**Blockchain Technology and Smart Contract for Finance**

At the heart of the FinTech movement is the cryptocurrency networks. A cryptocurrency network with its protocols and community constitutes a complex system that admits multiple levels of observation.

At the level of peer-to-peer nodes, the network overlays the internet and uses standard internet protocols to send messages and data. Being a public network that does not require authentication, it is under constant threat by malicious hackers.

Data transmitted is structured into financially meaningful entities. Transactions are put into blocks. Blocks are put into the blockchain. The blockchain is the ledger that users consensually agree records the “truth” about its users – whether someone possesses a coin or whether one owes another some amount. The maintenance of these structures is decentralized and distributed among the users of the network. Consensus – perhaps the single most important ingredient that makes the network tick – is built on the trust that the integrity of the network is properly maintained by all these different users who are motivated in such a way that they prefer to see a well-functioning network and no group of individuals is likely to be in cahoots to take advantage of the others in the network.

Honest users interact in the network following rules that have been set in protocols by the developer community. The robustness of the structure creates value in the cryptocurrency (by having a price against USD) and gives rise to further financial entities such as ETFs or DAOs on top of the cryptocurrency.

# Topic

For the ECA, you will select or device a financial use case for the Ethereum cryptocurrency network and its blockchain technology. A financial use case consists of how smart contracts can be put together in order to achieve a certain financial goal (such as the pooling of resources in the case of DAOs).

## Question 1

Undertake and complete a comprehensive project by answering the following questions:

* Analyse the financial use case in terms of how it can be delivered by the network and its smart contracts.
* Illustrate how the various parts of the network as seen from the different perspectives as described in the background above are seamlessly weaved together.
* Design, construct and write code for the smart contracts and carefully explain how they work.