

# Configuration Manual

Blockchain Smart Contracts for Cervical check patients in Ireland  
MSc in Science Cloud Computing

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National College of Ireland  
Project Submission Sheet  
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<b>Programme:</b>	MSc in Science Cloud Computing
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<b>Module:</b>	Blockchain Smart Contracts for Cervical check patients in Ireland
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<b>Signature:</b>	Vania Gehrmannn Schneider
<b>Date:</b>	14th August 2021

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# Configuration Manual

Vania Gehrmannn Schneider  
19139438

## 1 Hardware

- Processor: Intel(R) Core(TM) i7-8550U CPU @ 1.80GHz 1.99 GHz
- Memory: 8.00 GB (7.90 GB usable)
- Storage: 1TB
- Graphics: AMD Radeon Graphics Processor (0x69000)

## 2 Software installation and implementation for the Solidity Truffle APP

Download or clone: <https://github.com/VaniaGSIT/Eth-Smart-Contract-APP>

- Open the link provided above;
- Navigate to the Code green button;
- Select Download option;

Download Ganache:

- <https://www.trufflesuite.com/ganache> (1)

Install Truffle in the command line:

- `npm install -g truffle` (2)

Refresh the database:

- `truffle migrate --reset`

Run the application:

- `npm run dev`

Download Metamask Chrome version:(3)

- <https://metamask.io/download>
- Install MetaMask (Google Chrome version)
- Once successfully installed, it will look like this:



## Welcome to MetaMask

Connecting you to Ethereum and the Decentralized Web.  
We're happy to see you.

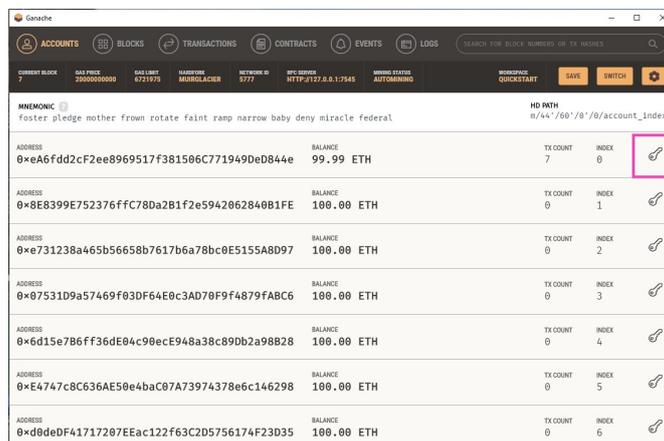
GET STARTED

## 2.1 Running the application

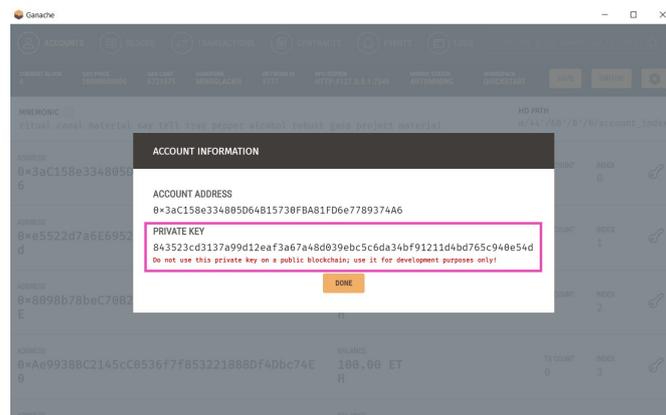
Start Ganache:



Click the key icon:



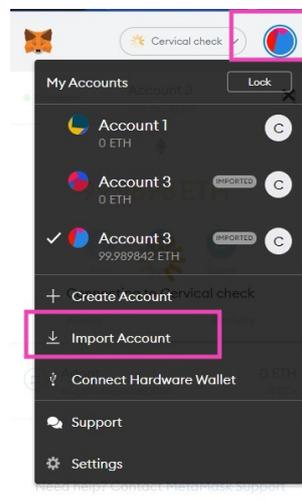
Highlight and copy the private key:



Open MetaMask in Chrome:



First click in the round image highlighted, secondly click import key and then paste the private key from Ganache:



Imported accounts will not be associated with your originally created MetaMask account Secret Recovery Phrase. Learn more about imported accounts [here](#)

Select Type: Private Key

Paste your private key string here:

Cancel Import

Had a problem changing networks!

