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**Total Marks: 7.5**

**Marks Obtained:**

**Operating System**

**Disk Partition Manager**

**Project proposal**

**Submitted To: sir Jawad Naseer**

**Date of Submission: March 26, 2025**

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**Introduction**

Disk partitioning is a fundamental process in operating systems that involves dividing a disk into separate sections to manage storage efficiently. A disk partition manager allows users to create, modify, and delete partitions, optimizing space allocation and improving system performance. This project aims to develop a Disk Partition Manager that provides an interactive and user-friendly interface for managing disk partitions effectively.

**Objectives**

* To develop a software application that enables users to create, delete, and resize disk partitions.
* To provide an intuitive graphical user interface (GUI) and command-line interface (CLI) for partition management.
* To ensure compatibility with major file systems such as NTFS, FAT32, ext4, and others.
* To implement safety measures to prevent accidental data loss.
* To support dynamic and logical partitioning.

**Scope of the project**

* The system will allow users to perform partitioning operations such as creating, resizing, merging, and deleting partitions.
* It will provide real-time disk usage visualization.
* The tool will be developed for Linux-based systems initially, with possible extensions to Windows.
* Users will have access to both GUI and CLI interfaces.
* The system will incorporate error handling and data integrity checks.

**Methodology**

* **Research and Analysis:** Study existing partition management tools and identify their strengths and weaknesses.
* **Technology Stack:** Use C/C++ for low-level disk management and Python or Java for the GUI.
* **Development Phases:**
  + Design the system architecture.
  + Implement basic partitioning functions.
  + Develop the user interface.
  + Test the system on different storage devices.
  + Optimize performance and ensure reliability.

**Expected Outcomes**

* A functional and reliable Disk Partition Manager with essential partitioning features.
* A user-friendly interface for both technical and non-technical users.
* A safe and efficient tool for disk partitioning without compromising data integrity.
* Documentation and a research report detailing the development process and findings.

**Conclusion**

The development of a Disk Partition Manager will contribute to better disk management solutions for users. This research-based project will provide insights into low-level disk operations and enhance the understanding of storage management techniques.