calculate the multiplication of two matrices \mathbf{a}_{ij} and \mathbf{b}_{jk}
- Let the user input the two matrices
 - How many rows of the matrix a: 2
 - How many columns of the matrix a: 3
 - Input a11:
 - Input a12:
 - Input a13:
 - Input a21:
 - Input a22:
 - Input a23:
- Calculate the multiplication of a and b
- Print out the result:
3 4 1
6 7 3

Exercise 6

- Write a C++ program to check a prime number using function
- Let enter a number: 5
- Number 5 is a prime
- Let enter a number: 4
- Number 4 is not a prime
- https://docs.google.com/forms/d/e/1FAIpQLSfKD4LYos-D5nlhAM1kJhkXbpYV_0sh5aEaD9f0560ndVFibQ/viewform?usp=sf_link

Exercise 7 – Chap 7

- Write recursive program to calculate the power of a number
- For example: $3^2 = 9$; $4^3 = 64$...
- Input a number: 3
- Input a power: 2
- The result of 3^2 is 9

Exercise 8 – Chap 7

- Write a program to sort an array a by using a recursive function and pass the array to the function (Merge sort)
- Input the length of array: 5
- Input 1th element: 3
- Input 2th element: 6
- Input 3th element: 1
- Input 4th element: 5
- Input 5th element: 2
- The sorted array is: 1 2 3 5 6

Exercise 9 – Chap 7

- Write a program to find the most occurring number in an array of integers
- How many numbers? 5
- Input number 1: 9
- Input number 2: 3
- Input number 3: 9
- Input number 4: 3
- Input number 5: 1
- The most occurring number are: 9, 3

Exercise 10 – Chap 7

- Write a program to check whether the given element is present or not
- How many numbers? 5
- Input number 1: 9
- Input number 2: 3
- Input number 3: 7
- Input number 4: 3
- Input number 5: 1

- Which number you want to check: 5
- The number is not present