C201 Homework 3
Submission: Print out the source code and the output for all three questions.

1. What will be the output of the following program?

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

int main()
{
    int * d = new int;
    *d = 5;
    int * n = new int [*d];

    for (int i=0; i<*d; i++)
    {
        *(n+i) = (i+1)*(i+1);
    }

    for (int i=0; i<*d; i++)
    {
        cout << n[i] << "\t";
    }
    cout << "\n";
    delete d;
    delete[] n;

    return 0;
}
```

2. Complete the following programs so that the main program can exchange the contests of two c-strings
(a)

```cpp
#include <iostream>
using namespace std;
void exchange(char * &a, char * &b);

int main()
{
    char str1[] = "Hello";
    char * s1 = str1;

    char str2[] = "Bye Bye";
    char * s2 = str2;

    //call function exchange, one line of code goes here

    cout << "s1 = " << s1 << endl; //"Bye Bye" should be displayed
    cout << "s2 = " << s2 << endl; // "Hello" should be displayed

    system("pause");
    return 0;
}
```
void exchange(char * & p1, char * & p2)
{
    //Implement function exchange
    //your code goes here
}

(b)
#include <iostream>
using namespace std;

void exchange(char **, char **);

int main()
{
    char str1[] = "Hello";
    char * s1 = str1;

    char str2[] = "Bye Bye";
    char * s2 = str2;

    //call function exchange, one line of code goes here
    cout << "s1 = " << s1 << endl;  //"Bye Bye" should be displayed
    cout << "s2 = " << s2 << endl;  //"Hello" should be displayed

    system("pause");
    return 0;
}

void exchange(char ** p1, char ** p2)
{
    //Implement function exchange
    //your code goes here
}

3. Complete a program about two-dimensional array. Your job is to complete the main function and two other functions, int maximum(int ** x, int m, int n) and double average(int ** x, int m, int n). The description of the program can be found in the partially written program that is available at

http://www.cs.iusb.edu/~yul/C201/source/hw3.cpp

The executable is available at
http://www.cs.iusb.edu/~yul/C201/source/hw3.ex

Note: Your functions should be robust enough to deal with any general integer arrays, not just the arrays created in this program.