Register a new patient:

Stevenson

**Name:**  
**Age:** 3  
**Date of Birth:** 05/03/2001  
**Address:** 65, oval square

Register

Confirm the transaction on MetaMast popup window:

MetaMask Notification

Account 3 → 0x5E05...3...

http://localhost:3000

ADOPT

0

DETAILS DATA

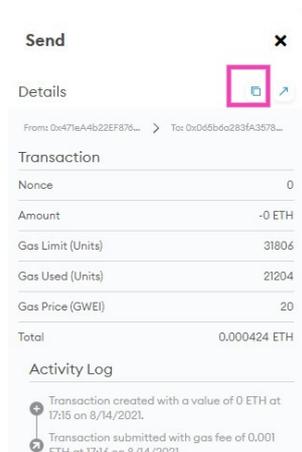
GAS FEE 0.001274  
 No Conversion Rate Available

Gas Price (GWEI) Gas Limit  
 20 63721

AMOUNT - GAS FEE  
 TOTAL 0.001274  
 No Conversion Rate Available

Reject Confirm

Confirmed transaction. Click icon copy:



Open a note pad application and paste the key copied from MetaMask:



After this process is done, the key generated in MetaMask is used for every new Patient entry for the Flask APP.

## Patients

Patient's name

Full name: New user test

Date of birth

DOB: 20/08/2021

Address

Address: 2, square north

Cervical check Number

Cervical check number: 0x2cd97de21cad840318be5201ba39b9318f1f87c8483cf065c

Submit

Check

## 3 Software installation and implementation for the Flask APP

Download or clone: <https://github.com/VaniaGSIT/Python-Blockchain>

- Open the link provided above;
- Navigate to the Code green button;

- Select Download option;

Steps for the flask APP install:

- Open the terminal and check if there is python installed

```

Command Prompt - python
C:\>python
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 23:03:10) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>>
  
```

- Install python: [https://phoenixnap.com/kb/how-to-install-python-3-windows\(4\)](https://phoenixnap.com/kb/how-to-install-python-3-windows(4))
- Once installed open the terminal and type: `import hashlib`
- `pip install flask`
- `pip install flask`
- Open the project in a editor of choice (example VS code)

Run the project:

- `python main.py runserver`

```

TERMINAL  PROBLEMS  OUTPUT  DEBUG CONSOLE

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\block_app> python main.py runserver
* Restarting with stat
* Debugger is active!
* Debugger PIN: 104-478-792
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
  
```

- click to open the webpage:

```

TERMINAL  PROBLEMS  OUTPUT  DEBUG CONSOLE

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\block_app> python main.py runserver
* Restarting with stat
* Debugger is active!
* Debugger PIN: 104-478-792
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
  
```

Application running on the terminal:

```
TERMINAL PROBLEMS OUTPUT DEBUG CONSOLE

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\block_app> python main.py runserver
* Restarting with stat
* Debugger is active!
* Debugger PIN: 104-478-792
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
127.0.0.1 - - [14/Aug/2021 14:50:46] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [14/Aug/2021 14:50:46] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [14/Aug/2021 14:50:47] "GET /favicon.ico HTTP/1.1" 404 -
```

Application web page Layout:

## Patients

Patient's name

Full name

Date of birth

DOB dd/mm/yyyy

Address

Address:

Cervical check Number

Cervical check number:

Submit

Check

Test a new user details:

## Patients

Patient's name

Full name	New user test
-----------	---------------

Date of birth

DOB	20/08/2021	
-----	------------	-------------------------------------------------------------------------------------

Address

Address:	2, square north
----------	-----------------

Cervical check Number

Cervical check number:	0x2cd97de21cad840318be5201ba39b9318f1f87c8483cf065c
------------------------	-----------------------------------------------------

[Submit](#)

[Check](#)

Populate the cervical check number with the key provided in the MetaMask(see steps on the truffle application):

## Patients

Patient's name

Full name	New user test
-----------	---------------

Date of birth

DOB	20/08/2021	
-----	------------	---------------------------------------------------------------------------------------

Address

Address:	2, square north
----------	-----------------

Cervical check Number

Cervical check number:	0x2cd97de21cad840318be5201ba39b9318f1f87c8483cf065c
------------------------	-----------------------------------------------------

[Submit](#)

[Check](#)

Verify in the "blockchain" folder for the new entry(last number on the list):

