

Blockchains: Fundamentals And Applications (2022)

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Mini Project on Solidity

The purpose of the mini project is to understand how smart contracts operate. The project will enable you to build an application that can operate without the need of any central authority. Feel free to experiment and be creative with your implementation!

The project is divided into two parts: report and code. Both the parts are compulsory.

Getting started

Select any real world example where you feel blockchain can be useful. You need to build a smart contract using solidity and prepare the report for this topic.

You are free to select a topic of your own or select one from the idea bank given below:

Topic	Example functions to include
Decentralised Bank	<ul style="list-style-type: none">• Maintain different types of account in bank• Check balance• Withdraw/Deposit amount• Loan and mortgage facilities
Ecommerce Application	<ul style="list-style-type: none">• Buy and sell items in application• Product listing and rating• Sale window when items are on discounts
Archive storage	<ul style="list-style-type: none">• Store records• Search Archive for particular record• Delete, add records• Remove records after certain time period
Decentralised Exchange	<ul style="list-style-type: none">• Trade crypto currency with others• Validate the user transaction

	<ul style="list-style-type: none"> • Execute functions of exchange • Settlement of payment to users
Decentralized digital Identity	<ul style="list-style-type: none"> • Role based maintenance of all personal details. • Authorities having additional permissions like Addition/ Deletion of records • Allow users to modify their own account. <p>Recall, in blockchain we don't maintain user identities.</p>
Gaming	<ul style="list-style-type: none"> • Create a multiplayer game with rewards • Multiple levels, etc • Example: treasure hunt
Lottery games	<ul style="list-style-type: none"> • Lottery based game where users bet on outcome • Maintain deposit by user in a game • Settle the payment for users
Subscription based services	<ul style="list-style-type: none"> • Implementing services of a platform with different subscription options. • Use modifiers to perform checks
Trading platform with token service	<ul style="list-style-type: none"> • Be creative about the type of trading platform • Trade using tokens in blockchain • Allow exchange of tokens
Fund management	<ul style="list-style-type: none"> • An application for a non profit enterprise • Track the funds and deposits. • Authorized payments and usage of funds.

Part 1: Report details

Below are a few points to include in your project report. Address the details with respect to the application you are building.

Application details

- Abstract
- Introduction
- Workflow of project (figures, flowcharts, etc)
- Technical solution (function descriptions, operations)
- Provide details of your deployed smart contract(Tx hash, Gas,etc.)
- Highlights of the project
- Conclusion

Further questions to address:

- How is your application different from the ones existing in the market today?
- What type of blockchain, public or permission or hybrid, will be suitable for your application)?
- Consider Cybercriminals are out on the loose. How vulnerable is your application?
- What are the advantages and disadvantages of using decentralized applications for the selected use case?

Part 2: Code

- Write your code in solidity.
- Code can be implemented in Ethereum or Hedera.
- Make sure to include comments in your code.
- Follow proper indentation.
- Follow naming conventions of your choice with proper context.

More details on how to submit your code will be provided. Please post your queries on the discord channel.

Link to Discord Channel:

<https://discord.gg/EMeb2N5hUg>