



**Question 3** [3 marks]

In Chord routes are maintained to only a selection of other nodes (e.g. 1, 2, 4, 8, ... positions away). Explain an advantage and disadvantage of instead maintaining routes to nodes 2, 4, 6, 8, ... positions away.

**Question 4** [1 mark]

Napster's performance is of order 1 for both latency (time to get search result) and number of messages sent. Whereas Gnutella is of order  $\log(n)$  for latency and order  $n$  for messages sent (where  $n$  is the number of peers). What is a disadvantage of Napster compared to Gnutella?

**Question 5** [1 mark]

A default value of the number of permanent peers ( $C$ ) in Gnutella is 4. What is a disadvantage of increasing this value?