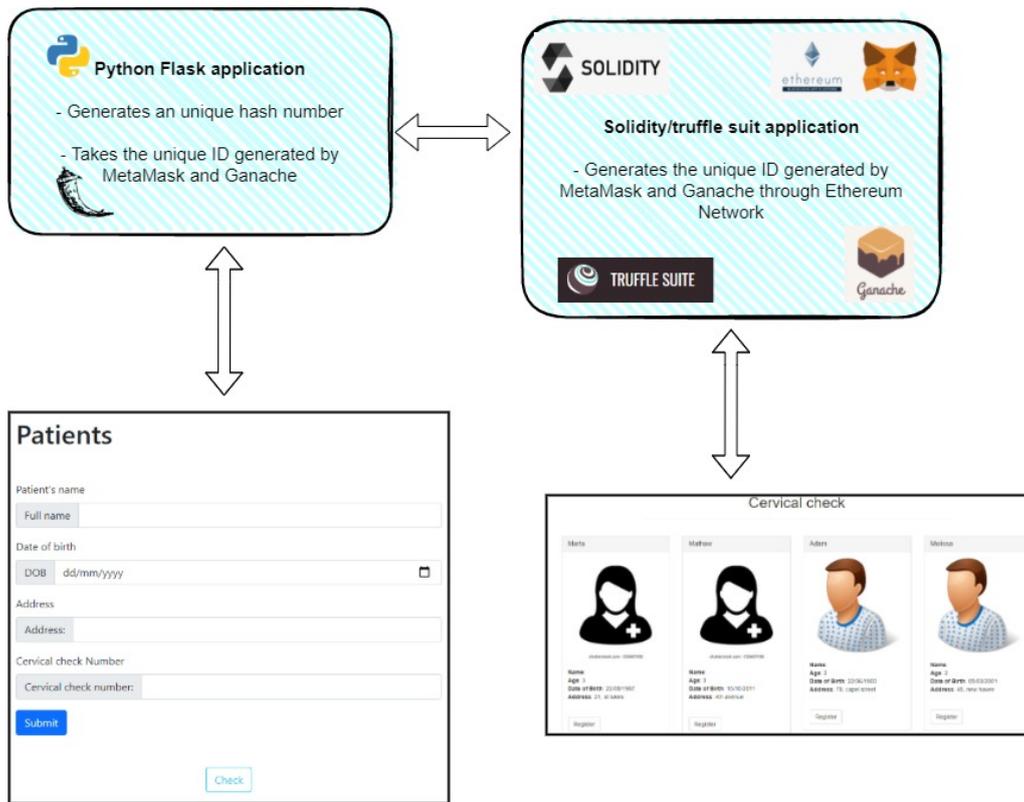
```
blockchain > 35
1  {
2    "patient": "New user test",
3    "dateofbirth": "2021-08-20",
4    "address": "2, square north",
5    "cervical": "0x2cd97de21cad840318be5201ba39b9318f1f87c8483cf065027246f572548765",
6    "prev_block": {
7      "hash": "a27d03be9fa764ff5d18a98da2fe2da2",
8      "filename": "34"
9    }
10 }
11
```

## 4 Project Development

The implementation for this research was done in two parts. One is the Solidity/Truffle application installed locally. The user can generate a unique key generated through the Ethereum network using the Ganache interface, connected with the MetaMask application. Both work together so, and in the application, a new unique key is generated every time a new entry ( patient) is created.

The Flask Application complements the Solidity application because it is interconnected between the clinics, doctors, and patients. The objective is so that everyone in the ecosystem would have access to the data, and also if something is changed or updated, all the users will know that information. The Flask application will take the key generated in MetaMask for registering a new patient and generate a second unique key for each new entry generated in the app. The idea is to double secure the patient's keys to having two keys: one generated through the Solidity app and the other generated through Flask App.

## Applications Ecosystem:



## References

- [1] S. I. 2021, "Install ganache," 2021, last accessed: 2021.08.14. [Online]. Available: <https://www.trufflesuite.com/ganache>
- [2] —, "How to install truffle," 2021, last accessed: 2021.08.14. [Online]. Available: <https://www.trufflesuite.com/docs/truffle/getting-started/installation>
- [3] M. . C. Formation, "Install metamask for your browser," 2021, last accessed: 2021.08.14. [Online]. Available: <https://metamask.io/download.html>
- [4] C. phoenixNAP, "How to install python 3 on windows 10r," 2021, last accessed: 2021.08.14. [Online]. Available: <https://phoenixnap.com/kb/how-to-install-python-3-windows>