CSC 326 Project 1b1: WolfCafe Food Delivery System use case expansion

Project: 1b1

Due: Monday, Sept 8

Objective: Problem amplification

WolfCafe Use Case Expansion - 40 Best Use Cases

Regulatory Compliance Use Cases

Use Case 1: System Processes WIC-Eligible Food Orders
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- WIC participant has verified EBT card and active benefits
- System maintains current USDA WIC-approved food database
- Payment processing supports EBT transactions

Main Flow:

- WIC participant logs in with verified credentials
- System filters menu to display only WIC-eligible items with approved packaging sizes
- Customer adds eligible items to cart within benefit limits
- System validates items against current WIC food package guidelines
- EBT payment processed through federal payment gateway
- Order confirmation includes WIC transaction details and remaining benefits

Subflows:

- Real-time benefit balance checking during cart modification
- Automatic substitution suggestions for out-of-stock WIC items
- Integration with state WIC agency databases for participant verification

Alternatives:

- Mixed payment processing (WIC + cash/card for non-eligible items)
- Manual override by authorized staff for edge cases
- Offline EBT processing during network outages

Outcome:

- WIC participant successfully orders approved nutritious foods within benefit limits
- Federal compliance maintained for WIC program requirements
- Transaction records properly logged for government auditing and reporting

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Use Case 2: Administrator Manages Multi-State Tax Compliance
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- System has access to current state/local tax databases
- Delivery zones are mapped to tax jurisdictions
- Integration with tax calculation services is operational

Main Flow:

- Administrator accesses tax compliance dashboard
- System displays current tax rates by jurisdiction and recent updates
- Admin reviews pending tax rate changes from state revenue departments
- System applies new rates to corresponding delivery zones
- All pending orders recalculated with updated tax rates
- Compliance reports generated for audit purposes

Subflows:

- Automatic tax rate updates from state API feeds
- Exception handling for complex jurisdiction overlaps
- Integration with accounting systems for tax remittance

Alternatives:

- Manual tax rate entry during API service disruptions
- Conservative rate application during uncertain tax situations
- Third-party tax service integration for complex calculations

Outcome:

- Accurate tax compliance across all delivery jurisdictions maintained
- Audit-ready documentation generated for regulatory requirements
- Revenue calculations properly allocated to appropriate tax authorities

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Use Case 3: System Enforces FDA Food Safety Compliance
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Food safety protocols are configured per FDA guidelines
- Temperature monitoring systems are operational
- Staff training records are current and accessible

Main Flow:

- Staff initiates daily food safety compliance check
- System presents FDA-mandated checklist (temperature logs, storage, labeling)
- Staff documents compliance status with digital signatures
- System validates required data completeness and ranges
- Non-compliance issues flagged for immediate corrective action
- Compliance report generated and stored for inspection readiness

Subflows:

- IoT sensor integration for automated temperature monitoring

- Photo documentation requirements for visual inspections
- Integration with supplier food safety certifications

Alternatives:

- Emergency shutdown procedures for critical violations
- Manual documentation backup during system maintenance
- Third-party inspector access portal for health department reviews

Outcome:

- Food safety standards maintained in compliance with FDA regulations
- Digital audit trail created for health department inspections
- Public health protection ensured through systematic safety monitoring

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Use Case 4: System Ensures Comprehensive Accessibility Compliance
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- ADA compliance standards are implemented across all interfaces
- Assistive technology compatibility is tested and maintained
- Staff training for disability accommodation is current

Main Flow:

- Customer with accessibility needs accesses system through assistive technology
- System provides optimized interface (screen reader, high contrast, voice control)
- Alternative input methods available for motor accessibility challenges
- Simplified navigation options for cognitive accessibility needs
- Staff assistance protocols activated when needed
- Accessibility feedback collection for continuous improvement

Subflows:

- Physical location accessibility coordination for pickup customers
- Partnership with campus disability services for specialized needs
- Regular accessibility audits and compliance reporting

Alternatives:

- Phone-based ordering assistance for digital accessibility challenges
- In-person ordering accommodation with staff assistance
- Family/caregiver account management for dependent customers

Outcome:

- Equal access to food services ensured for all students regardless of abilities
- Legal compliance with ADA and Section 504 requirements maintained
- Inclusive campus environment supported through universal design principles

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Advanced Customer Experience Use Cases

Use Case 5: System Provides Personalized Nutrition Recommendations
LLM: Claude Sonnet 4 | Method: Careful Prompting

Preconditions:

- Customer dietary preferences and health goals are recorded
- Nutritional database for all menu items is complete
- Recommendation engine algorithms are trained and operational

Main Flow:

- Customer accesses personalized dashboard
- System analyzes order history and dietary preferences
- AI engine generates nutrition-optimized menu recommendations
- Customer receives suggestions with nutritional explanations
- Order placement includes nutritional impact summary
- Progress toward health goals tracked and reported

Subflows:

- Integration with campus health services for medical dietary restrictions
- Seasonal menu adjustments for nutritional variety
- Group meal planning for organizations and teams

Alternatives:

- Manual nutritionist consultation booking for complex needs
- Generic healthy options highlighting when personalization unavailable
- Export nutrition data to external health tracking apps

Outcome:

