

# Programming Design, Spring 2016

## Suggested Solution for Homework 10

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### Problem 1

- (a) The class `Course` has a pointer member variable. If we use the default constructor, it will implement shallow copy and the pointer will be assigned to the same memory space.

The copy constructor implementation is the following:

```
Course :: course(const course &c){
    id = c.id;
    credit = c.credit;
    name = new char [strlen(c.name)];
    strcpy(name, c.name);
}
```

- (b) By using pointer, we can easily trace back to the `Course` object. Instead search every object if we use `int` to store the course information.

If we replace the `Course` pointer to `int`. The program will be easier to write and easier to understand but once we want to find the course, we need to spend more time by looking through all the course objects.

- (c) If we replace `Course* ptrCourse` with `Course course`, we have to copy the `Course` object every time we want to create a new `CourseGrade` object. It will be very difficult if we want to modify the `Course` object, because we will have to modify all the objects.

### Problem 2

Please see the attached CPP file.

### Problem 3

Please see the attached CPP file.