Preliminary Task Provisions

- **THE ANSWER ARE TYPED NEATLY** and **ATTACH THE SCREENSHOT OF THE CODE AND THE OUTPUT FOR ALGORITHM QUESTION**
- Print the answer and paste it on B5 notebook. Write your identity on the cover of the notebook.
- PT is **MANDATORY, IF YOU DON'T DO THE PT THEN YOU ARE NOT ALLOWED TO ATTEND PRACTICUM**
- **SUBMIT WITHOUT ANSWER = NOT ALLOWED TO ATTEND PRACTICUM.**
- **PT BOOK MUST BE BROUGHT AS A REQUIREMENT TO ATTEND PRACTICUM**
- Deadline : Monday, 27 January 2020, 08.03 WIFLAB
- **THERE IS NO TOLERANCE FOR LATE SUBMIT**
- **PLAGIARISM IS NOT ALLOWED**
- Work with the PT clearly to make it understandable
- For every algorithm questions, you must include **NAME** and **SID** as follows.
- For every algorithm questions, insert your **SID** to filename **(Example : header_130416XXXX.h)**
- **FILENAME UPLOAD ONLINE : MODX_NIM_CLASS.rar/zip**

```
int example (int a, int b) {

  /*

  Name : Ichi Ocha
  NIM : 1301123456

  */
```

HOME WORK - MODULE 01

REMEMBER, DO THIS YOURSELF

PROGRAMMING IS NOT A SKILL THAT YOU CAN JUST READ AND MAGICALLY BE ABLE TO DO IT

PROGRAMMING AND LOGIC IS ALL ABOUT PRACTICE

What to do

1. Install codeblock
2. Create a c++ console project
3. Add new Header file, and name it hello.h
4. Add new C/C++ Source file, and name it hello.cpp
5. Write the codes below in hello.h file

hello.h

```
1   #ifndef HELLO_H_INCLUDED
2   #define HELLO_H_INCLUDED
3
4   #include <iostream>
5   #include <cstdlib>
6
7   using namespace std;
8
9   void greetings(string x, string y);
10  void swap_1(int a, int b, int c);
11  void swap_2(int a, int &b, int &c);
12  void confused();
13  void remove_inside(int);
14  string indexing(double, double, double);
15  #endif // HELLO_H_INCLUDED
16
```

6. Write the codes below in hello.cpp file

hello.cpp

```
#include "hello.h"

void greetings(string x, string y) {
    if(y.length() != 10) {
        cout<<"wrong input"<<endl;
    } else {
        if(y.substr(0,2)=="13") {
            cout<<"hello "<<x<<" from School of Computing."<<endl;
            cout<<"you are majoring in ";
//            int z = static_cast<int>(y[3])-48;
            const char *p = y.substr(3,1).c_str();
            int z = atoi(p);
            switch (z) {
            case 1 :
                cout<<"Informatics";
                break;
            case 2 :
                cout<<"Computation Science";
                break;
            case 3 :
                cout<<"Information Technology";
                break;
            default:
                cout<<"..., where again?";
            }
            cout<<endl;
            cout<<"and you're the ";
            string n = y.substr(6,4);
            if(n[3]=='1') {
                cout<<n<<"st";
            } else if(n[3]=='2') {
                cout<<n<<"nd";
            } else {
                cout<<n<<"th";
            }
            cout<<" student listed in this major"<<endl;
            cout<<"in "<<"20"+y.substr(4,2)<<endl;
        } else {
            cout<<"hello, you're not from School of Computing, "
            <<"are you?"<<endl;
        }
    }
}
```

hello.cpp

```
44
45  void swap_1(int a, int b, int c) {
46      c = b;
47      b = a;
48      a = c * b++;
49  }
50
51  void swap_2(int a, int &b, int &c) {
52      c = b;
53      b = a;
54      a = c * b++;
55  }
56
57  void confused() {
58      int x1 = 5;
59      int x2 = 5;
60      int x3 = 5;
61
62      int *pA;
63      int *pB;
64      int *pC;
65      int *pD;
66      int *pE;
67
68      pA = &x1;
69      pB = &x2;
70      pC = pB;
71      pD = pC;
72      pE = pB;
73      pB = &x3;
74      *pD = 10;
75      pC = &x1;
76      *pE = x2 - *pA;
77      cout<<"pA = "<<*pA <<", pB = "<<*pB <<", pC = "
78      <<*pC <<", pD = "<<*pD <<", pE = "<<*pE<<endl;
79  }
```

hello.cpp

```
80
81  void remove_inside(int x) {
82      cout<<"removing index "<<x<<endl;
83      int arr[] = {4,6,7,9,4,6,8,4,2,2,5,8,0,4};
84      int n = sizeof(arr)/sizeof(arr[0]);
85      for (int i = 0; i<n; i++) {
86          cout<<arr[i]<<", ";
87      }
88      cout<<endl;
89
90      if(x>0&&x<n) {
91          while(x<n) {
92              arr[x++] = arr[x];
93          }
94          n--;
95          for (int i = 0; i<n; i++) {
96              cout<<arr[i]<<", ";
97          }
98          cout<<endl;
99      } else {
100         cout<<"wrong input"<<endl;
101     }
102 }
103
104 string indexing(double x, double y, double z) {
105     double t = x*.4 + y*.35 + z*.25;
106     if(t > 80)
107         return "A";
108     if(t > 75)
109         return "AB";
110     if(t > 70)
111         return "B";
112     if(t > 60)
113         return "BC";
114     if(t > 50)
115         return "C";
116     if(t > 40)
117         return "D";
118     return "E";
119 }
```

7. Write the codes below in main.cpp file
   Modify the codes according to the instruction on the image

main.cpp

```
#include "hello.h"

int main() {
    cout<<"Test procedure Greeting"<<endl;
    string name = "xx"; /** <-- Change this to your name*/
    string id = "xx";   /** <-- Change this to your student id (NIM)*/
    greetings(name, id);
    cout<<"please answer Question 1"<<endl<<endl;

    cout<<"Test procedure swap_1 and swap_2"<<endl;
    int a = 15;
    int b = 30;
    int c = 75;
    swap_1(a,b,c);
    cout<<"a = "<<a<<", b = "<<b<<", c = "<<c<<endl;
    a = 15;
    b = 30;
    c = 75;
    swap_2(a,b,c);
    cout<<"a = "<<a<<", b = "<<b<<", c = "<<c<<endl;
    cout<<"please answer Question 2"<<endl<<endl;


    cout<<"Test procedure confused"<<endl;
    confused();
    cout<<"please answer Question 3"<<endl<<endl;

    cout<<"Test procedure remove inside"<<endl;
    remove_inside(5);
    cout<<"please answer Question 4"<<endl<<endl;

    cout<<"Test procedure indexing"<<endl;
    cout<<"example 1 : "<<indexing(70, 75, 60)<<endl;
    cout<<"example 2 : "<<indexing(45, 70, 50)<<endl;
    cout<<"example 3 : "<<indexing(75, 80, 82)<<endl;
    cout<<"please answer Question 5"<<endl<<endl;

    return 0;
}
```

8. Run your project, and observe the results
9. Read carefully the questions below, then write down the answer in your answer book

Questions

1. Define and explain what did the procedure greetings do? What kind of process happen inside it?
2. Explain what happen inside procedure swap_1 and swap_2, and explain why the result is different!
3. From procedure confused, write down which variable (x1, x2, or x3) each pointer pA, pB, pC, pD, and pE is pointing?
4. Explain what happen inside procedure remove_inside! Write the detailed process of each process!
5. Explain what happen inside procedure indexing! Write the detailed process of each process!