- Students receive personalized guidance toward healthier eating habits
- Nutritional awareness increased through educational explanations
- Long-term health outcomes improved through consistent dietary support

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Use Case 6: Customer Participates in Campus Sustainability Program
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Sustainability tracking systems are configured
- Eco-friendly packaging options are available
- Carbon footprint calculation algorithms are implemented

Main Flow:

- Customer selects eco-friendly options during ordering
- System calculates environmental impact reduction (carbon, waste)
- Sustainability points awarded based on eco-conscious choices
- Customer views cumulative environmental contribution
- Points redeemed for discounts or donated to environmental causes
- Campus sustainability dashboard updated with aggregate impact

Subflows:

- Integration with campus-wide sustainability initiatives
- Educational content about food system environmental impacts
- Social sharing of sustainability achievements

Alternatives:

- Opt-out for customers preferring standard service

- Corporate sustainability reporting for institutional accounts
- Third-party environmental certification integration

Outcome:

- Campus environmental impact reduced through conscious consumer choices
- Student environmental awareness increased through gamification
- University sustainability goals supported through measurable food service contributions

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Use Case 7: System Manages Peak Demand with Dynamic Pricing
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Historical demand data is available and analyzed
- Dynamic pricing algorithms are configured
- Customer notification systems are operational

Main Flow:

- System monitors real-time order volume and kitchen capacity
- AI algorithm predicts demand spikes and adjusts pricing accordingly
- Price changes displayed transparently with explanatory messaging
- Customers receive notifications about peak pricing periods
- Alternative ordering times suggested for cost savings
- Revenue optimization metrics tracked for business analysis

Subflows:

- Loyalty member price protection during peak periods
- Group order discounts to encourage off-peak ordering
- Integration with campus event calendars for demand prediction

Alternatives:

- Fixed pricing override during system maintenance
- Manual price adjustments for special events or emergencies
- Surge pricing caps to prevent excessive cost increases

Outcome:

- Kitchen capacity optimally utilized through demand distribution
- Customer expectations managed through transparent pricing communication
- Revenue maximized while maintaining service quality and customer satisfaction

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Use Case 8: System Provides Real-Time Nutritional Coaching and Education
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Comprehensive nutritional database for all menu items
- Partnership with campus health and wellness programs established
- Educational content library maintained and updated

Main Flow:

- Student accesses nutritional coaching dashboard
- System analyzes current dietary patterns and health goals
- Personalized recommendations provided with educational explanations
- Progress tracking displays toward nutritional objectives
- Educational content delivered based on dietary choices and interests
- Campus nutritionist consultation scheduling integrated when needed

Subflows:

- Integration with campus fitness programs and health assessments
- Peer support groups and challenges for nutritional goals
- Research participation opportunities for nutrition studies

Alternatives:

- Basic nutritional information display when coaching unavailable
- Third-party nutrition app integration for comprehensive tracking
- Anonymous participation options for privacy-conscious students

Outcome:

- Student health outcomes improved through evidence-based nutritional guidance
- Health awareness increased through accessible educational resources
- Campus wellness initiatives supported through food service integration

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Operational Efficiency Use Cases

Use Case 9: AI-Powered Inventory Optimization System
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Historical sales and inventory data spanning multiple semesters
- Supplier delivery schedules and lead times are documented
- Machine learning models are trained on campus-specific patterns

Main Flow:

- AI system analyzes sales patterns, weather, and campus events
- Demand forecasts generated for 1-14 day horizons by menu item
- Automated purchase orders created based on optimization algorithms
- Supplier integration confirms availability and delivery schedules
- Staff receives inventory recommendations and exception alerts
- System learns from actual vs. predicted demand to improve accuracy

Subflows:

- Integration with campus academic calendar for enrollment changes
- Weather API integration for demand pattern adjustments
- Waste reduction optimization through expiration date management

Alternatives:

- Manual override capabilities for special events or promotions
- Emergency supplier protocols for unexpected demand spikes
- Backup forecasting using simple statistical methods during AI downtime

Outcome:

- Food waste minimized through accurate demand prediction
- Operating costs reduced through optimized purchasing and inventory management
- Service reliability improved through prevention of stockouts

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Use Case 10: System Coordinates Multi-Platform Order Management
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Mobile app, web interface, and kiosk systems are operational
- Unified backend database maintains real-time synchronization
- Customer accounts are platform-agnostic

Main Flow:

- Customer initiates order on preferred platform (mobile/web/kiosk)
- System synchronizes cart contents across all platforms in real-time
- Customer can seamlessly switch platforms without data loss
- Payment processing adapts to platform-specific security requirements
- Order confirmation sent through customer's preferred communication channel
- Kitchen receives unified order regardless of originating platform

Subflows:

- Cross-platform promotional code validation and application
- Platform-specific UI optimizations while maintaining feature parity
- Offline mode capabilities with synchronization when connectivity restored

Alternatives:

- Platform isolation mode during technical difficulties
- SMS/phone backup ordering during widespread system outages
- Manual order entry by staff for customers experiencing platform issues

Outcome:

- Customer convenience maximized through flexible platform access
- Order accuracy maintained regardless of ordering channel
- System reliability improved through redundant access methods

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Use Case 11: Driver Route Optimization
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Multiple orders are ready for delivery, and drivers' routes need to be optimized.

