Exercise Sheet 10

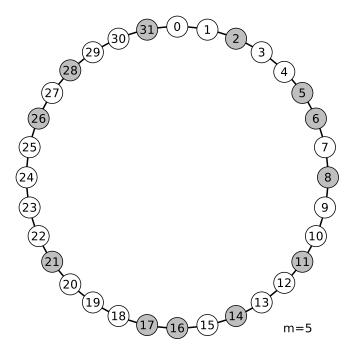
Exercise 1 (Peer-to-Peer)

1.	Centralized services exist in					
	\square Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
2.	No central point of attack exists with (Two answers are correct here.)					
	☐ Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
3.	No centralized services ex	ist with				
	☐ Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
4.		ents must know at least a single Peer to access systems, which implement. vo answers are correct here.)				
	\Box Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
5.	. A central point of attack exists with					
	\square Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
6.	Which architecture causes	s the biggest networl	k overhead?			
	☐ Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
7.	Which architecture causes the lowest network overhead?					
	☐ Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
8.	Which architecture implements a kind of dynamic, centralized service?					
	\square Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
9.	Napster (1999 - 2001) implemented					
	\square Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
10.	Which architecture implements Ultrapeers (= Supernodes)?					
	\square Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
11.	Gnutella v0.4 implements					
	\square Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			
12.	Gnutella v0.6 implements					
	☐ Centralized P2P	☐ Pure P2P	☐ Hybrid P2P			

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Exercise 2 (Distributed Hash Table)

- 1. What is the objective of hash functions?
- 2. How can the quality of a hash functions be determined?
- 3. What is the drawback of linear search in the Chord ring?
- 4. What way of searching in the Chord ring is preferred?
- 5. To which node n gets a key k assigned to?
 - ☐ The node with the same ID as the key
 - ☐ Direct predecessor
 - ☐ Direct successor
 - ☐ First node (starting from ID 1) without any keys assigned yet
- 6. Calculate the Finger Table values of node n = 8 and insert the correct values into the provided Finger Table.



Finger Table of node n = 8

Entry	Start	Node
1		
2		
3		
4		
5		

The table has 5 entries, because m contains the length of the ID in bits and m = 5

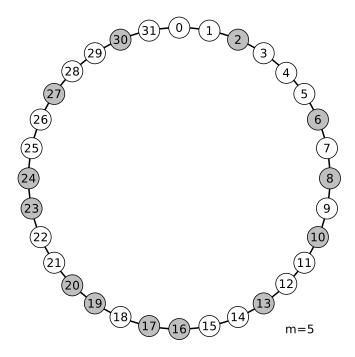
The Start value of entry i of the table on node n is $(n+2^{i-1})$ mod 2^m

The Node value of entry i points to the first node, which follows to n at a distance of at least 2^{i-1}

7. Which node is responsible for the key (resource) with ID 23?

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8. Calculate the Finger Table values of node n=20 and insert the correct values into the provided Finger Table.



Finger Table of node n = 20

Entry	Start	Node
1		
2		
3		
4		
5		

The table has 5 entries, because m contains the length of the ID in bits and m = 5

The Start value of entry i of the table on node n is $(n+2^{i-1})$ mod 2^m

The Node value of entry i points to the first node, which follows to n at a distance of at least 2^{i-1}

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9. Which node is responsible for the key (resource) with ID 11?

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