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## EXERCISE 2

# BITCOIN IMPLEMENTATION USING

# PYTHON

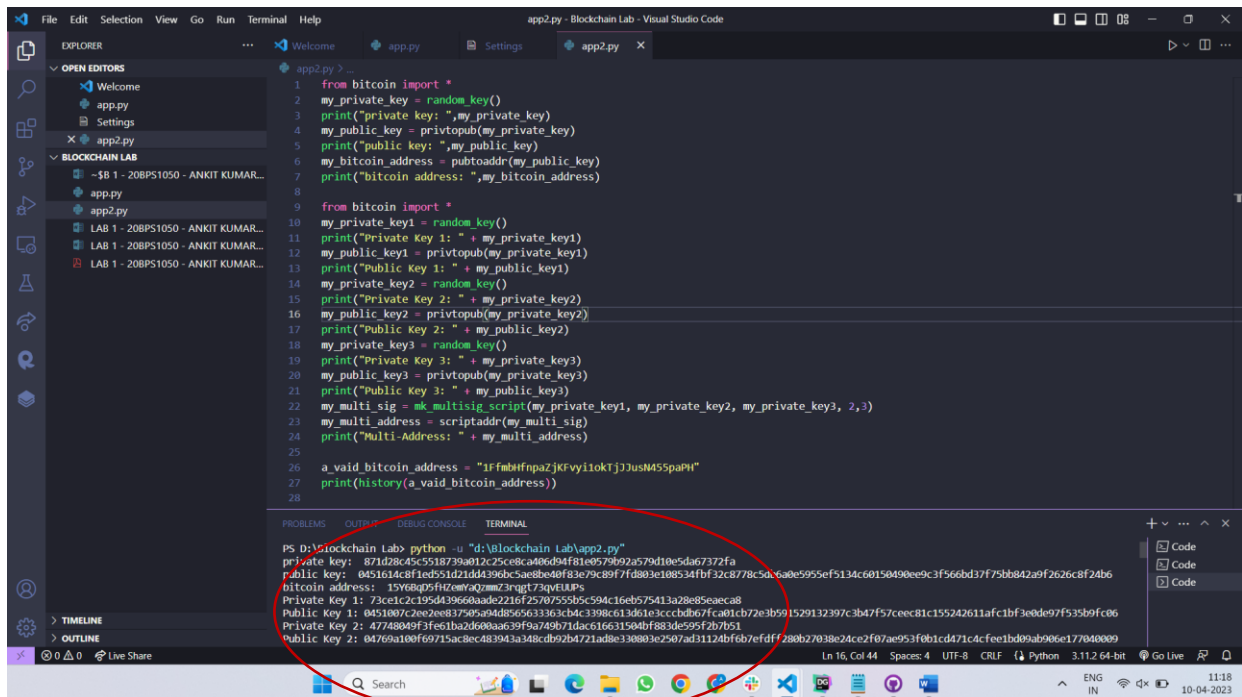
PYTHON CODE:

```
from bitcoin import *
my_private_key = random_key()
print("private key: ",my_private_key)
my_public_key = privtopub(my_private_key)
print("public key: ",my_public_key)
my_bitcoin_address = pubtoaddr(my_public_key)
print("bitcoin address: ",my_bitcoin_address)

from bitcoin import *
my_private_key1 = random_key()
print("Private Key 1: " + my_private_key1)
my_public_key1 = privtopub(my_private_key1)
print("Public Key 1: " + my_public_key1)
my_private_key2 = random_key()
print("Private Key 2: " + my_private_key2)
my_public_key2 = privtopub(my_private_key2)
print("Public Key 2: " + my_public_key2)
my_private_key3 = random_key()
print("Private Key 3: " + my_private_key3)
my_public_key3 = privtopub(my_private_key3)
print("Public Key 3: " + my_public_key3)
my_multi_sig = mk_multisig_script(my_private_key1, my_private_key2,
my_private_key3, 2,3)
my_multi_address = scriptaddr(my_multi_sig)
print("Multi-Address: " + my_multi_address)

a_void_bitcoin_address = "1FfmbHfnpaZjKFvyi1okTjJJusN455paPH"
print(history(a_void_bitcoin_address))
```