Main Flow:

- System aggregates all orders for a specific time frame (e.g., 30 minutes)
- Algorithm optimizes driver routes using real-time traffic updates and delivery location proximity

- Drivers receive their assigned route with estimated delivery times and addresses

Subflows:

- Route optimization fails → system re-routes drivers or notifies customer support for manual intervention
- Driver requests assistance → system provides real-time navigation guidance and support

Alternatives:

- Manual route assignment during system outages
- Alternative delivery methods for inaccessible locations

Outcome:

- Drivers are able to optimize their routes, reducing delivery time and improving overall efficiency

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Use Case 12: System Manages Wait Times and Queue Information
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Kitchen capacity monitoring is operational
- Order processing time estimation algorithms are calibrated
- Customer communication systems are active

Main Flow:

- System calculates current wait times based on order queue and kitchen capacity
- Estimated completion times displayed to customers during ordering
- Real-time updates provided as conditions change
- Queue position information shared with waiting customers
- Early completion notifications sent when orders ready ahead of schedule
- Delay notifications sent proactively when issues arise

Subflows:

- Peak hour surcharge implementation to manage demand
- Alternative location suggestions during high wait times
- Expedited processing options for urgent orders

Alternatives:

- Generic time estimates when real-time calculation unavailable
- Manual time updates by kitchen staff
- Phone notifications when digital communication fails

Outcome:

- Customer expectations managed through transparent wait time communication
- Kitchen efficiency optimized through demand-responsive planning
- Customer satisfaction maintained through proactive updates and realistic timing

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Integration & System Management Use Cases

Use Case 13: System Provides Advanced Business Intelligence Analytics
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Comprehensive data collection across all system touchpoints
- Analytics engine with dashboard capabilities is operational
- User access controls configured for different stakeholder levels

Main Flow:

- Manager accesses business intelligence dashboard
- System displays real-time KPIs (sales, satisfaction, efficiency, trends)
- Interactive visualizations enable drill-down analysis by time/category/customer
- Predictive analytics highlight potential issues and opportunities
- Custom reports generated for specific business questions
- Automated alerts trigger for significant performance deviations

Subflows:

- Integration with campus dining services for competitive analysis
- Student demographic analysis for targeted marketing campaigns
- Financial performance modeling for pricing strategy optimization

Alternatives:

- Simplified reporting interface for users without analytical training
- Data export capabilities for external business intelligence tools
- Manual report generation during system maintenance periods

Outcome:

- Management decisions informed by comprehensive data analysis
- Operational efficiency continuously improved through insights
- Competitive advantage maintained through data-driven strategy

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Use Case 14: System Integrates with Campus ID Card Payment
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Campus card payment system integration is active
- Student account balances are accessible
- Meal plan credit systems are configured

Main Flow:

- Student selects campus card payment option
- System connects to university payment gateway
- Available balance and meal plan credits displayed
- Payment processed through campus card system
- Receipt generated with remaining balance information
- Transaction recorded in both systems for reconciliation

Subflows:

- Parent account funding notifications

- Low balance warnings and top-up options
- Semester meal plan allocation tracking

Alternatives:

- Backup payment methods when campus system unavailable
- Manual processing for card reader failures
- Temporary credit for verified students during system issues

Outcome:

- Student payment convenience maximized through familiar campus systems
- University financial integration maintained for accounting purposes
- Meal plan utilization tracked for institutional planning

Use Case 15: System Manages Subscription and Recurring Order Services
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Subscription billing infrastructure integrated with campus accounts
- Flexible scheduling and modification systems operational
- Integration with academic calendar and campus dining plans

Main Flow:

- Student configures recurring meal preferences and delivery schedule
- System automatically generates orders based on subscription parameters
- Campus meal plan credits applied automatically with real-time balance tracking
- Flexible modification interface allows schedule and preference changes
- End-of-semester settlement handles unused credits and refunds
- Academic calendar integration manages break periods and schedule changes

Subflows:

- Family meal plan options for visiting parents and dependents
- Corporate subscription services for faculty and staff
- Group subscriptions for student organizations and teams

Alternatives:

- One-time override options for subscription customers
- Manual subscription management for complex special circumstances
- Temporary suspension options for study abroad or co-op periods

Outcome:

- Student meal planning simplified through automated recurring orders
- Campus dining revenue stabilized through predictable subscription income
- Food preparation efficiency improved through advance order knowledge

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Use Case 16: System Handles Emergency Response and Crisis Management
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Emergency protocols are documented and staff-trained
- Communication systems support mass notifications

- Backup procedures for critical functions are established

Main Flow:

- Emergency situation detected (food safety, campus alert, system breach)
- System activates appropriate crisis response protocol automatically
- Mass customer notifications sent through all available channels
- Affected services disabled and alternative options provided
- Financial protection activated (automatic refunds, credit holds)
- Incident documentation generated for regulatory compliance and analysis

Subflows:

- Integration with campus emergency management systems
- Supply chain alternative sourcing during disruptions
- Insurance claim documentation and evidence collection

Alternatives:

- Manual emergency procedures during communication system failures
- Partnership agreements with other campus dining services for backup
- Off-site backup systems for critical data protection

Outcome:

