## Exercise Sheet 10

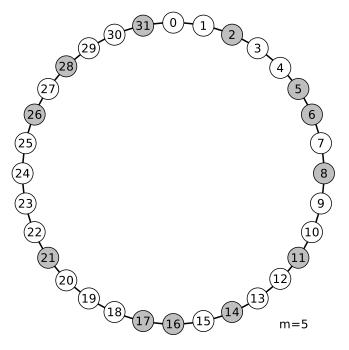
## Exercise 1 (Peer-to-Peer)

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.	Clients must know at least a single Peer to access systems, which implement Two answers are correct here.)				
	$\square$ 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 network	k overhead?		
	$\square$ Centralized P2P	☐ Pure P2P	☐ Hybrid P2P		
7.	Which architecture causes the lowest network overhead?				
	$\square$ 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)?				
	$\Box$ Centralized P2P	☐ Pure P2P	☐ Hybrid P2P		
11.	Gnutella v0.4 implements				
	$\Box$ Centralized P2P	☐ Pure P2P	☐ Hybrid P2P		
12.	Gnutella v0.6 implements				
	$\square$ 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

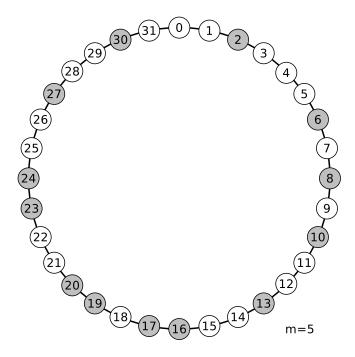
The Start value of entry i of the table on node n is  $(n+2^{i-1})$  mod  $2^m$ 

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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