Bangladesh University of Engineering and Technology
Department of Computer Science and Engineering
CSE308: Software Engineering Sessional
July 2022 Semester

Online-3 on Structural Design Patterns

Date: February 28, 2023

Problem Statement

Suppose that **aKash** is a digital wallet service, operating in Bangladesh. A user needs to provide his/her *national identity (NID) number* and an *initial deposit of ৳1,000 (one thousand taka)* to open an account with aKash. This application lets a user check his/her current balance, send money to, and receive money from another aKash account. Likewise, **PayFren** and **D-Harai** are two digital wallet services, operating mainly in the United States of America (USA) and Japan, respectively. A user needs to provide his/her *social security number (SSN)* and an *initial deposit of $10 (ten dollars)* to open an account with PayFren. On the other hand, a user needs to provide his/her *kojin bango (individual number)* and an *initial deposit of ¥1,500 (one thousand five hundred yen)* to open an account with D-Harai. Both applications offer similar functionalities to their users as aKash.

Now, the CEO of aKash has asked you to extend the design and implementation of aKash in order to enable digital transactions with PayFren and D-Harai accounts. You have to implement the necessary classes, following an appropriate design pattern, to capture the scenario above. For the sake of simplicity, you may assume that ৳1 (one taka) is equivalent to $0.01 (0.01 dollar) and ¥2 (two yen).

For further clarification, you may consider the following outputs.

```
NID0: Sending 500 taka to aKash account (NID1)... Current balance 500 taka...
NID1: Received 500 taka from aKash account (NID0)! Current balance 1500 taka...

SSN0: Sending 5 dollars to PayFren account (SSN1)... Current balance 5 dollars...
SSN1: Received 5 dollars from PayFren account (SSN0)! Current balance 15 dollars...

KB0: Sending 1000 yen to D-Harai account (KB1)... Current balance 500 yen...
KB1: Received 1000 yen from D-Harai account (KB0)! Current balance 2500 yen...

SSN0: Insufficient balance to send 10 dollars to aKash account (NID0)...

SSN0: Sending 2 dollars to aKash account (NID0)... Current balance 3 dollars...
NID0: Received 200 taka from PayFren account (SSN0)! Current balance 700 taka...

NID1: Sending 500 taka to D-Harai account (KB1)...
KB1: Received 1000 yen from aKash account (NID1)! Current balance 3500 yen...
```