CSC 510 - SE Date: 09/15/2025

Project 1c1

Problem Condensation

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Use Cases:

UC-01: Customer Registers for an Account

Primary Actor: Customer

Stakeholders & Interests:

- **Customer:** Secure and easy access to the platform, ability to save preferences and payment methods.
- **Platform Admin/Owner:** Efficient user acquisition, secure management of customer data, growing the user base.
- **Developers/IT Staff:** Robust authentication and data management systems, compliance with security standards.

Preconditions: Customer has internet access and has not yet registered.

Trigger: Customer opens the app or website and seeks to create an account.

Main Flow:

1. Customer selects "Sign Up" or "Create Account" option.
2. System presents a registration interface (e.g., email, phone number, social media login).
3. Customer enters required profile details (e.g., name, email, password) or chooses a social login option.
4. System verifies the information, creates the user account, and logs the customer in, displaying the home screen.

Subflows:

- 1a. Email verification required → System sends a verification link (expires 24 hrs). If link expired, customer can request resend (max 3 times/hour).
- 1b. Optional MFA enrollment → After registration prompt user to enable MFA (TOTP or SMS); store the enrollment flag.
- 1c. CAPTCHA challenge on suspicious activity → present CAPTCHA and block after repeated failures.
- 1d. Duplicate-detection → If email already exists, system suggests account recovery flow and provides a 'Forgot password' link.

Alternative Flows:

- 3a. Customer provides invalid or already-registered details → System displays an error message and prompts for retry.

UC-02: Customer Builds Order

Primary Actor: Customer

Stakeholders & Interests:

- **Customer:** Easy browsing, cart management, clear pricing, ability to customize.
- **Restaurant Staff:** Receive accurate order details.
- **Platform Admin/Owner:** Smooth user experience drives higher order volume.
- **Developers/IT Staff:** Ensure reliability of cart and menu systems.

Preconditions: Customer is logged in (or in guest mode) and browsing menu.

Trigger: Customer selects items from the menu.

Main Flow:

1. Customer browses the menu with categories and filters.
2. Customer views item details (description, price, availability).
3. Customer adds one or more items to cart.
4. System updates cart with items, quantities, and subtotal.
5. Customer can review, edit, or remove items from cart.

Subflows:

- 3a. Out-of-stock → "Add" button disabled with explanation.
- 4a. Cart updates live with tax/tip preview.

Alternative Flows:

- 2a. Menu fails to load → System shows error and retry option.

UC-03: Customer Checks Out & Adds Tip

Primary Actor: Customer

Stakeholders & Interests:

- **Customer:** Transparent totals, flexibility in tipping.
- **Staff/Delivery Staff:** Receive accurate compensation.
- **Dining Services/Owner:** Proper revenue tracking.
- **Regulators/Legal:** Compliance with tax/tipping laws.

Preconditions: Customer has items in the cart.

Trigger: Customer clicks "Checkout."

Main Flow:

1. System shows cart summary with subtotal and taxes.
2. Customer selects from preset tip options or chooses "Custom Tip."
3. System validates tip entry and updates total.

4. Customer confirms delivery/pickup details.
5. System prepares final order summary.

Subflows:

- 2a. Custom tip entered → Validate positive numeric input.
- 2b. High tip warning → System asks for confirmation.

Alternative Flows:

- 2c. Negative tip entered → Error message, prompt retry.
- 3a. Customer cancels → Return to cart review.

UC-04: System Processes Payment & Confirms Order

Primary Actor: System / Payment Gateway

Stakeholders & Interests:

- **Customer:** Quick, secure, successful transaction.
- **Platform Admin/Owner:** Reliable payments and fraud prevention.
- **Developers/IT Staff:** Seamless integration with gateways.

Preconditions: Customer proceeds with valid payment details.

Trigger: Customer clicks "Confirm Payment."