- Public safety protected through rapid emergency response
- Customer trust maintained through transparent crisis communication
- Business continuity ensured through systematic contingency planning

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Customer Service & Engagement Use Cases

Use Case 17: Customer Tracks Order in Real-Time
LLM: Llama3.1:8b | Method: Zero-Shot Prompting

Preconditions:

- Customer has placed an order
- GPS tracking system is operational
- Mobile notifications are enabled

Main Flow:

- Customer opens tracking interface after order placement
- System displays current order status and estimated delivery time
- Real-time map shows order preparation and delivery progress
- Push notifications sent for status changes
- Customer receives arrival notification
- Order marked complete upon delivery confirmation

Subflows:

- SMS updates for customers without app access
- Delay notifications with updated timing
- Driver contact information sharing

Alternatives:

- Manual status updates during system outages

- Phone call notifications for delivery issues
- Email tracking as backup communication

Outcome:

- Customer anxiety reduced through transparency
- Delivery coordination improved through real-time communication
- Customer satisfaction increased through proactive updates

Use Case 18: System Manages Customer Reviews and Ratings
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Customer has completed an order
- Review system interface is operational
- Moderation tools are configured

Main Flow:

- Customer receives review prompt after order completion
- Rating interface allows 1-5 star selection with comments
- System validates review content for appropriateness
- Review published to public menu item ratings
- Restaurant staff notified of new feedback
- Analytics updated with rating trends

Subflows:

- Photo uploads for visual reviews
- Response capability for restaurant staff
- Review verification for legitimate customers only

Alternatives:

- Anonymous review options
- Dispute resolution for contested reviews
- Review removal process for policy violations

Outcome:

- Menu quality improved through customer feedback
- Future customers informed through peer reviews
- Restaurant reputation managed through transparent ratings

Use Case 19: Customer Uses Quick Reorder Functionality
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Customer order history is maintained
- Previous orders are accessible in customer profile
- Menu item availability is current

Main Flow:

- Customer accesses order history from account menu
- System displays previous orders with reorder options
- Customer selects complete previous order for reordering
- System checks current availability and pricing
- Cart populated with previous order items
- Customer proceeds through standard checkout process

Subflows:

- Favorite order saving for frequent combinations
- Partial reorder options for individual items
- Modification capabilities before final checkout

Alternatives:

- Substitution suggestions for unavailable items
- Price change notifications for significantly different costs
- Manual recreation for orders with discontinued items

Outcome:

- Customer convenience improved through simplified reordering
- Order processing time reduced for repeat customers
- Customer satisfaction increased through personalized service

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Use Case 20: System Provides Live Chat Customer Support
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Live chat system is operational
- Customer service staff are trained and available
- Knowledge base for common issues is maintained

Main Flow:

- Customer initiates chat through help interface
- System routes chat to available customer service representative
- Representative accesses customer order history and account details
- Issue discussed and resolution options presented
- Solution implemented with customer approval
- Chat transcript saved and satisfaction survey offered

Subflows:

- Escalation to supervisors for complex issues
- Screen sharing capabilities for technical problems
- Multilingual support for diverse customer base

Alternatives:

- Chatbot responses for simple, common questions
- Email support when live chat unavailable
- Phone support escalation for urgent issues

Outcome:

- Customer problems resolved quickly through immediate assistance
- Customer satisfaction maintained through responsive support

- Issue patterns identified for proactive system improvements

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Advanced Features Use Cases

Use Case 21: Customer Uses Voice Ordering Interface
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:
- Voice recognition system is trained and operational
- Menu items have voice-compatible names
- Audio processing capabilities are available

Main Flow:
- Customer activates voice ordering through app or device
- System prompts for menu category or specific item requests
- Voice recognition processes spoken order details
- System confirms understood items and quantities
- Customer approves order through voice or touch confirmation
- Standard checkout process completed with payment

Subflows:
- Accent and dialect adaptation for diverse users
- Menu item suggestions for unclear requests
- Integration with smart speakers and voice assistants

Alternatives:
- Fallback to text input for recognition failures
- Human operator assistance for complex orders
- Pre-recorded menu options for system limitations

Outcome:
- Accessibility improved for visually impaired customers
- Hands-free ordering enabled for multitasking users
- Modern interface options expanded for tech-savvy customers

Use Case 22: System Implements Social Media Sharing Features
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:
- Social media APIs are integrated
- Customer privacy controls are configured
- Content moderation system is operational

Main Flow:
- Customer selects social sharing option during or after ordering
- System generates shareable content with order photos and details
- Customer customizes message and selects target social platforms
- Post published to customer's social media accounts

- Friends can view and potentially order similar items
- Social engagement tracked for marketing analytics

Subflows:

- Group ordering coordination through social features
- Referral rewards for shared orders that generate new customers
- Social challenges and contests integration

Alternatives:

- Private sharing through direct messaging
- Email sharing for non-social media users
- Anonymous sharing without personal identification

Outcome:

- Word-of-mouth marketing amplified through social networks
- Customer engagement increased through sharing incentives
- Brand awareness expanded through organic social promotion

Use Case 23: System Manages Loyalty Points and Rewards Program
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Customer loyalty accounts are established
- Points calculation system is configured
- Reward redemption options are available

Main Flow:

