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Courses » Blockchain Architecture Design and Use Cases

Announcements

**Course**

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## Unit 5 - Week 3 : Unit 3

### Course outline

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- Lecture 11 : Consensus in Bitcoin – I (The Basics)

- Lecture 12 : Consensus in Bitcoin – II (PoW and Beyond)

- Lecture 13 : Consensus in Bitcoin – IV (The Miners)

- Lecture 14 : Permissioned Blockchain – I (Basics)

- Lecture 15 : Permissioned Blockchain – II (Consensus)

- Lecture Materials

### Assignment 3

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

**Due on 2018-09-05, 23:59 IST.**

1) Say, we have 3 blocks with different transactions,  $B1=[T101, T102, T104, T105]$ ,  $B2=[T101, T102, T103]$ , and  $B3=[T102, T103, T104, T105]$ . Once the consensus (PoW) is reached which of these is likely to get included in the chain, if the last block in the blockchain has transactions T98, T99 and T100? **1 point**

- ☐ B1
- ☐ B2
- ☐ B3
- ☐ Each of these is equally likely

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Each of these is equally likely*

2) Which of the following challenges make the application of traditional distributed consensus algorithms to blockchain-based systems difficult over the Internet? **1 point**

- ☐ Large number of users
- ☐ Global accessibility of the internet
- ☐ Asynchronous nature of the internet
- ☐ All of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

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Week 5	ce De	<input type="radio"/> Nonce
Week 6		<input type="radio"/> Timestamp
Week 7		<input type="radio"/> Previous block hash
Week 8		<b>No, the answer is incorrect.</b>
Week 9		<b>Score: 0</b>
Week 10		<b>Accepted Answers:</b>
Week 11		<i>Nonce</i>
Week 12		4) Suppose a group of malicious miners have 3 controlled nodes with <b>1 point</b> IP addresses as 192.16.8.2/24, 192.16.8.5/24 and 192.16.8.3/24 (all of them belongs to the same subnet). At a time how many of these nodes can simultaneously join as a miner independently and not forming a legitimate mining pool?
VIDEO DOWNLOAD		<input type="radio"/> At most 1 from this subnet
		<input type="radio"/> All the 3 from this subnet
		<input type="radio"/> At most 2 from this subnet
		<input type="radio"/> None can join as they all belong to the same subnet
	<b>No, the answer is incorrect.</b>	
	<b>Score: 0</b>	
	<b>Accepted Answers:</b>	
	<i>At most 1 from this subnet</i>	
	5) Which of the following consensus algorithms consider virtual <b>1 point</b> resources or digital coins for participating in the mining activity?	
	<input type="radio"/> Proof of Stake	
	<input type="radio"/> Raft Consensus	
	<input type="radio"/> Proof of Burn	
	<input type="radio"/> Proof of Work	
	<b>No, the answer is incorrect.</b>	
	<b>Score: 0</b>	
	<b>Accepted Answers:</b>	
	<i>Proof of Burn</i>	
	6) Suppose the previous difficulty was set to 20 and the given <b>1 point</b> threshold before the change in difficulty level is 2 weeks. If the last 2016 blocks were mined in 1119100 milliseconds, then after 2 weeks what will be the level of difficulty? [Use ceiling function to provide the answer].	
	<input type="radio"/> 22	
	<input type="radio"/> 20	
	<input type="radio"/> 19	
	<input type="radio"/> 21	
	<b>No, the answer is incorrect.</b>	
	<b>Score: 0</b>	
	<b>Accepted Answers:</b>	
	<i>22</i>	
	7) Which of the following strategy is used by the Bitcoin network to <b>1 point</b> control the inflow of bitcoins in the network:	

- ☐ Increasing the nonce
- ☐ Lower the mining reward
- ☐ Increasing the block size
- ☐ All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Lower the mining reward*

8) Suppose a mining pool has obtained a block reward of 236 bitcoins **1 point** and the pool fee is 100 bitcoins. Considering the difficulty of the block as 961 what is amount of reward each miners in the pool will obtain with pay per share scheme?

- ☐ 1.965727587 bitcoins
- ☐ 0.141519251 bitcoins
- ☐ 0.057483923 bitcoins
- ☐ 0.245577523 bitcoins

No, the answer is incorrect.

Score: 0

Accepted Answers:

*0.141519251 bitcoins*

9) Suppose there are 5 (with ids 1..5) nodes in a distributed system. **1 point** While in process of reaching consensus, node 1 suggests a proposal with a proposal number 405. In the same way node 4 suggests a proposal with a proposal number 411. Now, the node 1 being a malicious node immediately proposes another proposal with a proposal number 415. Considering Paxos as the underlying consensus algorithm, how the system will reach consensus in this scenario?

- ☐ Proposal 405 from node 1 will be considered finally
- ☐ Proposal 415 from node 1 will be considered finally
- ☐ Blocking proposal 415 and accepting proposal 411 finally
- ☐ Nodes 2, 3, and 5 will wait for sometime and one of them will become a proposer

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Blocking proposal 415 and accepting proposal 411 finally*

10) Which of the following serve as the primary assumption for a **1 point** permissioned blockchain:

- ☐ Closed network
- ☐ Chosen miners
- ☐ No malicious miners
- ☐ All of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

*Closed network*

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