

Milestone 3: Practical Implementation of LowTech GmbH Webshop in CSP Platform

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Abstract

1 Introduction

1.1 Overview of the Project

Brief recap of previous milestones and progression to current implementation phase

1.2 Objectives of the Cloud Implementation of Webshop

2 Application Design

2.1 Architectural Overview

Detailed description of the three-tier structure with CSP service mapping

2.1.1 Presentation-Tier (Frontend) - User Interface (UI)

Technology Stack

- Frontend Framework
- State Management
- Communication with Backend
- Hosting & Deployment,

component-based architecture

1. Navigation & Routing
2. API Communication
3. Data Fetching

Key Features of the UI

1. Product Catalog
2. Product Search and Filtering
3. Product Details Page
4. Shopping Cart
5. Checkout Process

2.1.2 Application-Tier (Backend) - Business Logic

2.1.3 Data-Tier (Database) - Databases

2.2 Technology Stack

- Frontend:
- Backend:
- Database:

2.3 System Diagrams

3 Implementation Process

3.1 Cloud Environment Setup

Step-by-step account configuration and resource provisioning

3.2 Service Integration

- Azure Load Balancer configuration
- Database replication setup
- Blob storage integration patterns

3.3 Development Challenges

- State management in scaled environments
- Database connection pooling
- CSP-specific limitations encountered

4 Operational Characteristics

4.1 Performance Metrics

4.1.1 Functional Test Cases

Test Case ID	Test Scenario	Expected Outcome	Status (Pass/Fail)
TC-001	Load homepage and verify product listing	Homepage loads with products displayed correctly.	

Test Case ID	Test Scenario	Expected Outcome	Status (Pass/Fail)
TC-002	Apply price filter (Ascending/Descending)	Products reorder correctly based on selected price.	
TC-003	Apply Out of Stockfilter	Only out-of-stock items are displayed.	
TC-004	Apply FFast Deliveryfilter	Only products eligible for fast delivery show up.	
TC-005	Filter by category	Products are filtered correctly by selected category.	
TC-006	Search product by name or category	Products matching search are shown correctly.	
TC-007	Clear filter functionality	All filters are removed, showing the full product list.	
TC-008	Product Detail Page - Click Product	Clicking a product opens its detailed page.	
TC-009	Product Detail Page - Load Product Details	Product details (name, description, price) are displayed.	
TC-010	Add a product to cart	Product appears in cart with correct details.	
TC-011	Increase product quantity in cart	Quantity updates and is reflected in the cart.	
TC-012	Remove product from cart	Product is removed from the cart immediately.	
TC-013	Proceed to checkout	Checkout page loads with the correct order summary.	
TC-014	Select payment method - Stripe	Stripe payment option is selected and processed.	
TC-015	Select payment method - PayPal	PayPal payment option is selected and processed.	
TC-016	Complete order processing	Order confirmation message is displayed.	
TC-017	Order confirmation email is received	Email is sent after order is placed.	
TC-018	Shipment notification email is received	Email is sent when the order is shipped.	
TC-019	Toggle Dark/Light Theme	Application switches between themes successfully.	

4.2 Security Considerations

- Network security groups configuration
- Database encryption implementation
- Access control mechanisms

5 Critical Analysis

5.1 Cloud Service Evaluation

Cost-benefit analysis of selected Azure services

5.2 Architectural Decisions

Trade-off discussion between containerized vs serverless approaches

6 Repository Documentation

6.1 GitHub Structure

- Branching strategy
- CI/CD pipeline configuration
- Documentation standards

6.2 Contribution Tracking

Commit history analysis and individual contribution breakdown

7 Conclusion

7.1 Project Outcomes

Summary of achieved objectives and demo capabilities

7.2 Future Enhancements

Potential improvements for production readiness

References