

C++ Online A1

Write a C++ class “Matrix” encapsulating a two-dimensional integer matrix object. The class should have the following member functions

1. A **constructor** which takes two integer arguments (number of row and number of column) and is responsible for necessary memory allocation (you should use malloc () and free () function for memory allocation).
2. A **destructor** with the responsibility of freeing memory
3. A **print** function with the responsibility of displaying matrix
4. A **set** function which takes three integer arguments (row, column, value) with the responsibility of setting the values of a matrix element.
5. A **get** function which takes two integer arguments (row, column) with the responsibility of returning the values of a matrix element.
6. An **add** function which takes an integer argument (n) which is added with each element of the matrix encapsulated by the object accessing add function
7. Another overloaded **add** function which add all the element of the matrix encapsulated by the object accessing add function and return the sum

You can use the following main function

```
int main()
{
    cout<<"Hello World"<<"\n";
    Matrix m(3,3);
    for(int i=0; i<3; i++)
        for(int j=0; j<3; j++)
            m.set(i,j,i+j);
    m.print();
    cout<<m.get(0,0)<<"\n";
    m.set(0,0,100);
    cout<<m.get(0,0)<<"\n";
    m.add(100);
    m.print();
    cout<<m.add()<<"\n";
    return 0;
}
```

Your output should be like the following:

```
Hello World
0 1 2
1 2 3
2 3 4
0
100
200 101 102
101 102 103
102 103 104
1018
```