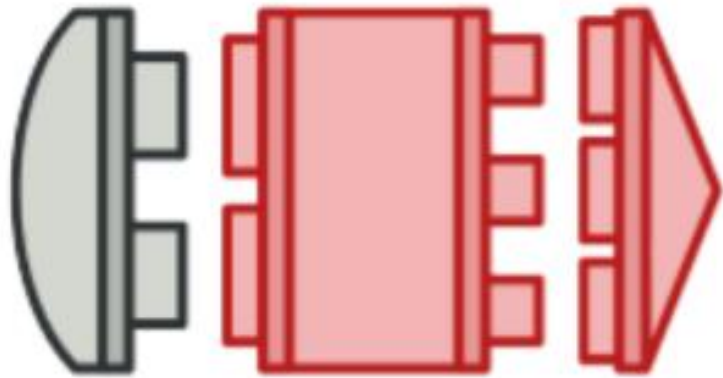**PareDox**
Education Solutions

Problem Solving Programming

Design Patterns

Aamir Shabbir Pare

Adapter Pattern

Provides a unified interface that allows objects with incompatible interfaces to collaborate.

Aamir Shabbir Pare

Basic Concept

- The Adapter pattern converts the interface of a class into another interface that clients expect. It lets classes work together that could not otherwise because of incompatible interfaces

- Leveraging on Adapter Pattern improves reusability of older functionality.

- Allow incompatible classes to interact with each other by converting interface of one class into other expected by the clients.

Real World Concept

- Electrical outlet adapter/AC power adapter in international travels.
- A Laptop that accepts US power supply, can be plugged into a European power outlet.
- USB Adapter for external HDD with SATA interface.
- C-Type USB adapter for Cell phone chargers
- The same goes with applications with incompatible interface.
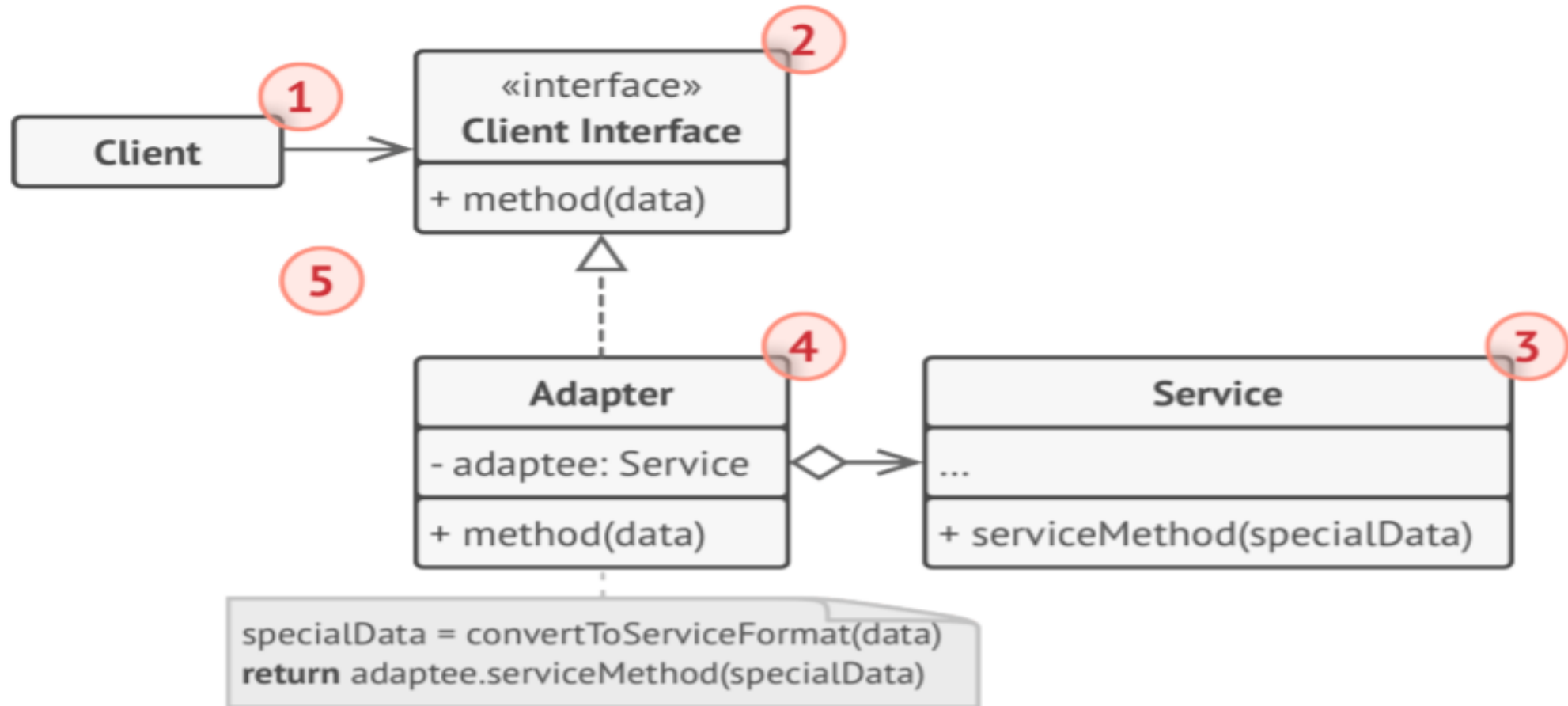
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Computer World Concept

