Data Structures and Algorithms
Homework 01[1]

Note: You are required to submit your answer in *hand-written* form at the beginning of the next lecture.

Question 1.
What does the following code do?

```
int** a;
a = new int*[m];
for (int i = 0; i < m; i++)
    a[i] = new int[n];
for (int i = 0; i < m; i++)
    for (int j = 0; j < n; j++)
        cin >> a[i][j];
```

Question 2.
Consider the following program. What are values of variables value1 and value2 after executing the program?

```
#include <iostream>
int main () {
    int value1 = 0, value2 = 1;
    int *p1, *p2;
    p1 = &value1;
    p2 = &value2;
    *p1 = 10;
    *p2 = *p1;
    p1 = p2;
    *p1 = 20;
    return 0;
}
```

Question 3.
Read Bitbucket mini guide. Create your own Bitbucket account and a project named 'test' and learn how to use them. You should submit your account name as the written answer of this homework question. In addition, you will have to present your account to your lab instructor during the first lab section next week. You will be using this account to submit all your lab exercises.

Question 4 (optional).
Define Complex class for representing complex numbers. A complex number is of the form a + ib, where a and b are real numbers, and i is the standard imaginary unit with the property $i^2 = -1$. Followings are standard operators on complex numbers:

```
(a + ib) + (c + id) = (a + c) + i(b + d)
(a + ib) – (c + id) = (a - c) + i(b - d)
(a + ib) * (c + id) = (ac – bd) + i(bc + ad)
```

Write member functions of Complex class for the above mentioned operators.

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[1] *Adapted from Pham Bao Son's DSA-09s2*