**Assumption**

1. GoodHealth Fitness Corporation’s Member ID will not same as GrantFitness Corporation’s Client ID and their ID must be unique.
2. MemberCare and ClientCrotrol have an association to member and client use for saving their records.
3. The phone number should be number only.

**Design Pattern Description**

Adapter pattern:

We have used to support the operation between the two companies GoodHealth Fitness Corporation and GrantFitness Corporation.

It is because the member and client do not fit exactly to that of the new company side. Adapter pattern works as a bridge between two incompatible interfaces that it can translates between the member and client. Also we don't have to modify neither existing one.

Command pattern:

We have used to provide the functions of "create member", "display member details", "add hours", "spend hours", "change phone number", "undo", "redo", "list undo/redo" and "quit system".

The Command Pattern is used for store a list of functions that it will execute later. Also, the Command Pattern hides the details of the functions that need to be performed, so that the function do not need to be concerned about the details when it needs to execute the function.

Factory pattern:

We have used to create all command objects.

It is because the Factory pattern is used is that it introduces a separation between the application and a family of classes. It provides a simple way of extending the family of products with minor changes in application code.

It provides customization hooks. When the objects are created directly inside the class it's hard to replace them by objects which extend their functionality. If a factory is used instead to create a family of objects the customized objects can easily replace the original objects, configuring the factory to create them.

Memento pattern:

We have used to support the functions of "undo" and "redo" for "add hours", "spend hours" and "change phone number ".

It is because the Memento pattern can store the source object and retrieve information. Also, it can rollback the source object's state, it hands the Memento back to the source object for reinstatement.