- Application broadly classified into two parts: UI (font end) and database (back end)

- Client pass specific data object through UI

- Database works smoothly with the old functionality.

- Over a period, the new changes occurred, clients want pass some other objects but database rejects because of incompatibility.

- In this case the Adapter pattern will solve the problem

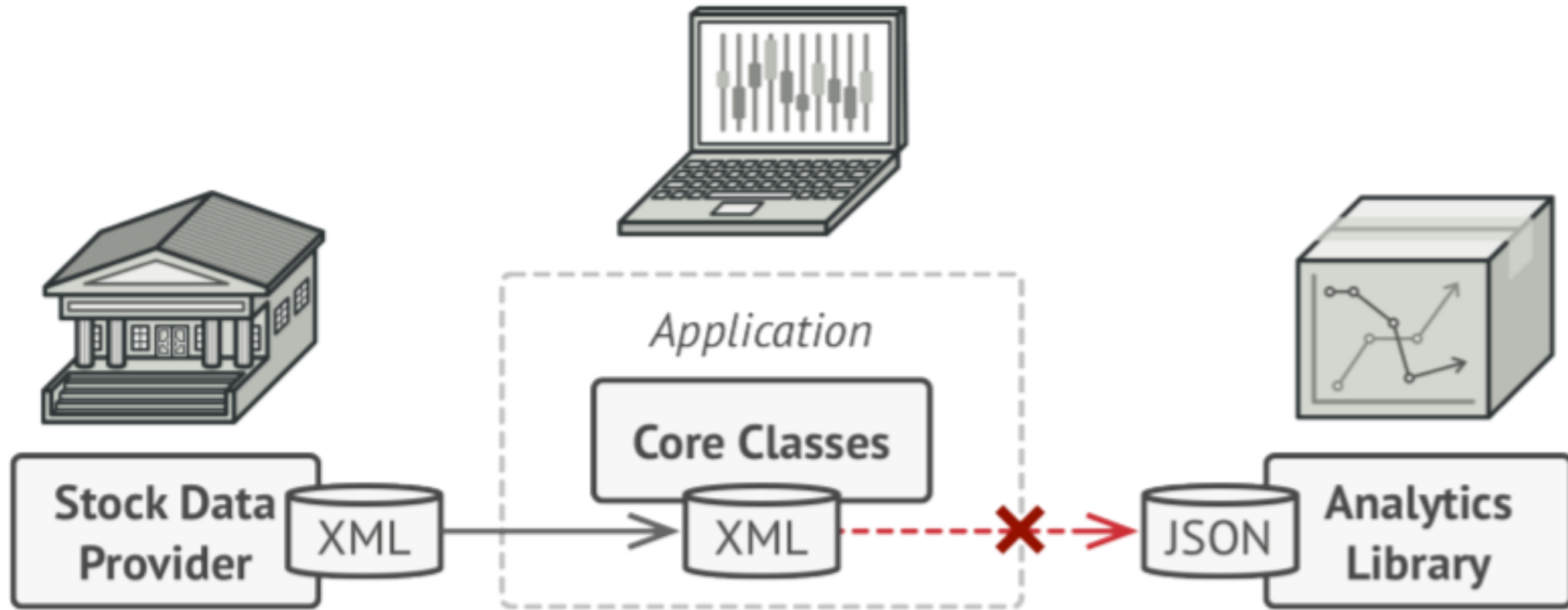Aamir Shabbir Pare

Adapter Structure

Structure Detail

- The **Client** is a class that contains the existing business logic of the program.

