EEM480 ALGORITHMS & COMPLEXITY

HW1 REPORT

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Language: JAVA
Environment: NetBeans

Summary

Basically, the algorithm converts 7 base numbers (Kuba) and 9 base numbers (Galli) to 10 base inside each classes. It means that whenever a new Galli or Kuba is created from main function, then GetCurrency methods immediately converts it to 10 base.

How Conversion Are Made?

Convert.java class created for this purpose. This class has 3 methods:

- **convert_ten method** has 2 inputs which are base and num. Inside for loop, power function is called and result is updated. Finally, result is returned.
- **power method** is a recursive method and returns result acording to given inputs (base and pow). This method is %100 perfect because negative values are not checked. Actually, I didn't see it necessery.
- **convert_original method** has 2 inputs (base and num). As I mentioned above in Summary part, every Currency value keeps 10 base numbers because they are converted to 10 base in GetCurrency methods. Finally, this method returns original base result before Add or Subtract methods show the result to user.

What Are The Critical Points?

- **GetCurrency method** which is the one **without input parameters** is **only used to ask the value of Currency** from user.

- **Convert method provides** us to convert Galli to Cuba or opposite. For example in Galli.java class, we have Convert method that converts Galli to Kuba then returns Kuba. We need to create new Kuba object then we need to provide this Kuba object's Currency by using GetCurrency method that is the one with int parameter which belongs to Kuba.class. **That is how we can reach Kuba Currency inside Add(Kuba newKuba) method. That is the trick.**

- There is no problem when adding or subtracting the same type currencies. It is easy. The most important point here is adding 2 different type currencies.

  Kuba will be added to Galli takes us to Add(Kuba newKuba) method which is inside the Galli.java class. The result must be Kuba as written in HW explanation.

  That's why we create new Galli object and make it equal to newKuba.Convert() (newKuba is the input parameter of the function). That provides us to reach Currency inside Kuba.java class and that is the only way to get the Currency inside Kuba.java class.Moreover, addition will be (this.Currency + newKuba.Currency) with Galli type. **Finally, this addition will be multiplied with 2 to get the Kuba result.**

- try and catch block is used to detect if there is an error when getting the input from user or not. If there is, Automatically catch block shows the message and exits the code with 0 exit code