**Individual Weekly Report – Week 10**

**Project: E-commerce Web Application TechPlaza**

**Role: DevOps Engineer**

**Completed Tasks:**

1. **Exploration of Microservices Architecture**: I've conducted a thorough investigation into the potential adoption of a microservices architecture for the Techplaza application. This entails breaking down the application into smaller, loosely coupled services for independent development, deployment, and scaling. Such an approach offers flexibility in technology choices, efficient scalability, easy maintainability, and effective fault isolation.
2. **Investigation into Azure Kubernetes Service (AKS):** I've evaluated the benefits of integrating AKS into our application architecture. AKS provides a managed platform for deploying, managing, and scaling containerized applications. It offers advanced features such as container orchestration, horizontal scaling, comprehensive monitoring, and streamlined management, all contributing to application efficiency and resilience.

**Ongoing/In-Progress Tasks:**

1. **Integration Strategy for Microservices and AKS**: I am currently working on devising a strategy for the potential integration of a microservices architecture and AKS into our existing application infrastructure. This involves understanding the implications of such an integration and planning for a smooth transition.
2. **Evaluation of Service Mesh**: I am in the process of evaluating the benefits of implementing a service mesh, like Azure Service Fabric or Istio, to enhance communication, observability, and resilience within our potential microservices architecture.

**Issues/Challenges:**

1. **Issue 1**: The transformation to a microservices architecture can be a complex task, potentially introducing new challenges related to service communication, data management, and security. I'm addressing these by researching best practices and solutions used in successful microservices implementations and planning for these challenges in the transition strategy.
2. **Issue 2**: Integrating Azure Kubernetes Service (AKS) into our application infrastructure may introduce challenges related to container orchestration, cluster management, and resource allocation. I'm mitigating this by studying AKS in-depth, understanding its intricacies, and planning for a seamless integration.
3. **Issue 3**: Implementing a service mesh in our architecture could pose challenges, including complexity in setup and management, and potential performance overhead. I'm addressing these by evaluating different service mesh solutions and considering their benefits and trade-offs.