# ERC 20 Token Implementation

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## Instructions for Token deployment

- Load all the files inside the source_code folder into the Remix workspace.
- Change the compiler version to 0.5.16
- Click on the LearnToken.sol and press CTRL + s to compile
- Now, Go to the deploy tab of Remix. Then change the environment to Injected web3.
- You must also select the ropsten network network on the metamask addon.
- In the contract tab of Remix, Change the contract to LearnToken.sol and then click on Deploy.
- Under the deployed Contacts sections, Expand the LearnToken and you should see all the public functions that are available for interaction.
- Copy the address of the deployed Learn Token

## Instructions for Contract deployment

- Load all the files inside the source_code folder into the Remix workspace.
- Change the compiler version to 0.5.16
- Select LearnContract.sol and press CTRL + s to compile
- Now, Go to the deploy tab of Remix. Then change the environment to Injected web3.
- You must also select the ropsten network network on the metamask addon.
- In the contract tab of Remix, Change the contract to LearnContract.sol and then input the address of the deployed LearnToken. Then click on Deploy.
- Under the deployed Contacts sections, Expand the LearnContract and you should see all the public functions that are available for interaction.

**Instructions to test the Token functions**

- When you deploy the Learn token, you should automatically receive 100000 LRN Tokens. This is because, In the constructor I have minted 100000 tokens to the person who deploys the Token contact. Using metmask, You can click on the Assets section and load the token using the address of the deployed token.
- approve(address, amount) : When calling this function, the owner of the contract authorizes, or approves, the given address to withdraw instances of the token from the owner's address.
- transfer(address, amount) : This function lets the owner of the contract send a given amount of the token to another address just like a conventional cryptocurrency transaction.
- transferFrom(address, to , amount): This function allows a smart contract to automate the transfer process and send a given amount of the token on behalf of the owner.
- balanceOf() : This function allows a smart contract to store and return the balance of the provided address. The function accepts an address as a parameter, so it should be known that the balance of any address is public.
- To check the token name, click on the name property
- To check the owner who deployed the contract, click on the owner property
- You can also mint tokens to an address if you are the owner. This is just like a transfer, but new tokens are minted to the existing supply.

**Instructions to test the Contract functions**

- You can use two accounts in metamask. Account 1 for the user. Account 2 for the organization(udemy).
- You can use the purchaseToken function of LearnContract to get LearnTokens. Input the wei that you want to spend for purchasing tokens. Purchase some tokens (1000) using both the accounts of metamask.
- Once you are done purchasing, the first thing you need to do is to make sure that you approve a certain transaction amount(1000 Learn tokens) to the LearnContract function. This way, your transaction won't be declined. To do this, you can use the approve function of the LearnToken. Input the LearnContract address and the amount you need to approve. Do this for both the accounts in metamask(Account 1 and Account 2)
- Select account 2 in metmask. Input 50 Wei and execute the registerAsOrganization function. There are two variations of the function. One of them will have a normal subscription time and premium subscription of 120 and 300 seconds respectively by default. You must provide the name of the organization, normal subscription fee that the organization would charge, premium subscription fee that the organization would charge. You can also use the other variation of the function which will take additional input of subscription times.
- To check the organization you just registered, you can use the getOrganizationName function by inputting the account 2 address.
- Now you can select Account 1
- Let's suppose that Account 1 has to purchase a subscription of the organization, Udemy(Account 2). He can input the address of the organization and execute the buyNormalSubscription function. This will deduct the user's LearnTokens and the user will get access to the content for a certain amount. In this case, the time is equivalent to normalSubscriptionTime of Udemy. By default, normal subscription time is 120 seconds which is convenient for a demo.
- You can check the doesUserHasNormalAccess function by inputting the organization address. It should return true.
- But if you try to execute the function after 120 seconds, it shouldn't return true.

**Instructions to deploy the App**

- Get the contract address of both the LearnToken and LearnContract.
- Paste the address in the controller.js file which is inside the features folder of the src folder. Also copy and paste the ABIs of both the contracts inside the controller.js file.
- Now go to the root directory of the project and do npm install. Then run npm start.
- You can see the application running at port 3000 of your localhost. Navigate to http://localhost:3000. You can select the ropsten network using the metamask plugin.
- You can create two accounts in metamask and perform the steps described below.