# OUTPUT:



```
1 from bitcoin import *
2 my_private_key = random_key()
3 print("private key: ", my_private_key)
4 my_public_key = privtopub(my_private_key)
5 print("public key: ", my_public_key)
6 my_bitcoin_address = pubtoaddr(my_public_key)
7 print("bitcoin address: ", my_bitcoin_address)
8
9 from bitcoin import *
10 my_private_key1 = random_key()
11 print("Private Key 1: " + my_private_key1)
12 my_public_key1 = privtopub(my_private_key1)
13 print("Public Key 1: " + my_public_key1)
14 my_private_key2 = random_key()
15 print("Private Key 2: " + my_private_key2)
16 my_public_key2 = privtopub(my_private_key2)
17 print("Public Key 2: " + my_public_key2)
18 my_private_key3 = random_key()
19 print("Private Key 3: " + my_private_key3)
20 my_public_key3 = privtopub(my_private_key3)
21 print("Public Key 3: " + my_public_key3)
22 my_multi_sig = mk_multisig_script(my_private_key1, my_private_key2, my_private_key3, 2,3)
23 my_multi_address = scriptaddr(my_multi_sig)
24 print("Multi-Address: " + my_multi_address)
25
26 a_valid_bitcoin_address = "1FmbHfnpaZjKfvyiokTjJusN455paPH"
27 print(history(a_valid_bitcoin_address))
28
```

PS D:\Blockchain Lab> python -u "d:\Blockchain Lab\app2.py"

private key: 871d28c45c5518739a012c25ce8ca06d94f81e0579b92a579d10e5da67372fa  
public key: 0451614c8f1ed551d21dd4396bc5ae8be40f83e79c89f7fd803e108534fbf32c8778c5db6a0e5955ef5134c60150490ee9c3f566bd37f75bb842a9f2626c8f24b6  
bitcoin address: 15V6BqD5fHzemYaqZmmZ3rgqt73qVUUUPs  
Private Key 1: 73ce1c2c195d439660aade2216f25707555b5c594c16eb575413a28e85eac8  
Public Key 1: 0451007c2ee2ee837505a94d856533363cb4c3398c613d61e3cccbdb67fca01cb72e3b591529132397c3b47f57ceec81c155242611afc1bf3e0de97f535b9fc06  
Private Key 2: 47748049f3fe1ba2d600aa639f9a749b71dac616631504bf883de595f2b7b51  
Public Key 2: 04769a100f69715ac8ec483943a348cd92b4721ad8e330803e2507ad31124bf6b7efdf7280b27038e24ce2f07ae953f0b1cd471c4cfee1bd09ab906e177040009  
Private Key 3: baf155ea0616e540b4945aa9b76c61aeb8b254d06d6b1c00a554fe762970156  
Public Key 3: 0421f5fadd7d89d870966332e2a7769bfddccc93c0101cb806523488294755ecf3803a3afee00a355c23bc1c7647c9831078de5e9bd77b262db689c42b7a421ae  
Multi-Address: 3Qj9sNTofaNa7fYr1LYe8SbmmWGb8n  
Fetching more transactions... 50  
Fetching more transactions... 100  
Fetching more transactions... 150  
Fetching more transactions... 200  
Fetching more transactions... 250  
Fetching more transactions... 300  
Fetching more transactions... 350  
Fetching more transactions... 400  
Fetching more transactions... 450  
Fetching more transactions... 500  
Fetching more transactions... 550  
Fetching more transactions... 600  
Fetching more transactions... 650  
Fetching more transactions... 700  
Fetching more transactions... 750  
Fetching more transactions... 800  
Fetching more transactions... 850  
Fetching more transactions... 900  
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'block\_height': 784567}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 3842, 'output': 'b5ea0ebcf269d064e0e0a987ee7b80210e9b8ae7b18c  
7f1a40b64b89bb2730f2:1', 'block\_height': 784130}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 3882, 'output': '1a237975461d447a6aa4  
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'b51d02a7de9e9041c3a38df6a55eb17fa92afdd00ab1f991c70a274ada4a0d10:0', 'block\_height': 782977}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH',  
'value': 9044, 'output': 'cd28e828fbb8ee107e60a7b4d77dc073f17fde9d67a2d4a0cc687e00efd52aed:0', 'block\_height': 782409}, {'address': '1FmbHfnpaZ  
jKfvyiokTjJusN455paPH', 'value': 4287, 'output': 'ff5e226361736866e3788bc0d1d07dd105dc6e4eba931f515c519ee9d783d66a:1', 'block\_height': 781947},  
'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 355400, 'output': '8394ffddc39e4edf13d08a8e355edaf9dae7ef7756fe540318d17e8cf03dc09:0',  
'block\_height': 781794}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 1000, 'output': '55a9f964a456d90f469ee9d5794c41e995a2ee7f4220  
4d3dd06896f9d0490d5:0', 'block\_height': 781651}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 546, 'output': 'f373782bb036ca4ca771f  
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'value': 100000, 'output': '11186296ed694bf3ee24c4e872a2c9b4782010c226bd0337834657dd2a2182b3:0', 'block\_height': 778841}, {'address': '1FmbHfnpa  
ZjKfvyiokTjJusN455paPH', 'value': 115348297, 'output': 'db2a44666171715685de96d1b8d113f86f83813d6cc28b299081a5ad72f7916:1', 'block\_height': 776  
686}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 4839, 'output': '7ed9dce68a759fa4534a5bc826dad06cfe7e00b1b08b8acc45e5fe0a9743c2f  
:2', 'block\_height': 776640}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 10027, 'output': '1443e2711669a3a2aad2930c3273ba68ec25ffh

