

## Final Project Design

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### Summary:

The project is a currency exchange game that find the possible way to earn profits by exchange different currency. The user will choose a currency they want as the start sources, enter the number of the currency they want in the exchange cycle and the amount they have of the start sources. The program will run based on the bellman-ford algorithm.

In the end, the most profitable cycle will display with the final amount they got. If there is no profitable cycle, the less lost solution will display.

### Description:

The user can choose the source currency, enter the amount of the money of the source currency, and enter the number of the currency they want to get in the exchange cycle. (It can be 1 to 10). The program will suggest and show the top 3 most beneficial exchange combinations using the source currency as head.

### Design Pattern:

Visitor. As we used it in the graph traversal.

### Class Diagram:

CurrencyAPI
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+ParseCurrencyJason(String jsonResponse):CurrencyInfo +createUrl(String baseCurrency):String +makeAPICall(URL url):String

Currency <<Interface>>
+CurrencyInfo(String name) +add(String currency, Double rate): void +remove(String currency): void +remove(String currency, Double rate): void +getSize(): int

CurrencyInfo
+String name +HashMap<CurrencyInfo, Double> children
+CurrencyInfo(String name) +add(String currency, Double rate): void +remove(String currency): void +remove(String currency, Double rate): void +getSize(): int

FindProfitCycle <<Interface>>
+findCycle(int currencyNum, CurrencyInfo[]info): ArrayList<ArrayList<CurrencyInfo>>

FindCycleProfit
ArrayList<ArrayList<CurrencyInfo>>
+findCycle(int currencyNum, CurrencyInfo[]info): ArrayList<ArrayList<CurrencyInfo>>

CurrencyGUI
JLabel label; JTextField textField;J Button button;
+createComponent(); +createButtonAndListener(); +getInfo (int CurrencyNum,double amount):double

