

Sample Question 1:

It was discussed in class lectures that a class should be dependent on abstract classes. Write at least two benefits of having dependency on abstract classes and two drawbacks of being dependent on concrete classes

Sample Question 2:

When do you perform shallow copy and deep copy of objects?

Sample Question 3:

Recall the Proxy design pattern where there are three necessary types of classes implemented: the real class, the proxy class, and their abstract class. Explain in your own words, which classes have references and objects of these classes

Sample Question 4:

Design classes for string searching algorithms, namely Knuth-Morris-Pratt, Rabin-Karp, Boyer-Moore and Brute Force. Write suitable names for these classes as well their abstract class. Write methods of each of these classes with parameters and return types. Write a short code for the client side how string searching will be initiated

Sample Question 5:

Recall the Visitor pattern discussed in lecture sessions. There were three Employee Types: General Employees, Managers and Directors. One of the benefits to employees is Club Benefits where employees can avail the membership of one of the social clubs. However, this benefit is not applicable to General Employees. How do you implement the Visitor class for Club Benefits for General Employees? Sample code is given below:

```
public class ClubVisitor : Visitor {
    public void VisitGeneralEmployee(GeneralEmployee generalEmployee) {
    }
    public void VisitManager(Manager manager) {
    }
    public void VisitDirector(Director director) {
    }
}
```

Sample Question 6:

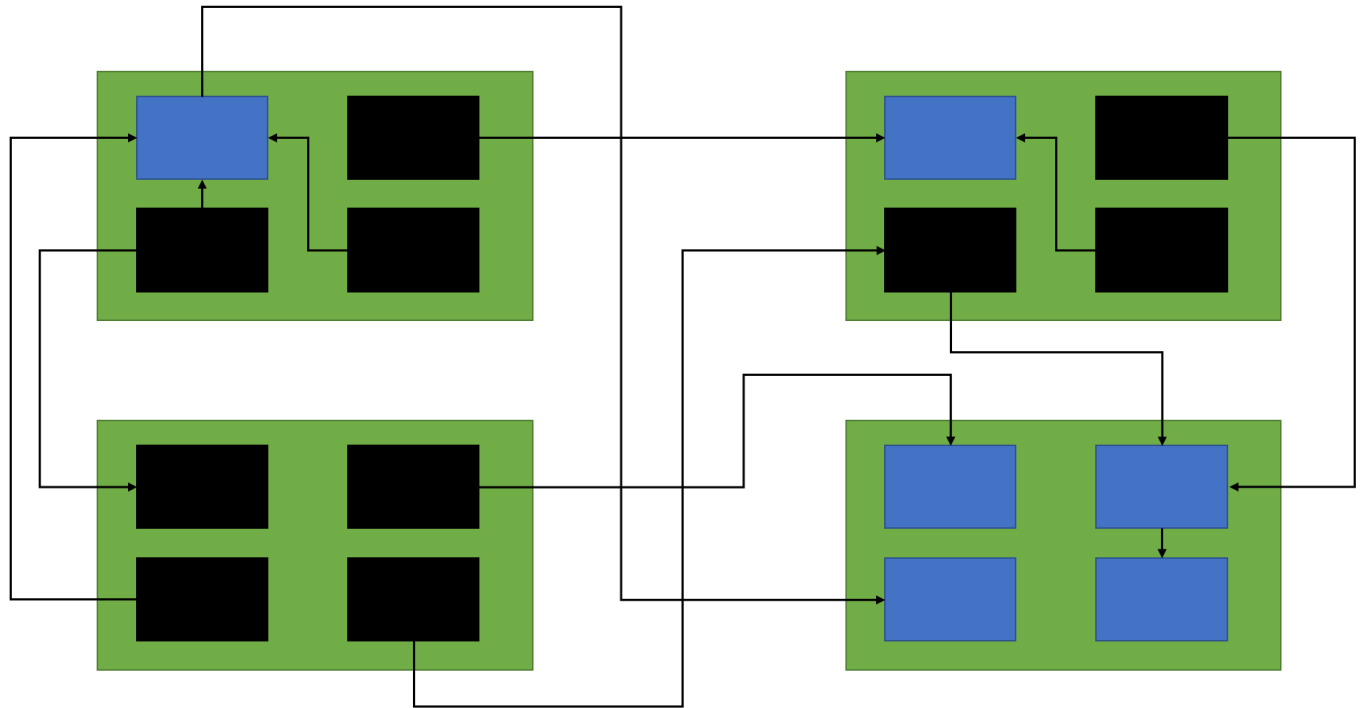
There are mainly 2 types of tables in relational databases from data modeling standpoint: A) the ones which are created through fundamental entities and B) the ones which are created through associative entities. Fundamental entities are the victim of constant design changes which in general affect the data models in software applications. Provide a solution which protects these tables from changes such as adding new columns or removing existing columns. Your solution must have a strong reason. It is also a legitimate answer that there is no solution if you have a strong reason to defend your statement

Sample Question 7:

The Decorator Pattern strictly follows the Open Close Principle. Explain with reasons if this statement is true or false?

Sample Question 8:

Consider the Package Dependency Graph given below. Calculate the Instability and Abstractness of each package. Also determine whether the package lies on the Main Sequence or in the Zone of Pain or in the Zone of Uselessness. Is it overall a better package design? Green: Packages, Black: Concrete Classes, Blue: Abstract Classes.



Sample Question 9:

Discuss the differences by indicating performance and usability of 3 different ways of implementing Unit of Work pattern: Caller Registration, Object Registration and Unit of Work Controller.

Sample Question 10:

What are the key differences among Active Record, Row Data Gateway and Data Mapper patterns?

Note: Answers will be provided later today!!!