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS D:\Blockchain Lab> python -u "d:\Blockchain Lab\app2.py"
private key: 871d28c45c5518739a012c25ce8ca06d94f81e0579b92a579d10e5da67372fa
public key: 0451614c8f1ed551d21dd4396bc5ae8be40f83e79c89f7fd803e108534fbf32c8778c5db6a0e5955ef5134c60150490ee9c3f566bd37f75bb842a9f2626c8f24b6
bitcoin address: 15V6BqD5fHzemYaqZmmZ3rgqt73qVUUUPs
Private Key 1: 73ce1c2c195d439660aade2216f25707555b5c594c16eb575413a28e85eac8
Public Key 1: 0451007c2ee2ee837505a94d856533363cb4c3398c613d61e3cccbdb67fca01cb72e3b591529132397c3b47f57ceec81c155242611afc1bf3e0de97f535b9fc06
Private Key 2: 47748049f3fe1ba2d600aa639f9a749b71dac616631504bf883de595f2b7b51
Public Key 2: 04769a100f69715ac8ec483943a348cd92b4721ad8e330803e2507ad31124bf6b7efdf7280b27038e24ce2f07ae953f0b1cd471c4cfee1bd09ab906e177040009
Private Key 3: baf155ea0616e540b4945aa9b76c61aeb8b254d06d6b1c00a554fe762970156
Public Key 3: 0421f5fadd7d89d870966332e2a7769bfddccc93c0101cb806523488294755ecf3803a3afee00a355c23bc1c7647c9831078de5e9bd77b262db689c42b7a421ae
Multi-Address: 3Qj9sNTofaNa7fYr1LYe8SbmmWGb8n
Fetching more transactions... 50
Fetching more transactions... 100
Fetching more transactions... 150
Fetching more transactions... 200
Fetching more transactions... 250
Fetching more transactions... 300
Fetching more transactions... 350
Fetching more transactions... 400
Fetching more transactions... 450
Fetching more transactions... 500
Fetching more transactions... 550
Fetching more transactions... 600
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Fetching more transactions... 750
Fetching more transactions... 800
Fetching more transactions... 850
Fetching more transactions... 900
[{'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 31286, 'output': 'fd518b2df6ab12476d26b7cd13b5bf5ba924ce0f1dd4d89abb30681494f56ed3:0',
'block_height': 784567}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 3842, 'output': 'b5ea0ebcf269d064e0e0a987ee7b80210e9b8ae7b18c
7f1a40b64b89bb2730f2:1', 'block_height': 784130}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 3882, 'output': '1a237975461d447a6aa4
4e25bc2c5f496aed22d26979ded6a2eeaa9c335d021:0', 'block_height': 783005}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 1000, 'output':
'b51d02a7de9e9041c3a38df6a55eb17fa92afdd00ab1f991c70a274ada4a0d10:0', 'block_height': 782977}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH',
'value': 9044, 'output': 'cd28e828fbb8ee107e60a7b4d77dc073f17fde9d67a2d4a0cc687e00efd52aed:0', 'block_height': 782409}, {'address': '1FmbHfnpaZ
jKfvyiokTjJusN455paPH', 'value': 4287, 'output': 'ff5e226361736866e3788bc0d1d07dd105dc6e4eba931f515c519ee9d783d66a:1', 'block_height': 781947},
'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 355400, 'output': '8394ffddc39e4edf13d08a8e355edaf9dae7ef7756fe540318d17e8cf03dc09:0',
'block_height': 781794}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 1000, 'output': '55a9f964a456d90f469ee9d5794c41e995a2ee7f4220
4d3dd06896f9d0490d5:0', 'block_height': 781651}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 546, 'output': 'f373782bb036ca4ca771f
c2127bc3e1718a60c4215911f15c8becaa71c706c7:0', 'block_height': 780875}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 7528, 'output':
'7e567d42296e889d11090af76cb0335663828d691b80b68015484f8019f67f6f:0', 'block_height': 778841}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH',
'value': 100000, 'output': '11186296ed694bf3ee24c4e872a2c9b4782010c226bd0337834657dd2a2182b3:0', 'block_height': 778841}, {'address': '1FmbHfnpa
ZjKfvyiokTjJusN455paPH', 'value': 115348297, 'output': 'db2a44666171715685de96d1b8d113f86f83813d6cc28b299081a5ad72f7916:1', 'block_height': 776
686}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 4839, 'output': '7ed9dce68a759fa4534a5bc826dad06cfe7e00b1b08b8acc45e5fe0a9743c2f
:2', 'block_height': 776640}, {'address': '1FmbHfnpaZjKfvyiokTjJusN455paPH', 'value': 10027, 'output': '1443e2711669a3a2aad2930c3273ba68ec25ffh
```

```
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