Main Flow:

1. System sends payment request to gateway.
2. Gateway authenticates customer payment info.
3. Gateway authorizes or declines transaction.
4. On success, system updates order status to "Paid."
5. System confirms order and sends details to staff.

Subflows:

- 3a. Suspicious transaction flagged → System holds for review.
- 3b. Gateway timeout → Retry and notify customer.

Alternative Flows:

- 3c. Payment declined → Show error and allow retry.
- 3d. Network failure → Queue transaction and alert customer.

UC-05: Staff Accepts or Rejects Order

Primary Actor: Staff

Stakeholders & Interests:

- **Staff:** Manage kitchen capacity efficiently.
- **Customer:** Receive timely updates if order cannot be fulfilled.

- **Owner:** Ensure operational reliability.

Preconditions: Order has been placed and is pending in staff queue.

Trigger: New order arrives in staff queue.

Main Flow:

1. Staff views pending orders.
2. Staff reviews order details and feasibility.
3. Staff chooses "Accept" or "Reject."
4. Accepted orders move to "In Progress."
5. Rejected orders notify customer with reason.

Subflows:

- 3a. Partial acceptance → Customer notified to confirm or cancel.
- 3b. Paid & rejected → Refund process initiated.

Alternative Flows:

- 4a. Timeout → System auto-flags or reassigns order.

UC-06: Staff Prepares and Completes Order

Primary Actor: Staff (Kitchen Staff)

Stakeholders & Interests:

- **Staff:** Follow safe prep standards.
- **Customer:** Receive safe, quality food.
- **Regulators:** Ensure compliance with food safety laws.

Preconditions: Order has been accepted.

Trigger: Staff begins preparing food.

Main Flow:

1. Staff views order details on kitchen display.
2. Staff prepares food per standards.
3. Staff packages items safely.
4. Staff marks order as "Ready for Pickup/Delivery."
5. System updates status and notifies customer.

Subflows:

- 2a. Use digital checklists for safety.
- 4a. Missing ingredients → Notify customer of change.

Alternative Flows:

- 3a. Suspected contamination → Halt prep and report.

- 5a. Notification fails → Manual contact by staff.

UC-07: Delivery Staff Receives and Completes Delivery

Primary Actor: Delivery Staff

Stakeholders & Interests:

- **Delivery Staff:** Clear assignments, efficient routing.
- **Customer:** On-time delivery.
- **Owner:** Optimized logistics.

Preconditions: Order is ready for delivery.

Trigger: System assigns delivery to staff.

Main Flow:

1. System sends assignment notification.
2. Driver views order and pickup location.
3. Driver accepts assignment.
4. Driver picks up order.
5. Driver delivers to customer, confirms handoff.
6. System updates order status to "Delivered."

Subflows:

- 2a. Multiple orders batched → System provides grouped route.
- 4a. Traffic reroute → System updates ETA.

Alternative Flows:

- 3a. Driver rejects assignment → Reassign order.
- 5a. Customer unavailable → Contact support, return order.

UC-08: Real-time Order Status Updates & Notifications

Primary Actor: System

Stakeholders & Interests:

- **Customer:** Transparency on progress.
- **Staff/Delivery:** Automated communication reduces calls.
- **Owner:** Improved trust and service quality.

Preconditions: Order placed.

Trigger: Status changes (accepted, in progress, ready, delivered).

Main Flow:

1. System monitors status changes.

2. When change occurs, system sends push notification (or SMS/email).
3. Customer receives updates (e.g., "Order ready for pickup," "Out for delivery").

Subflows:

- 2a. ETA change → Customer notified.
- 2b. Delivery reassigned → Driver details updated.

Alternative Flows:

- 3a. Notification fails → Retry, fallback channel (email/SMS).

UC-09: Customer Views Order History

Primary Actor: Customer

Stakeholders & Interests:

- **Customer:** Convenient reordering, record-keeping.
- **Owner:** Insights into customer behavior.
- **Developers:** Reliable data storage.

Preconditions: Customer is logged in.

