

Assignment 2

Question 01: Given below is the definition of the class Project and two objects of the same class. Draw the serialized form of the object. **Apply** Java Object Serialization procedure. Use 8 byte version. (CLO-1)

```
public class Project implements Serializable {
    private String projID;
    private String title;
    private unsigned int duration; // in weeks
    private float budget; // in millions
    public Project (String a, String b, unsigned int c, float d) {
        projID = a; title = b;
        duration = c; budget = d; } }
Project p1 = new Project("E-46", "Examination System", 24, 2.5);
Project p2 = new Project("F-22", "Fee Collection", 20, 2.0);
```

Question 02: **Explain** how the following code snippet can potentially cause a deadlock, and propose a solution to prevent this problem. (CLO-2)

```
#include <iostream>
#include <thread>
#include <chrono>
#include <mutex>
using namespace std;

void deadlock(mutex& m1, mutex& m2) {
    m1.lock();
    cout << "Thread acquired m1" << endl;
    this_thread::sleep_for(chrono::milliseconds(100)); // Simulate some work
    m2.lock();
    cout << "Thread acquired m2" << endl;
    m1.unlock();
    m2.unlock();
}

int main() {
    mutex mut1, mut2;
    thread t1([&] { deadlock(mut1, mut2); });
    thread t2([&] { deadlock(mut2, mut1); });

    t1.join();
    t2.join();

    return 0;
}
```