- The **Client** Interface describes a protocol that other classes must follow to be able to collaborate with the client code.

- The **Service** is some useful class (usually 3rd-party or legacy). The client can't use this class directly because it has an incompatible interface.

- The **Adapter** is a class that's able to work with both the client and the service: it implements the client interface, while wrapping the service object. The adapter receives calls from the client via the adapter interface and translates them into calls to the wrapped service object in a format it can understand.

- The client code doesn't get coupled to the concrete adapter class as long as it works with the adapter via the client interface.
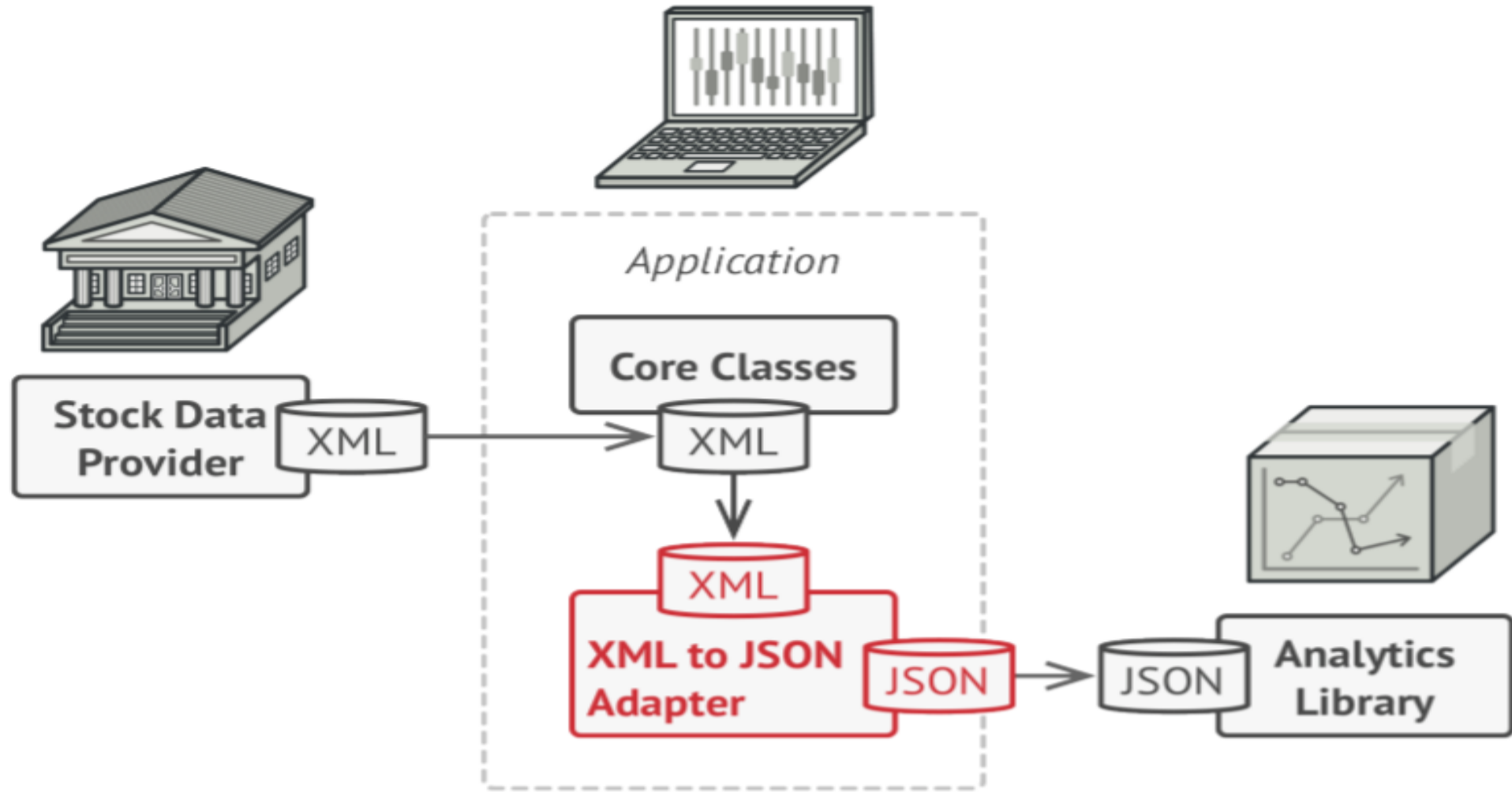
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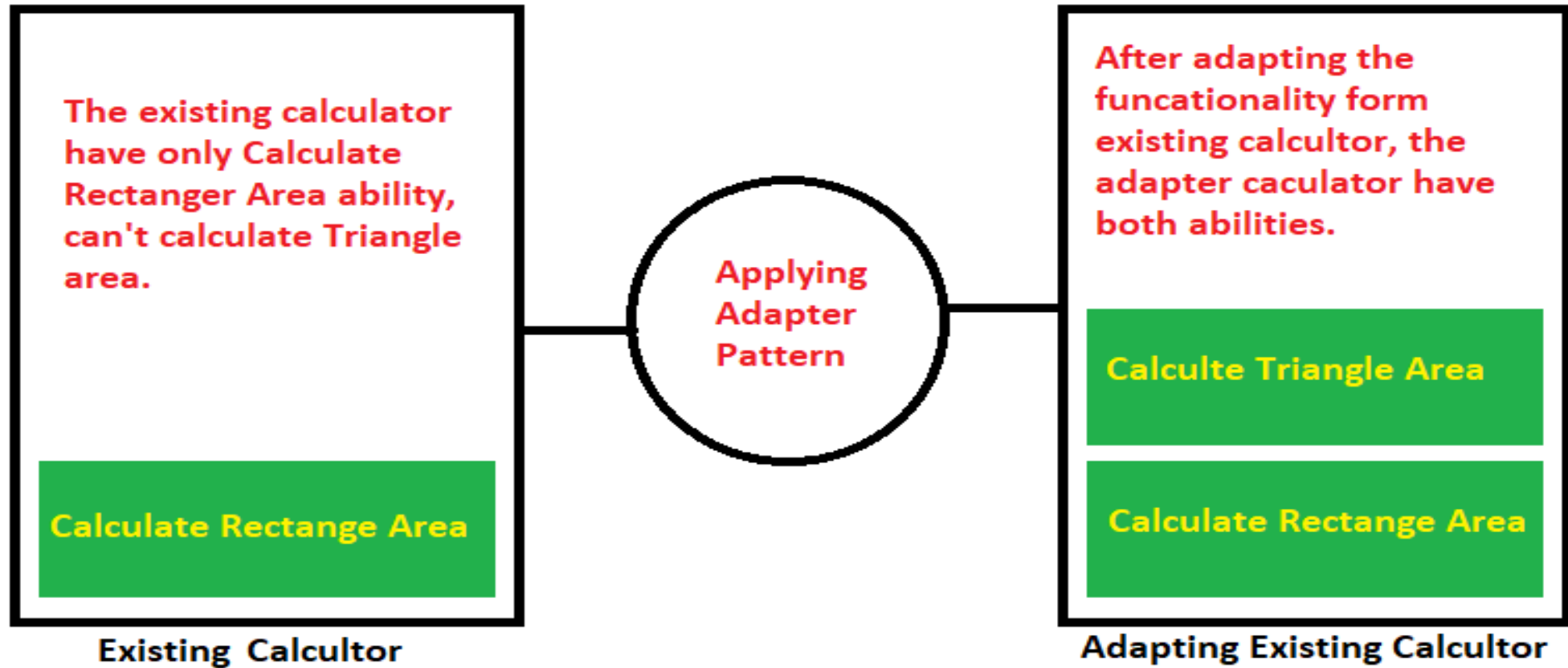
A Stock Market Problem

