



## Data structure and Programming II

### TP04: Pointer

- Objective:
  - To practice using basic pointer variable
  - Apply C++ programming
- Individual work
- Submit to Moodle (do not zip)
  - A pdf report (cover, exercise and solution with screenshot)
  - Source codes

**Deadline:**  
6 days

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#### Write C++ programs to implement pointer variable:

1. Write a C++ program to create three integer numbers n1, n2 and n3. Assign values of 7, 3, 15 to n1, n2 and n3, respectively. Next create three pointer variables p1, p2 and p3, where p1 points to n1, p2 points to n2 and p3 points to n3.
  - a. Display the address and value of n1, n2, and n3 using the pointer variables p1, p2 and p3.
  - b. Update the value of n3 using p3. The value of n3 now should be the sum of n1 and n2.

2. Write a C++ program to get a number, say n, from a user. Then modify the value of n to n+7 using a pointer variable.

Remark: You are not allowed to use  $n=n+7$ . Use pointer operation instead.

3. Write a function in C++ program to exchange two numbers. These two variables are passed through parameters of the function using pointer.

```
void exchange(float *a, float *b)
```

4. Write a function to solve this quadratic equation  $ax^2 + bx + c = 0$ , where a is not equal to 0. Store values of x1, x2 and delta using the parameters given to the function. The prototype of this function is defined by:

```
void solveEquation(int a, int b, int c, float *x1, float *x2, float *delta)
```

5. Write a C++ program to ask a user for 7 integer numbers and store in an array. Then write a function that can find min and max values from this array. You are recommended to use pointer. Pass your max and min variable as reference via function parameter.

The prototype of this function is defined by:

```
void findMaxMin(int number[ ], int *max, int *min)
```

6. Write a C++ program to ask a user for 7 float numbers and store in an array. Create a pointer variable and let it reference to the array.

- a. Display all numbers stored in array by using another pointer variable. Let's loop through array.
- b. Compute the summation and multiplication of all numbers in this array using pointer operation.

**REMARK:** You are not allowed to access element in array using the bracket [ ]. You are required to use pointer operation.

7. Write a C++ program which calculates the sum of  $1/12 + 1/22 + 1/32 + \dots + 1/n^2$ , where n is a positive integer. The program calls to a function that can calculate the sum above. The prototype of this function is as followed:

```
void sum1(double *sum, int n)
```

See a sample code on the right.

```
#include<iostream>
using namespace std;

void sum1(double *sum, int n){
    //your codes
}

main(){
    double result;

    sum1(&result, 5);
    cout<<result<<endl;
}
```