**Assignment 2: 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**.

**1. Parallel Computing: Weather Forecasting:**

**Application:** Weather forecasting requires processing vast amounts of data in real-time to generate accurate predictions. Parallel computing is crucial in this context because it allows meteorologists to break down complex computational tasks into smaller, manageable chunks that can be processed simultaneously by multiple processors or nodes.

**Usage:** High-performance computing clusters are used to run weather prediction models in parallel. These clusters consist of multiple interconnected processors or nodes that work together to handle the computational workload efficiently. Each node can process a subset of the data independently, and the results are combined to produce the final forecast.

**Importance:** Parallel computing significantly speeds up the weather forecasting process, allowing meteorologists to analyse more data and generate more accurate predictions in a shorter amount of time. This is essential for providing timely and reliable information to the public, helping people prepare for severe weather events and mitigate their impact.

**2. Networked Systems: Online Shopping:**

**Application:** Online shopping platforms connect buyers and sellers over the internet, allowing customers to browse products, place orders, and make payments remotely. Networked systems play a critical role in enabling seamless communication and transactions between various components of the online shopping ecosystem, including web servers, databases, payment gateways, and delivery services.

**Usage:** Networked systems are used to create and maintain online shopping websites, which consist of multiple interconnected servers and databases distributed across different geographical locations. These systems handle user requests, process transactions, manage inventory, and track shipments in real-time.

**Importance:** Networked systems enable online shopping platforms to provide a convenient and efficient shopping experience for customers, regardless of their location. By leveraging the power of the internet and distributed computing, these systems can handle a large number of concurrent users, ensure data integrity and security, and scale dynamically to meet fluctuating demand. This scalability and reliability are essential for the success of online retailers, especially during peak shopping seasons like Black Friday and Cyber Monday.