PRACTICE EXAM

Difficulty: MEDIUM

Questions: 10

Operating Systems - File Systems Exam

Instructions

Answer all questions to the best of your ability. Read each question carefully before answering.

Section 1: Multiple Choice Questions (40 points total, 10 points each)

Instructions: Choose the best answer for each of the following questions.

Question 1: Which of the following is NOT a directory operation?
A) Create
B) Openfile
C) Rename
D) Unlink

Question 2: In a single-level directory system, how are files organized?
A) Hierarchically, with nested directories.
B) All files are stored in a single directory.
C) Using a linked list structure.
D) Through a file allocation table.

Question 3: Which of the following describes Contiguous file allocation?
A) Files are stored as a linked list of blocks.
B) Files are stored in non-adjacent memory.
C) Files are stored in adjacent memory.
D) Files are stored using a file allocation table.

Question 4: What is the main function of an i-node?
A) To store the actual data content of a file.
B) To map virtual addresses to physical addresses.
C) To hold metadata about a file, such as ownership, permissions, and location of its data blocks.
D) To manage the free space on the disk.

Section 2: Short Answer Questions (30 points total, 10 points each)

Instructions: Answer each of the following questions in 2-3 sentences.

Question 5: (10 points) Explain the difference between a hierarchical directory system and a single-level directory system.

Question 6: (10 points) Describe the purpose of the `Readdir` directory operation.

Question 7: (10 points) Briefly explain one advantage and one disadvantage of contiguous file allocation.

Section 3: Problem-Solving Questions (30 points total, 15 points each)

Instructions: Provide detailed answers, explaining your reasoning.

Question 8: (15 points) Consider a file system that uses a linked list allocation method with the file allocation table stored in main memory. Describe a scenario where this method would provide better performance than contiguous allocation, and explain why.

Question 9: (15 points) Describe how the "Link" directory operation can facilitate file sharing between multiple users in a hierarchical file system. Explain the potential challenges that arise when the original owner deletes the file and how the file system can handle this scenario.