AN INVESTMENT IN YOUR FUTURE

C++ PROJECT

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GENERAL DESCRIPTION

The aim of the project is to implement a cryptocurrency wallet that records the coins you currently have.

CLASS HIERARCHY

1. Each student is tasked with defining their own **hierarchy of (crypto)currencies**;
2. There should be at least one **non-crypto currency** that the coins can be exchanged into according to the current **exchange rate.**
3. The cryptocurrency hierarchy should consist of at least **7 classes** connected by relations of inheritance;
4. Each modeled class should have 1 or 2 fields, so that the "leaf" classes of the hierarchy have **at least 3 fields**;
5. Each leaf class should have at least **one numeric and one character field**;
6. Classes that are not at the bottom of the hierarchy should be **abstract**;
7. **No parameterless constructors**; constructor parameters should mirror the classes' fields;
8. Each class should have a **toString()** method that provides text information about a given cryptocurrency.
9. Before implementing the project, students are asked to prepare a **UML class diagram** of the modeled hierarchy by **October 17, 2021, 23:59 CET**.

REQUIREMENTS

The project should include a generic (template) class called Wallet that will be a collection of coins. Adding a coin to the Wallet should be performed by the "+=" operator, whereas removing should be done by the "-=" operator.

Students are asked to create a console application that does the following:

1. Creates a user-defined number of random crypto-currency coins, sets their current value, and adds them to a wallet.
2. Lists all the coins currently available in the wallet (please use the implemented toString() method).
3. There should also be a separate class with the method trade() that for each coin in the wallet:
   - with a user-defined probability (pSell) selects a coin, removes it from the wallet, exchanges it for currency;
   - with a user-defined probability (pBuy) buys more coins of a given cryptocurrency.
4. The program should run trade() in a loop until the wallet becomes empty; the program should be convergent when pSell > pBuy.
5. After each iteration, the wallet should list all the coins.
6. Each class should be divided into two files: *.cpp and *.h (or *.hpp). The *.h files should contain declarations, whereas the *.cpp files should host the implementations.

DEADLINE

Please send the code of your projects back to your lecturer by **November 14, 2021, 23:59 CET**.