You can't use the analytics library "as is" because it expects the data in a format that's incompatible with your app.
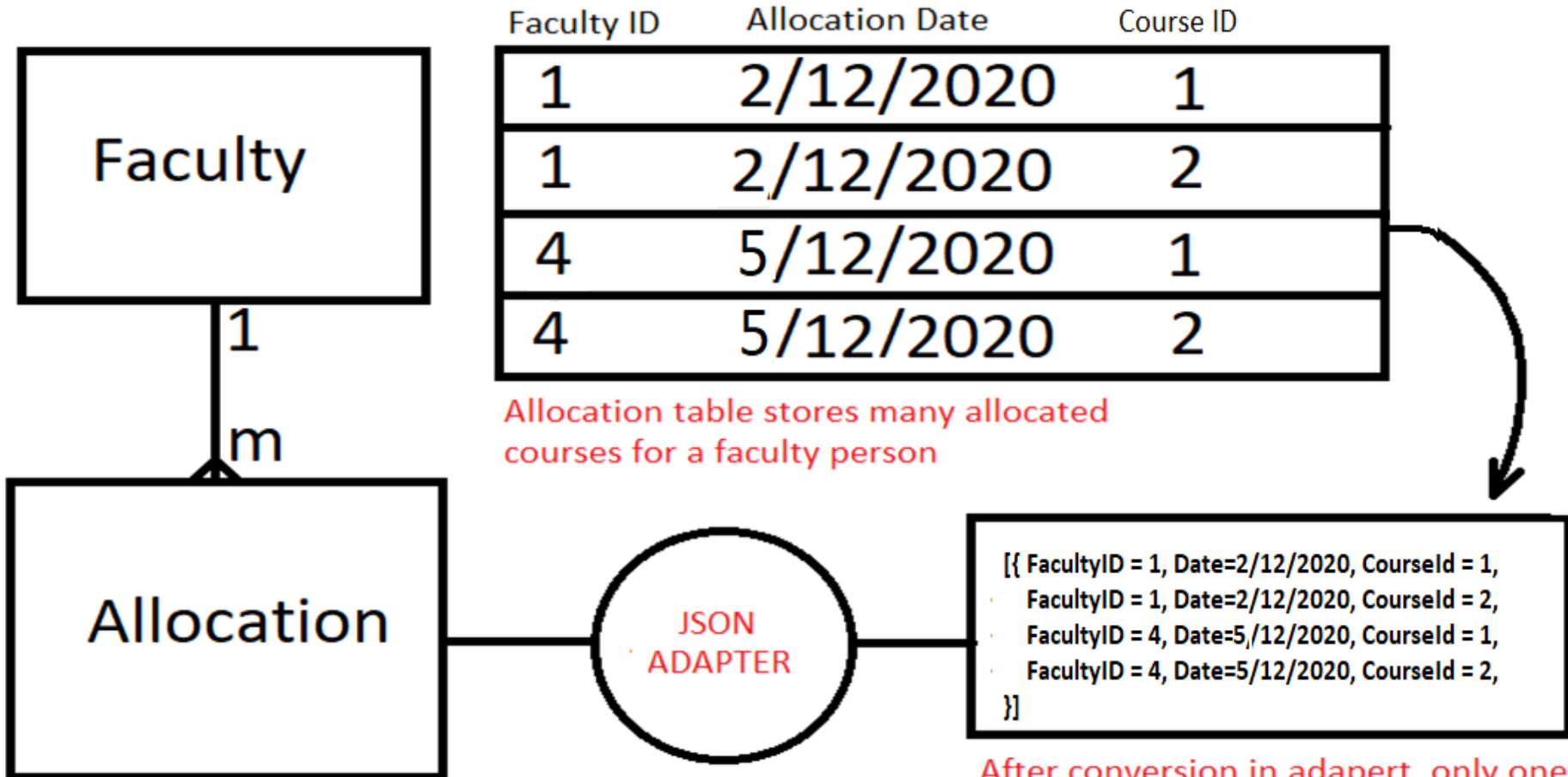
A Stock Market Solution

A Calculator Example of Adapter

The existing calculator have only Calculate Rectanger Area ability, can't calculate Triangle area.

Applying Adapter Pattern

After adapting the funcationality form existing calcultor, the adapter caculator have both abilities.

Calculate Rectange Area

Calculte Triangle Area

Calculate Rectange Area

Existing Calcultor

Adapting Existing Calcultor

CALCULATOR ADAPTER EXAMPLE

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A Database Example of Adapter

ADAPTER DATABASE EXAMPLE

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