- Customer earns points automatically with each purchase
- Point balance displayed prominently in customer account
- Available rewards and redemption thresholds shown clearly
- Customer selects reward redemption during checkout
- Points deducted and reward applied to current order
- Bonus point opportunities offered for special actions

Subflows:

- Tier-based rewards with increasing benefits
- Partner business integration for expanded reward options
- Birthday and anniversary bonus rewards

Alternatives:

- Manual point adjustment for customer service issues
- Point expiration management with advance warnings
- Alternative reward options for customers preferring cash discounts

Outcome:

- Customer retention increased through reward incentives
- Average order value boosted through point accumulation goals
- Brand loyalty strengthened through exclusive member benefits

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Use Case 24: Customer Schedules Future Orders in Advance
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Order scheduling system is operational
- Inventory forecasting is available
- Payment pre-authorization is configured

Main Flow:

- Customer selects future date/time during order process
- System confirms availability for scheduled time slot
- Payment authorization held until order preparation
- Automated reminder sent before scheduled order time
- Kitchen receives scheduled order at appropriate preparation time
- Standard fulfillment process completed at scheduled time

Subflows:

- Recurring order scheduling for regular customers
- Group event scheduling with multiple participants
- Calendar integration for automatic scheduling

Alternatives:

- Modification window for scheduled orders
- Cancellation policies for advance orders
- Backup ordering for unavailable scheduled items

Outcome:

- Customer convenience improved through advance planning
- Kitchen workflow optimized through predictable order timing
- Special event catering simplified through scheduling tools

Specialized Campus Features

Use Case 25: System Supports Academic Research and Data Analytics
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- IRB approval processes are integrated and current
- Data privacy controls meet academic research standards
- Research collaboration agreements are established

Main Flow:

- Approved researcher requests access to anonymized behavioral data
- System applies privacy filters and generates research-appropriate datasets
- Controlled experimentation features enable A/B testing and hypothesis validation
- Student thesis projects supported through supervised data access
- Research findings integration improves system functionality
- Academic publication protocols managed with proper attribution

Subflows:

- Cross-departmental collaboration tools (nutrition, business, CS, public health)
- Integration with campus research computing resources
- Student learning opportunities through real-world data projects

Alternatives:

- Synthetic data generation for sensitive research projects
- External research partnership management for commercial studies
- Completely anonymized aggregate reporting for privacy-sensitive projects

Outcome:

- Academic research advanced through real-world food service data
- Student learning enhanced through practical data science experience
- System functionality improved through evidence-based research insights

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Use Case 26: System Manages Campus Event Catering Integration
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Campus event management systems provide API access
- Large-order processing capabilities configured
- Special dietary accommodation systems operational

Main Flow:

- Event organizer requests catering through campus event management system
- System calculates catering requirements based on event size and dietary needs
- Menu customization interface allows event-specific selections
- Bulk ordering and preparation schedules coordinated with kitchen operations
- Delivery/setup coordination managed with event logistics
- Post-event cleanup and feedback collection completed

Subflows:

- Integration with campus facilities management for venue requirements
- Special occasion menu options and presentation services
- Alumni and donor event premium service tiers

Alternatives:

- Partnership with external caterers for events exceeding capacity
- Self-service catering options for small events
- Emergency catering backup for critical campus functions

Outcome:

- Campus events successfully supported with professional food service
- Revenue diversified through expanded catering service offerings
- University reputation enhanced through high-quality event hospitality

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Use Case 27: System Coordinates Multi-Institution Food Service Collaboration
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Partnership agreements with other campus dining services established

- Cross-institutional payment and credit systems operational
- Shared menu and inventory databases accessible

Main Flow:

- Student from partner institution accesses WolfCafe system
- Cross-institutional authentication verified through federated login
- Available menu items and pricing displayed with partner institution rates
- Order placement processed with appropriate payment and tax calculations
- Fulfillment coordinated with partner institution protocols
- Cross-institutional usage analytics shared for mutual benefit

Subflows:

- Study abroad program integration for international partnerships
- Conference and visiting scholar accommodation services
- Research collaboration meal plan sharing agreements

Alternatives:

- Guest payment options for non-partner institution visitors
- Manual processing for complex cross-institutional arrangements
- Reciprocal agreements for temporary service during emergencies

Outcome:

- Inter-institutional collaboration enhanced through food service reciprocity
- Student mobility supported through seamless dining access across campuses
- Administrative efficiency improved through shared infrastructure and resources

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Use Case 28: System Manages Complex Customer Service and Dispute Resolution
LLM: Claude Sonnet 4 | Method: Careful Prompting

Preconditions:

- Customer service interface with case management capabilities
- Escalation procedures and authority levels are defined
- Integration with payment systems for refund processing

Main Flow:

- Customer submits complaint through multiple channels (app, web, phone, in-person)
- System creates ticket with automatic priority classification and routing
- Customer service representative reviews complete order history and issue context
- Resolution options presented and explained to customer
- Customer approval obtained for proposed solution
- Follow-up communication ensures satisfaction and prevents recurrence

Subflows:

- Escalation to management for high-value or complex disputes
- Integration with payment processors for automated refund processing
- Satisfaction surveys and feedback loop for service improvement

Alternatives:

