

CS5231 高速電腦網路 期末考 (06/14/2005, 18:20-20:00)

- (10%) 1. Please describe the operation of IP switching to have the performance of hardware switch and the flexibility of routing protocol. Is it a control driven or data (flow) driven mechanism? Why?
- (10%) 2. Please describe the Tag Distribution Protocol used in the Tag Switch architecture.
- (10%) 3. Please describe the concept of the following components of MPLS: Labels, Label stack, Label Distribution protocols.
- (10%) 4. Please explain the concept and purpose of Longest Prefix Matching for routers to determine the routing of packets. Give an example to demonstrate your concept.
- (10%) 5. Binary Tries are often used data structures to store the prefixes for longest prefix matching. Please describe this data structure and explain how it is used to store the set of following prefixes:
(a) 100111, (b) 000111, (c) 100000, (d) 001001, (e) 001010, (f), 100101
- (10%) 6. A generic Layer-7 packet processing engine includes: (a) packet normalizer, (b) pattern matching engine, and (c) policy engine. Please explain the functions of each of the three engines.
- (10%) 7. Boyer-Moore Algorithm is one of the famous string matching algorithms which using “bad character” and “good suffix” features. For example, for a pattern of **GCAGAGAG**, the bad characters and the corresponding number of shifts are (A/1, C/6, G/2, T/8), and the good suffixes and their corresponding number of shifts are (G/7, C/7, A/7, G/2, A/7, G/4, A/7, G/1). Please show how the algorithm processes the following input string:
GCATCGCAGAGAGTATACAGTAAG
- (10%) 8. Please explain the concept of Bloom Filter for string matching.
- (10%) 9. Aho-Corasick is a deterministic string matching algorithm. Thus, the performance is independent to the number of patterns. Please explain why it is deterministic and show the constructed data structure for the following patterns: {hers, his, she}. Also the way to process the input string: heishis.
- (10%) 10. What are the missions of Notification Server and Switchboard Server in the MSN architecture? What are the procedures to create a switchboard session and invite a principal in the MSN protocol?