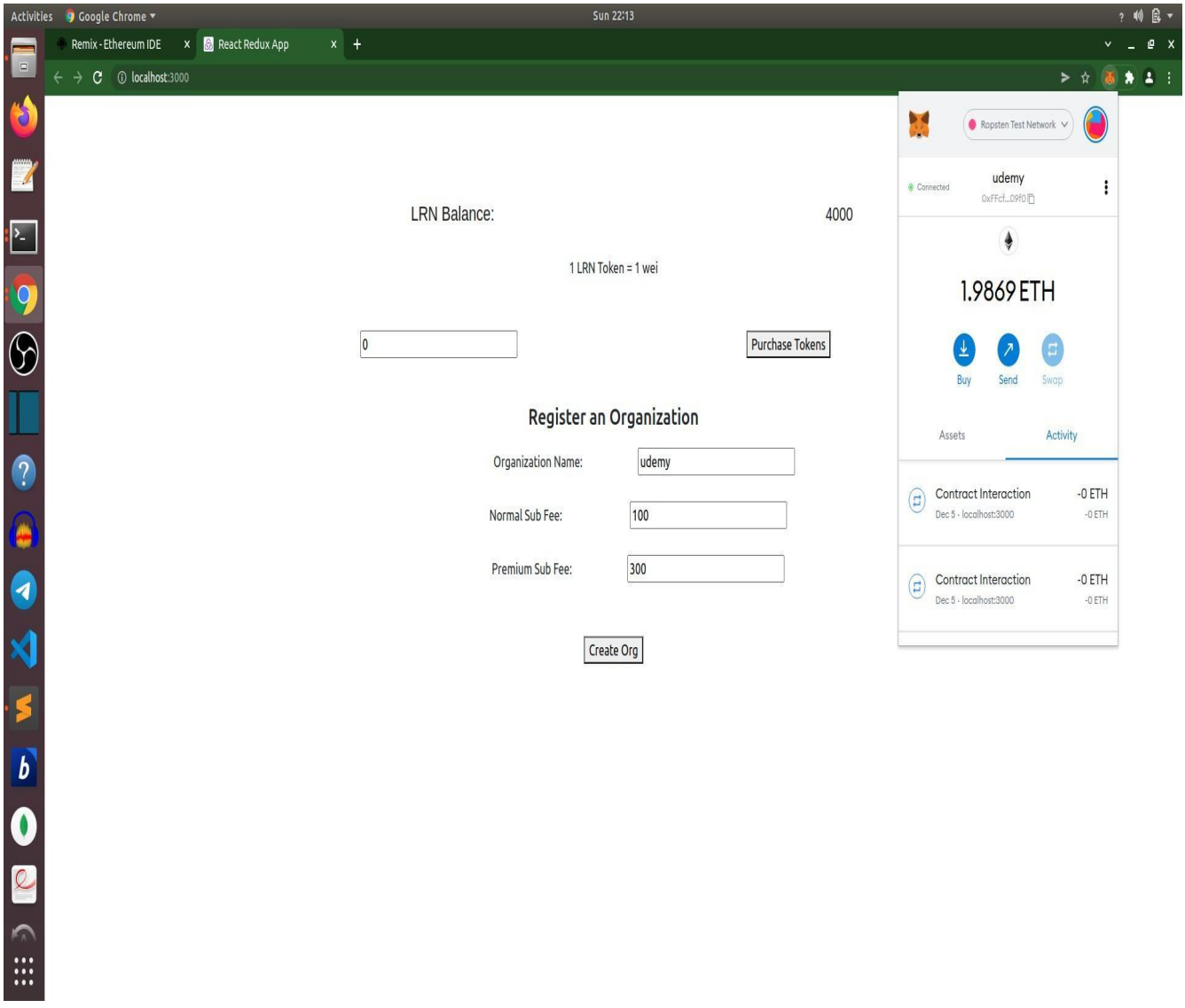
Note: Do not expect this application to work smoothly on ganache. The project is heavily reliant on the block.timestamp feature to keep track of the time.