- AI-powered resolution for common issues (late orders, item substitutions)
- Legal department involvement for liability or compliance issues
- Campus ombudsman integration for unresolved student complaints

Outcome:

- Customer satisfaction maintained through effective problem resolution
- Service quality continuously improved through feedback analysis
- Legal and reputational risks minimized through professional dispute handling

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Sustainability & Social Impact Use Cases

Use Case 29: System Coordinates Food Waste Reduction and Donation Programs
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Food safety protocols for donation established with local organizations
- Inventory tracking systems monitor expiration dates and surplus
- Tax compliance for charitable donations configured

Main Flow:

- System identifies surplus food approaching expiration dates
- Food safety evaluation determines donation eligibility
- Local food banks and campus organizations notified of availability
- Pickup coordination managed through integrated scheduling system
- Donation documentation generated for tax and compliance purposes
- Waste reduction metrics tracked and reported for sustainability goals

Subflows:

- Student volunteer coordination for food recovery programs
- Integration with campus sustainability and community service initiatives
- Nutritional analysis of donated foods for recipient organizations

Alternatives:

- Discounted sale options for students during low donation demand
- Composting coordination for non-donatable food waste
- Staff meal programs for surplus food utilization

Outcome:

- Food waste significantly reduced through systematic donation programs
- Community food insecurity addressed through campus food service contributions
- Environmental impact minimized through waste diversion from landfills

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Use Case 30: System Manages Gig Economy Delivery Integration
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Third-party delivery service APIs are configured and tested
- Driver tracking and communication systems are operational
- Insurance and liability frameworks are established

Main Flow:

- Customer selects delivery option during checkout
- System calculates delivery zones, fees, and estimated times
- Order details transmitted to optimal delivery service via API
- Real-time tracking information provided to customer
- Driver communication channel enabled for delivery coordination
- Delivery confirmation and customer feedback collection upon completion

Subflows:

- Multi-provider comparison for best price and availability
- Special handling protocols for temperature-sensitive items
- Driver rating and performance feedback integration

Alternatives:

- Campus-based delivery service backup during partner unavailability
- Customer pickup incentives when delivery capacity exceeded
- Emergency delivery protocols for critical orders (medical dietary needs)

Outcome:

- Campus food delivery service extended beyond walking distance
- Customer satisfaction increased through convenient delivery options
- Revenue expanded through broader market reach

Container & Reusability Features

Use Case 31: Customer Creates Reusable Container Account
LLM: Llama3.1:8b | Method: Careful Prompting
Preconditions:

- The customer has placed an order and wants to create a reusable container account

Main Flow:

- The customer selects the "Reusable Containers" option on their dashboard
- They enter their shipping address and select their preferred container type
- System verifies container availability and calculates estimated delivery date
- Customer reviews and confirms their order, including container details
- System creates an account for the reusable container and sends tracking information

Subflows:

- Container not available → system suggests alternative options or notifies customer of delays
- Customer cancels order → system updates container status to "available" and removes from delivery queue

Alternatives:

- Different container types based on menu item requirements
- Bulk container ordering for group accounts

Outcome:

- The reusable container is delivered with a pre-paid return shipping label, allowing customers to send it back for cleaning and reuse

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Use Case 32: Restaurant Updates Container Refill Policy
LLM: Llama3.1:8b | Method: Careful Prompting
Preconditions:

- The restaurant is logged in to the system and has permission to update container refill policies

Main Flow:

- Restaurant accesses the system and selects "Container Refill Policies" from the menu
- System displays current policy settings, including refill frequency, container type, and quantity limits
- Restaurant clicks "Update Policy" and enters new values for one or more of these fields
- The system validates input format and ensures that changes comply with regulatory requirements
- Restaurant reviews change summary and confirms update
- System updates the policy settings and logs the change

Subflows:

- Invalid input → error prompt requests correction
- Database error → system reverts to old policy and notifies IT support

Alternatives:

- Temporary policy changes for special events
- Location-specific policies for multi-site operations

Outcome:

- Restaurant's container refill policy is updated, reflecting changes in their operations

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Use Case 33: System Detects Overdue Container Refills
LLM: Llama3.1:8b | Method: Careful Prompting
Preconditions:

- The restaurant has a history of using the food delivery platform with customers' reusable containers

Main Flow:

- System monitors container refill status and detects overdue refills
- System sends notification to restaurant staff, highlighting overdue refills and suggesting corrective actions
- Restaurant staff reviews notification and updates container status accordingly
- System updates database with corrected information

Subflows:

- System suggests automated reminder emails or push notifications for customers with overdue refills
- Database error → system reverts to previous state and notifies IT support

Alternatives:

- Automatic container replacement ordering for lost containers
- Customer account holds for repeatedly overdue containers

Outcome:

- Restaurant is notified of overdue container refills, enabling them to manage customer expectations and maintain a smooth delivery process

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Marketing & Promotions Use Cases

Use Case 34: Administrator Manages Flash Sales and Time-Limited Promotions
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Promotional campaign system is operational
- Inventory levels are monitored in real-time
- Customer notification systems are ready

Main Flow:

- Administrator creates time-limited promotional offer
- System schedules promotion start and end times
- Automatic notifications sent to eligible customers
- Real-time inventory tracking prevents overselling
- Promotion automatically expires at scheduled time
- Sales performance analytics generated post-promotion

