

## ACCT403 Bitcoin Exercise Group # \_\_\_\_\_

Objective: Introduce accounting students to bitcoins, hash functions, blockchains, and the accounting issues related to bitcoins.

### Part 1: Watch the following introductory video on bitcoins:

Bitcoin: How Cryptocurrencies Work (SciShow) (9:24)

<https://www.youtube.com/watch?v=kubGCSj5y3k>

**Part 2: Definitions.** Define the following terms. Online definitions can be found at sites such as: <https://bitcoin.org/en/vocabulary>

TERM	DEFINITION
Address	
Block	
Block Reward	
Blockchain	
BTC	
Coinbase	
Coinbase Transaction / Generation Transaction	
Confirmation	
Difficulty	
Double Spending	
Hash	
Input	

Mining	
Mining / Miner	
nBits / Target Threshold	
nonce	
orphan block	
output	
P2P	
Private Key	
Proof of Work	
Public Key	
Satoshis	
SHA-256	
Transaction Fee / Miner Fee	
wallet	

**Part 3: Exploring the Block**

1. What is the current value of 1 bitcoin in USD?
  - a. Today's date: \_\_\_\_\_ Value: \_\_\_\_\_
  - b. What exchange site did you find the valuation? \_\_\_\_\_
  
2. As of today's date of \_\_\_\_\_, what is the approximate number of BTC in circulation? \_\_\_\_\_
  - a. What site did you find this information? \_\_\_\_\_
  - b. What would be the market capitalization of bitcoins? \_\_\_\_\_

3. Go to a site such as <http://www.coindesk.com/price/>
  - a. What is the 52-week high for BTC in USD? \_\_\_\_\_ What date did this occur? \_\_\_\_\_
  - b. What is the 52-week low for BTC in USD? \_\_\_\_\_ What date did this occur? \_\_\_\_\_
  - c. What site did you find this information? \_\_\_\_\_
4. Go to <http://blockchain.info>. As of today's date and time of \_\_\_\_\_, what is the height of the bitcoin blockchain? \_\_\_\_\_

For the next 5 questions, select the latest block identified in #4.

5. How many transactions are included in the block? \_\_\_\_\_
6. The **output total** is defined as the total value of all the transaction outputs of the block (including the coins returned to the sender as change). What is the output value of the block?  
 USD: \_\_\_\_\_ BTC: \_\_\_\_\_
7. The **estimated transaction volume** is similar to the output total but includes an algorithm which attempts to remove the change from the total value. This may be a more accurate reflection of the true transaction volume. What is the estimated transaction volume for the block?  
 USD: \_\_\_\_\_ BTC: \_\_\_\_\_
8. What is the value of the transaction fees?      USD: \_\_\_\_\_ BTC: \_\_\_\_\_
9. What is the value of the block reward?      USD: \_\_\_\_\_ BTC: \_\_\_\_\_
10. What is the value of the nonce? \_\_\_\_\_
11. How many leading zeros are in the hash? \_\_\_\_\_


**Part 4: Exploring a Transaction (<http://blockchain.info>)**

Transaction ID: 90b18aa54288ec610d83ff1abe90f10d8ca87fb6411a72b2e56a169fdc9b0219


Enter the above transaction ID into the search field at blockchain.info. You should see something like below:

### Transaction View information about a bitcoin transaction

90b18aa54288ec610d83ff1abe90f10d8ca87fb6411a72b2e56a169fdc9b0219

1GqpaRRvdX8HpqRUzg42v5GMPEoFDXV27Q  17fobSZ8Dj81c8sanhzzR76ADMjWYyCP \$ 5,445.13  
18mZn5VXoxcb8MbNKQj17bX4qYxNEU7SDe \$ 1,540,601.59

**\$ 1,546,046.72**

Summary	
Size	226 (bytes)
Received Time	2014-02-19 16:46:00
Included In Blocks	<a href="#">286731</a> ( 2014-02-19 16:47:08 + 1 minutes )
Confirmations	162946 Confirmations
Relayed by IP 	<a href="#">46.4.121.100</a> (whois)
Visualize	<a href="#">View Tree Chart</a>

Inputs and Outputs	
Total Input	\$ 1,546,046.72
Total Output	\$ 1,546,046.72
Fees	\$ 0.00
Estimated BTC Transacted	\$ 5,445.13
Scripts	<a href="#">Show scripts &amp; coinbase</a>

What is the date and time of this transaction?

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What is the input bitcoin address?

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What is the output bitcoin addresses?

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What is the value of the transaction in bitcoins? \_\_\_\_\_

What was the value in USD of the transaction at the time of the transaction? \_\_\_\_\_

What is the value in USD today (at the time you are doing this exercise?) \_\_\_\_\_

What block is this associated with? \_\_\_\_\_

How many confirmations to date? \_\_\_\_\_

Click on the INPUT bitcoin address ([1GqpaRRvdX8HpgRUzg42v5GMPEoFDXV27Q](https://blockchain.info/tx/1GqpaRRvdX8HpgRUzg42v5GMPEoFDXV27Q)). This is the bitcoin address from where this transaction originated.