The learn Token Contract is deployed on Ropsten at
0x4637505efDd827D682C9B571D757EdeDd01d7515

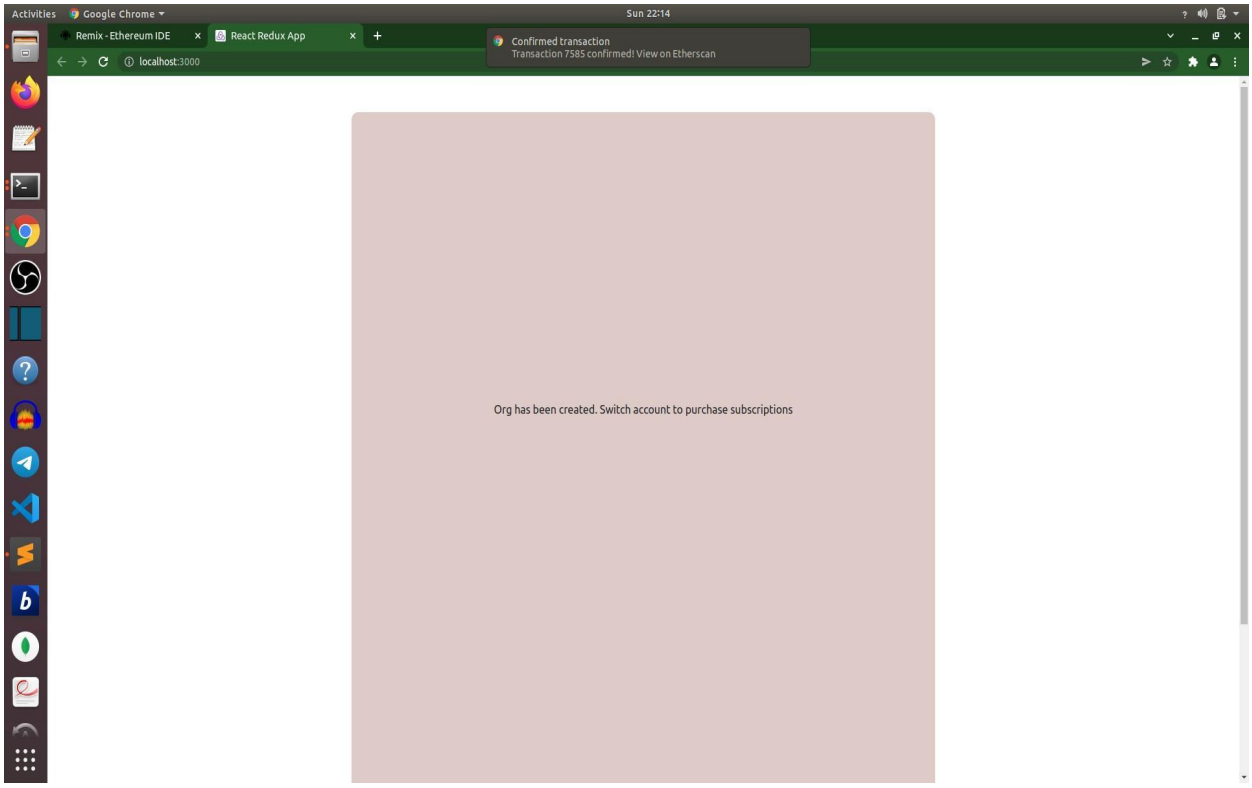
The Learn Contract is deployed on Ropsten at
0x67E4e33851AcC760407Ff30B353F52d54E517B10