Subflows:

- Early access for loyalty program members
- Inventory-based automatic promotion termination
- Social media integration for viral promotion spreading

Alternatives:

- Manual promotion termination for unexpected circumstances
- Waitlist creation when promotional items sell out
- Rain check system for disappointed customers

Outcome:

- Sales volume increased through urgency-driven purchasing
- Customer engagement boosted through exclusive offers
- Inventory movement accelerated for slow-moving items

Use Case 35: System Sends Automated Marketing Communications
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Customer communication preferences are recorded
- Email/SMS marketing systems are operational
- Content templates and scheduling tools are available

Main Flow:

- System identifies target customers based on behavior and preferences
- Personalized marketing content generated using customer data
- Communications scheduled for optimal timing based on customer patterns
- Messages sent through preferred channels (email, SMS, push notifications)
- Engagement tracked through opens, clicks, and subsequent orders
- Campaign effectiveness analyzed for future optimization

Subflows:

- A/B testing for message effectiveness
- Seasonal and holiday campaign automation
- Win-back campaigns for inactive customers

Alternatives:

- Generic broadcasts when personalization unavailable
- Manual campaign creation for special circumstances
- Opt-out management for customers preferring minimal communication

Outcome:

- Customer engagement maintained through relevant communications
- Sales increased through targeted promotional messaging
- Brand awareness sustained through consistent customer contact

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Use Case 36: Partner Restaurant Offers Promotions through Platform
LLM: Llama3.1:8b | Method: Careful Prompting
Preconditions:

- Partner restaurant has an active account on the food delivery platform and has created promotional content

Main Flow:

- Partner restaurant administrator accesses the platform's administrative dashboard and selects "Promotions"
- System displays available promotion templates (e.g., discount codes, buy-one-get-one-free)
- Restaurant administrator creates or edits a new promotion, specifying terms and eligibility criteria
- System integrates promotion details into partner restaurant's menu items and online profile
- Customers receive promotional offers based on their account preferences and ordering history

Subflows:

- Promotion error → system alerts restaurant administrator with corrective actions
- Customer may redeem promotions through the platform, with system tracking redemption metrics
- Partner restaurant may view promotion performance analytics to adjust marketing strategies

Alternatives:

- Co-marketing opportunities with complementary businesses
- Geo-targeted promotions for specific campus locations

Outcome:

- Partner restaurants can effectively promote their offerings to customers, driving sales and increasing loyalty through targeted marketing campaigns

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Security & Fraud Prevention Use Cases

Use Case 37: System Implements Advanced Security and Fraud Prevention
LLM: Claude Sonnet 4 | Method: Careful Prompting
Preconditions:

- Security monitoring systems operational across all platforms
- Machine learning fraud detection models trained on campus-specific patterns
- Incident response procedures established and tested

Main Flow:

- System continuously monitors transactions and user behavior patterns
- AI algorithms identify potentially fraudulent or unauthorized activities
- Risk-based authentication triggered for suspicious transactions
- Security team alerted to potential threats with detailed evidence
- Preventive measures activated automatically to protect users and systems
- Post-incident analysis improves detection algorithms and security measures

Subflows:

- Integration with campus ID systems for identity verification
- Coordination with campus security for physical threat assessment
- Customer notification and education about security best practices

Alternatives:

- Manual security review processes during algorithm maintenance
- Customer service escalation for false positive detections
- Emergency account lockdown procedures for confirmed security breaches

Outcome:

- Customer financial information and personal data protected from fraud
- System integrity maintained through proactive threat detection
- Trust in digital payment systems preserved through robust security measures

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Specialized Dietary & Health Use Cases

Use Case 38: Customer Requests Special Dietary Accommodations
LLM: Llama3.1:8b | Method: Careful Prompting
Preconditions:

- Customer has an active account on the food delivery platform

Main Flow:

- Customer adds items to cart but specifies special dietary needs (e.g., gluten-free or vegan)
- System checks available options from partnered restaurants and displays compatible menu items
- Customer selects desired items and applies special requests through order notes
- Restaurant receives notification of special requests and verifies availability with system support
- Upon confirmation, restaurant prepares order with accommodations

Subflows:

- Incompatible request → system alerts customer to modify or cancel order
- Restaurant may contact customer for clarification on dietary needs before fulfilling order
- Customer may review and update order details at any point during the ordering process

Alternatives:

- Pre-configured dietary preference profiles
- Nutritionist consultation integration for complex dietary needs
- Ingredient-level allergen tracking

Outcome:

- Customer receives customized order meeting their special dietary requirements, enhancing user experience and building loyalty

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Use Case 39: System Provides Nutritional Information and Calorie Tracking
LLM: Llama3.1:8b | Method: Zero-Shot Prompting
Preconditions:

- Complete nutritional database exists for all menu items
- Customer dietary preference profiles are available
- Integration with health tracking apps is configured

Main Flow:

- Customer views detailed nutritional information for menu items
- System displays calories, macronutrients, allergens, and dietary tags
- Customer adds items to cart with running nutritional totals
- Daily/weekly nutritional summaries available in customer profile
- Integration with fitness apps for comprehensive health tracking
- Personalized recommendations based on nutritional goals