How many transactions are associated with the bitcoin address? \_\_\_\_\_

In the table below, identify the Block ID of the below 4 transactions. The first one has been done for you.

Date	Transaction ID	Amount	Block ID
2014-02-19 16:46:00	<a href="https://blockchain.info/tx/90b18aa54288ec610d83ff1abe90f10d8ca87fb6411a72b2e56a169fdc9b0219">90b18aa54288ec610d83ff1abe90f10d8ca87fb6411a72b2e56a169fdc9b0219</a>	-1,684 BTC	<a href="https://blockchain.info/block/286731">286731</a>
2014-02-11 16:26:57	<a href="https://blockchain.info/tx/18798f8795ded46c3086f48d5bdabe10e1755524b43912320b81ef547b2f939a">18798f8795ded46c3086f48d5bdabe10e1755524b43912320b81ef547b2f939a</a>	1,684 BTC	
2014-02-09 19:17:23	<a href="https://blockchain.info/tx/f06d3445711d002c484a993cd5ad834e39d23eac94f5a520b698d9d85a608a7">f06d3445711d002c484a993cd5ad834e39d23eac94f5a520b698d9d85a608a7</a>	-0.01 BTC	
2014-02-09 19:17:21	<a href="https://blockchain.info/tx/1271a07321aa9ecdbf62d3521e0171b8bff02ff016e5f44619813c3c917bbc6b">1271a07321aa9ecdbf62d3521e0171b8bff02ff016e5f44619813c3c917bbc6b</a>	0.01 BTC	

Go to <http://blockchain.info>

Let's examine the first transaction associated with this address. This will be the LAST one on the list if it is sorted from new to old, which is the default. The transaction ID we are examining starts with "1271..." Select the transaction.

Take a screen shot of transaction id "1271". It should look like this. Replace the screenshot in the template with your screenshot.

## Transaction View information about a bitcoin transaction

[1271a07321aa9ecdbf62d3521e0171b8bff02ff016e5f44619813c3c917bbc6b](#)

[1HK7sQTqJdjBbX5VyEqfe6m8b85NvYZdWw](#) (0.0183 BTC - Output)

[1GJBqNby6tW5MaQd8W29U6bf42RFugC8vg](#) (0.01 BTC - Output)

➔

[1GqpaRRvdX8HpqRUzg42v5GMPEoFDXV27Q](#) - (Spent) 0.01 BTC

[1A8uTurkqYP1ACoq42SL98CmrhM8imKPSi](#) - (Spent) 0.0182 BTC

0.0282 BTC

Summary	Inputs and Outputs
Size <span style="float: right;">375 (bytes)</span>	Total Input <span style="float: right;">0.0283 BTC</span>
Received Time <span style="float: right;">2014-02-09 19:17:21</span>	Total Output <span style="float: right;">0.0282 BTC</span>
Included In Blocks <span style="float: right;"><a href="#">284999</a> ( 2014-02-09 20:03:20 + 46 minutes )</span>	Fees <span style="float: right;">0.0001 BTC</span>
Confirmations <span style="float: right;">167113 Confirmations</span>	Estimated BTC Transacted <span style="float: right;">0.0182 BTC</span>
Relayed by IP <span style="font-size: 0.8em;"> ⓘ </span> <span style="float: right;"><a href="#">178.63.63.214</a> (whois)</span>	Scripts <span style="float: right;"><a href="#">Hide scripts &amp; coinbase</a></span>
Visualize <span style="float: right;"><a href="#">View Tree Chart</a></span>	

What is the transaction date for the above transaction? \_\_\_\_\_

For transaction "1271...", there are two input addresses associated with the transaction. What are the two input addresses and values? The first one has been completed for you.

INPUT BITCOIN WALLET ADDRESSES
<a href="#">1HK7sQTqJdjBbX5VyEqfe6m8b85NvYZdWw</a>

For that same transaction (“1271...”), what are the two output addresses and **values** associated with the transaction? The first output address and values are listed for you.

OUTPUT BITCOIN WALLET ADDRESSES	Value in Bitcoins at the time of transaction	Value in USD at the time of the transaction
<a href="#">1GqpaRRvdX8HpqRUzg42v5GMPEoFDXV27Q</a>	0.01 BTC	\$6.98

