Peer-to-peer networks – (due till May 13, 2009)

Exercise 9.1: Bit torrent

a) Bit torrent distinguishes between three download strategies.

- Rarest first
- Random choice
- End game mode

What are the advantages of these strategies as compared to download data-chunks consecutively? What are the disadvantages?

b) Finishing a download can sometimes be delayed by the completion of the last chunk. Suggest a better algorithm than bit torrent's „end game mode".

Exercise 9.2: Zipfian distribution

Plot the Zipfian distribution for alpha=0.5 and alpha=0.25. If the attention to a specific file follows one of these distributions, which consequences does this have for the peer-to-peer networks Chord, Pastry, Kademlia or Bubblestorm with regard to the downloading of files?

$$v_k = \frac{1/k^\alpha}{\sum_{n=1}^{N} 1/n^\alpha}$$