Step 1: REGISTER AS A ORGANIZATION

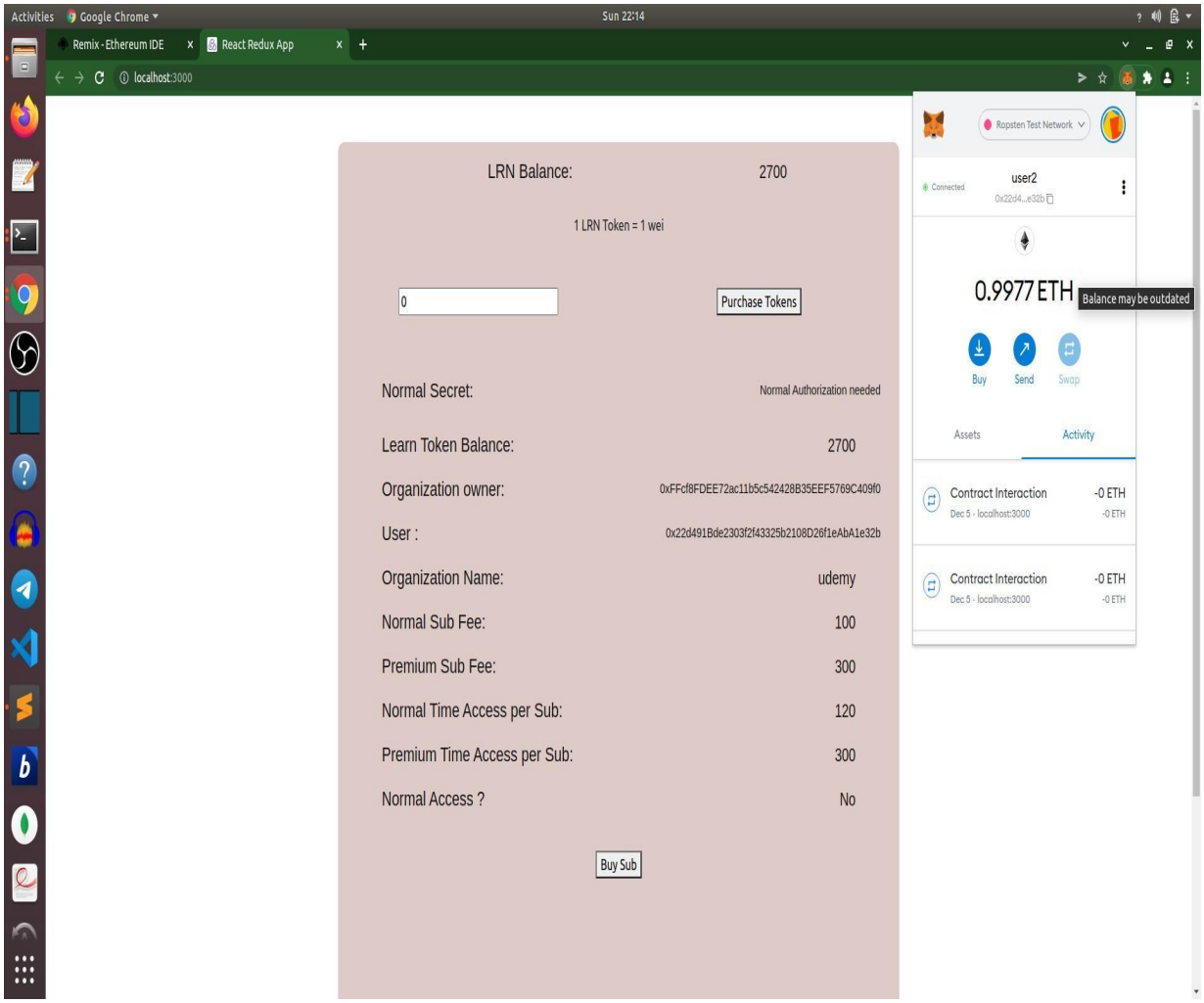
- To do this, you will need to purchase some Learn Tokens. The process was described in the Contract testing section. You can also purchase Learn Tokens using the web Interface. Make sure that you approve the accounts of your metamask account to spend tokens in LearnContract