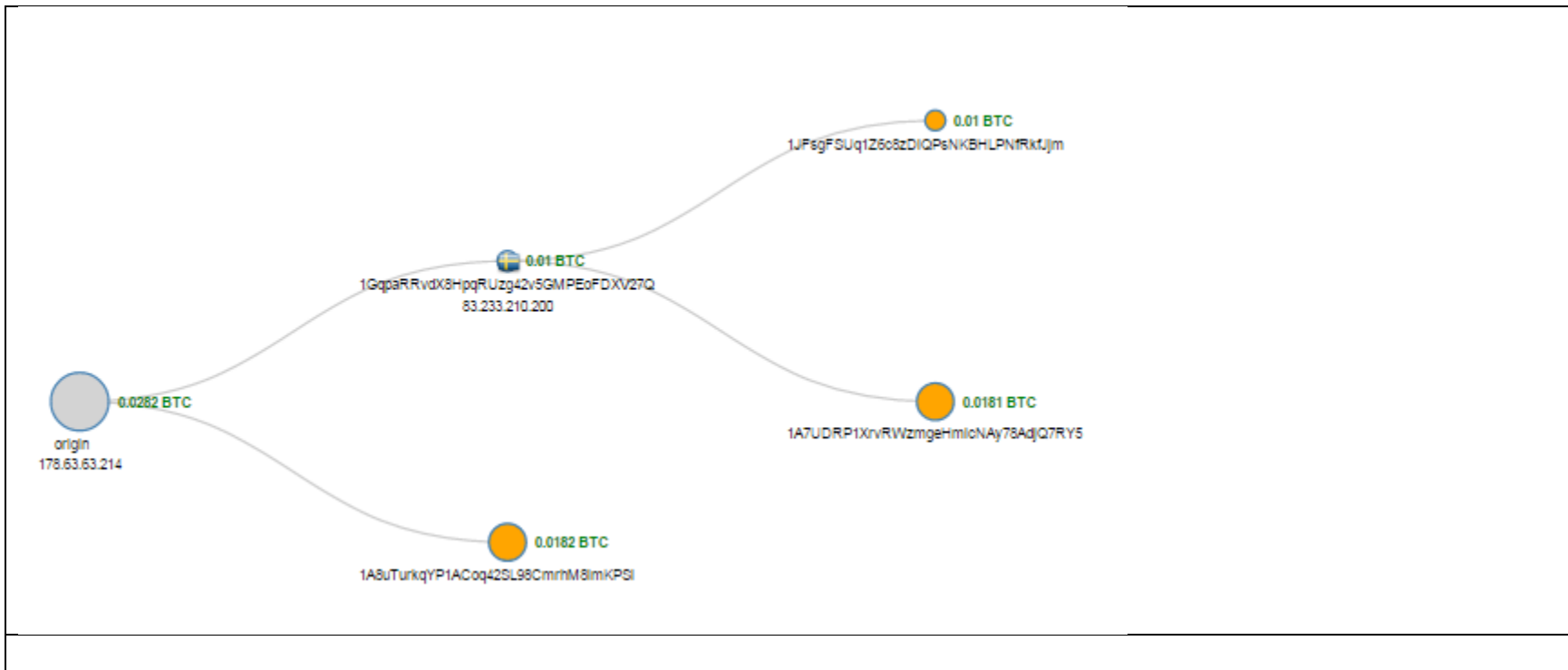
For transaction “1271...”, was the address “1Gqpa...” the sender or the receiver? \_\_\_\_\_

What block number was this transaction included in? \_\_\_\_\_

How many confirmations does this transaction have? \_\_\_\_\_

Click “visualize” to view the tree chart

Insert a screenshot of the visualization here. Replace the one in this template with your screenshot.



Click on the orange button associated with transaction 1



1Gqpa ...

What is the IP address associated with transaction “1Gqpa...”? \_\_\_\_\_

What country is associated with the above IP address? Hint: go to google and lookup the IP address details.

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Enter the address of “1Gqpa...” into the search field of blockchain.info. Does the bitcoin address of “1Gqpa...” have any bitcoins associated with it now? (YES or NO) \_\_\_\_\_

### **Part 5: Hashing and Additional Research**

**Step 1:** Watch this short (simplistic) video on the difference between hashing and encryption

Fundamental difference between Hashing and Encryption algorithms <https://www.youtube.com/watch?v=EJ-fnN28FRI> (1:40)

**Step 2:** Watch this short explanation on the bitcoin hashing and SHA-256

What is a Bitcoin hash and SHA-256

[https://www.youtube.com/watch?annotation\\_id=annotation\\_3457876853&feature=iv&src\\_vid=9mNgeTA13Gc&v=jzro6im0S6o](https://www.youtube.com/watch?annotation_id=annotation_3457876853&feature=iv&src_vid=9mNgeTA13Gc&v=jzro6im0S6o)

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**Step 3:** Hash each group member name into a SHA-256 hash value.

- Go to a site with a hash calculator such as <http://conversion-tool.com/sha256>
- Hash your first name and last name
- Document the input and output hash result in the table below

- Fill in your name, hash, and group number in the table below.

INPUT (Text to hash)	OUTPUT (Hash Result)	Group

**Step 4:** Prepare a short answer response to three of these questions. You may type in your answer right after each question here in this document. Each answer should be 200 – 500 words. Your response ideally should add to the discussion and not simply repeat the information previously posted. Provide the URL of any sites or documents used to answer the question.

1. What does the IRS think about bitcoins? What are the tax implications of bitcoins?
2. What does a business have to consider if they accept bitcoins? Focus on both accounting and non-accounting implications.
3. What does an individual have to consider if he/she trades with bitcoins? Focus on both accounting and non-accounting implications.
4. What are the legal issues related to bitcoins? What laws may be impacted by bitcoins?
5. Do you think bitcoin or another cyber currency will replace existing traditional currency? Why or why not?
6. What happened regarding the failed MT GOX bitcoin exchange? Do you think this will happen again?