Subflows:

- Meal planning tools for balanced nutrition
- Dietary restriction filtering and warnings
- Nutritionist consultation scheduling integration

Alternatives:

- Basic calorie information when detailed data unavailable
- Third-party nutrition app data import/export
- Generic healthy option highlighting

Outcome:

- Customer health awareness increased through transparent information
- Dietary goals supported through integrated tracking
- Informed food choices enabled through comprehensive data

Use Case 40: Food Delivery Platform Integrates with Restaurant's Loyalty Program
LLM: Llama3.1:8b | Method: Careful Prompting
Preconditions:

- Partner restaurant has an existing loyalty program with active members

Main Flow:

- Partner restaurant administrator accesses the platform's administrative dashboard and selects "Loyalty Integration"
- System connects partner restaurant's loyalty database to the food delivery platform
- Customers earning loyalty points through in-app purchases or menu item rewards can redeem them for discounts, free items, or other perks on the platform
- Restaurant may track loyalty member engagement and adjust rewards strategies

Subflows:

- Loyalty program error → system alerts restaurant administrator with corrective actions
- Customer may link loyalty account to food delivery platform profile for seamless redemption
- Partner restaurant may review loyalty performance metrics to refine marketing efforts

Alternatives:

- Platform-wide loyalty program for multi-restaurant rewards
- Tiered loyalty benefits based on spending levels
- Limited-time bonus point opportunities

Outcome:

- Partnership between the food delivery platform and the partner restaurant's loyalty program enhances customer retention, driving repeat business through targeted rewards and incentives

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Summary Statistics

Total Use Cases: 40

- Claude Sonnet 4 (Careful Prompting): 25 use cases (62.5%)
- Llama3.1:8b (Zero-Shot Prompting): 10 use cases (25%)
- Llama3.1:8b (Careful Prompting): 5 use cases (12.5%)

Categories Covered:

- Regulatory Compliance: 4 use cases
- Customer Experience: 12 use cases
- Operational Efficiency: 8 use cases
- Integration & Management: 6 use cases
- Sustainability & Social Impact: 4 use cases
- Security & Marketing: 6 use cases

LLM Comparison Reflection Document

Key Differences Between LLM Approaches

Claude Sonnet 4 vs Llama3.1:8b Performance Analysis

Contextual Understanding: Claude demonstrated superior comprehension of the WolfCafe campus context, generating use cases that specifically addressed university needs like WIC program compliance, academic research integration, and campus event catering. Llama3.1:8b produced more generic food delivery features applicable to any commercial platform, missing the distinctive campus environment requirements.

Regulatory Awareness: Claude excelled at incorporating complex regulatory requirements (FDA compliance, multi-state tax regulations, ADA accessibility) into practical use cases with detailed implementation paths. Llama3.1:8b showed minimal awareness of regulatory complexities, focusing primarily on operational features without considering compliance frameworks.

Use Case Structure and Detail: Claude consistently provided comprehensive use case structures with detailed preconditions, main flows, subflows, and alternatives. Each use case included specific implementation considerations and risk mitigation strategies. Llama3.1:8b's use cases were more concise and sometimes lacked the subflow and alternative scenario details, though this improved significantly with careful prompting.

Innovation and Differentiation: Claude generated more sophisticated, differentiating features like AI-powered inventory optimization, academic research data sharing, and multi-institutional collaboration systems. Llama3.1:8b focused on proven, standard industry features (order tracking, reviews, loyalty programs) that, while important, offer less competitive advantage.

Zero-Shot vs Careful Prompting Comparison

Zero-Shot Prompting Results:

- Rapid generation of 20+ use cases in single requests
- Broader variety but less depth and specificity
- Higher likelihood of generic, industry-standard features
- Occasional overlapping concepts requiring manual deduplication
- Minimal regulatory or compliance consideration

Careful Prompting Results:

- More targeted, context-specific use cases
- Detailed implementation guidance with alternatives
- Better alignment with project requirements and constraints
- Higher complexity and innovation in proposed solutions
- Systematic consideration of stakeholder needs

Cost-Effectiveness Analysis

Claude Sonnet 4: Generated more implementable, higher-value use cases requiring less human refinement. Better ROI for complex, regulated domains.

Llama3.1:8b: Lower operational cost but required more iterative prompting for quality outputs. More suitable for rapid ideation phases or less regulated domains.

Recommendations

For future use case development: Use Claude for complex, regulated requirements and Llama3.1:8b for rapid brainstorming and standard feature identification. Combine both approaches for comprehensive coverage.

Report on Total Cost of LLM Usage:

LLM Service	Model	Prompting Method	Estimated Cost	Rationale
Anthropic Claude	Claude 3 Sonnet	Careful (Iterative)	$0.00	Deep analysis of a large knowledge base (60+ docs) and generating detailed outputs.

Anthropic Claude	Claude 3 Sonnet	Zero-Shot	$0.00	Producing multiple short outputs quickly without extensive context.
Meta LLaMA	llama3.1: 8b	Careful (RAG)	$0.00	Run locally on personal hardware (Ollama).
Meta LLaMA	llama3.1: 8b	Zero-Shot	$0.00	Run locally on personal hardware (Ollama).
		Total Project Cost:	~0.00	