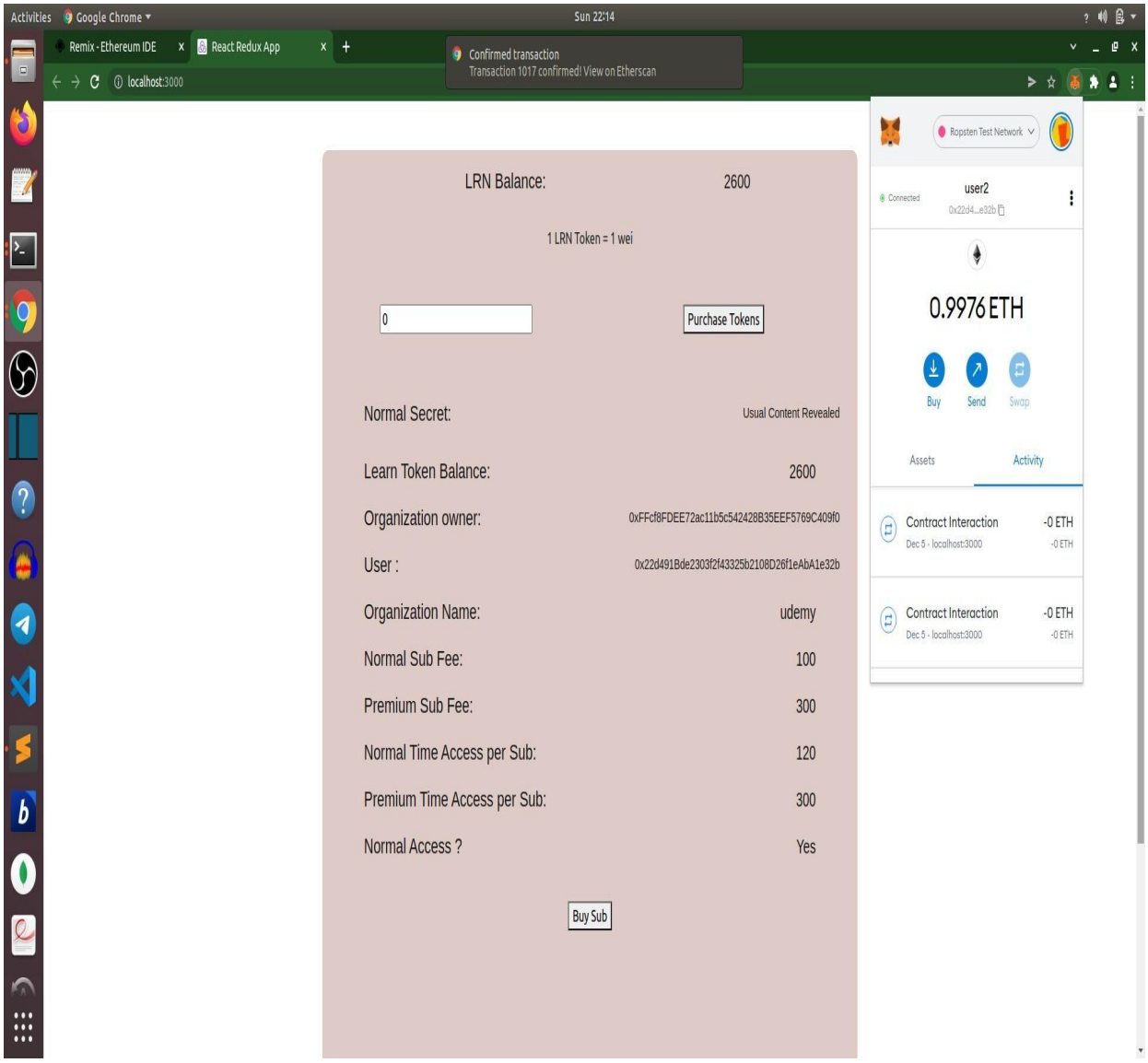
Step 2: Once organization is registered, switch to another account which we will use as user



Step 3 : The User 2 doesn’t have access to the content at this stage. Normal secret text reads “NORMAL AUTHORIZATION NEEDED”



Step 4: After buying the subscription, Now the user has access to the content. Now the Normal Secret field reads “User Content Revealed”



Step 5: After 120 seconds which is the duration for which the normal subscription lasts, The user content is again hidden. Now the Normal Secret text reads again as “Normal Authorization needed”. In this case, the text is used for simplification. This could be applied for courses that get updated regularly. For Ex, Courses in Udemy, Coursera