Assignment-2

Problem: Identify a real-world application for both parallel computing and networked systems. Explain how these technologies are used and why they are important in that context.

Solution:

Parallel Computing: Weather Forecasting Systems

Usage:

Weather forecasting relies heavily on parallel computing to process massive datasets collected from satellites, weather stations, and sensors worldwide. High-performance computing systems divide tasks such as atmospheric simulations, climate modeling, and prediction algorithms into smaller parts that run simultaneously on multiple processors.

Importance:

- Speed: Parallel computing significantly reduces the time required to perform complex calculations, allowing meteorologists to provide timely and accurate forecasts.
- Accuracy: By simulating multiple scenarios concurrently, parallel computing enables better predictions of weather patterns, aiding disaster preparedness and mitigation.
- Scalability: It handles the ever-increasing complexity of climate models and the growth of data inputs over time.

Networked Systems: Online Banking

Usage:

Online banking leverages networked systems to enable secure, real-time transactions and communication between customers, banks, and third-party financial systems. These systems ensure that user requests such as fund transfers, bill payments, and account inquiries are processed over interconnected servers and networks.

Importance:

- Accessibility: Customers can access banking services from anywhere, improving convenience.

- Security: Networked systems implement encryption, firewalls, and authentication protocols to protect sensitive financial information.
- Efficiency: By integrating various banking services, networked systems streamline operations, reduce manual effort, and improve service delivery.