Trigger: Customer selects "Order History."

Main Flow:

1. Customer opens Order History.
2. System retrieves past orders with details.
3. Customer views details or reorders.

Subflows:

- 2a. Filter by date, restaurant, or status.
- 2b. Export history (PDF/CSV).

Alternative Flows:

- 3a. No past orders → Show message.
- 3b. Retrieval error → Retry option.

UC-10: Staff Manages Menu & Ingredients

Primary Actor: Staff

Stakeholders & Interests:

- **Staff:** Keep menu and stock updated.
- **Customer:** See accurate availability.
- **Owner:** Prevent ordering of unavailable items.

Preconditions: Staff logged in with permissions.

Trigger: Menu or stock changes occur.

Main Flow:

1. Staff accesses management interface.
2. Staff creates/edits/deletes menu items.
3. Staff updates prices, descriptions, allergen info.
4. Staff adjusts stock levels after shipments or low inventory.
5. System validates and updates menu.

Subflows:

- 3a. System calculates nutrition info.
- 4a. Low stock triggers auto "out-of-stock" flag.

Alternative Flows:

- 3b. Missing critical info → Error, block save.
- 4b. Invalid stock entry → Error, prompt retry.

UC-11: Basic AI Meal Suggestion

Primary Actor: System

Stakeholders & Interests:

- **Customer:** Personalized recommendations.
- **Restaurant:** Increased sales of relevant items.
- **Owner:** Customer retention.

Preconditions: Customer logged in with saved preferences.

Trigger: Customer browses menu or opens homepage.

Main Flow:

1. System checks saved dietary preferences (e.g., vegetarian).
2. System highlights suitable dishes on menu.
3. Customer may select suggested dish to add to cart.

Subflows:

- 2a. If no preference saved → Default suggestions shown.

Alternative Flows:

- 2b. No matching dishes → Show nearest alternatives.

UC-12: Rating & Review System

Primary Actor: Customer

Stakeholders & Interests:

- **Customer:** Share experiences and feedback.

- **Staff/Delivery:** Improve based on feedback.
- **Owner:** Service quality insights.

Preconditions: Order completed.

Trigger: Customer chooses to leave feedback or system prompts.

Main Flow:

1. System prompts customer to rate order.
2. Customer gives star rating and optional text.
3. System saves review with order details.

Subflows:

- 2a. Low rating → Auto-escalation to support.
- 2b. Verified order → "Verified Purchase" badge applied.

Alternative Flows:

- 3a. Abusive review flagged → Sent for moderation.

UC-13: Search & Filter Functionality

Primary Actor: Customer

Stakeholders & Interests:

- **Customer:** Quickly find items of interest.
- **Accessibility Expert:** Ensure WCAG compliance.
- **Developers:** Maintain fast, reliable search.

Preconditions: Customer browsing menu.

Trigger: Customer uses search bar or filter.

Main Flow:

1. Customer types keyword in search or applies filters.
2. System shows matching results.
3. Customer selects item to view details or add to cart.

Subflows:

- 2a. Search auto-suggests categories.
- 2b. Filters (e.g., veg, price range) refine results.

Alternative Flows:

- 2c. No matches found → System shows alternatives.

UC-14: Customer Schedules Order for Later

Primary Actor: Customer

Stakeholders & Interests:

- **Customer:** Flexibility in food timing.
- **Restaurant:** Prepares in advance.
- **Delivery Staff:** Better planning.

Preconditions: Customer logged in; restaurant supports scheduled orders.

Trigger: Customer selects "Schedule Order" at checkout.

Main Flow:

1. Customer adds items to cart.
2. At checkout, selects "Schedule for Later."
3. System shows available time slots.
4. Customer picks preferred time.
5. System confirms and queues scheduled order.

Subflows:

- 3a. Customer changes time before confirmation.

Alternative Flows:

- 3a. No slots available → Prompt immediate order.
- 4a. Invalid time (closed hours) → Reject and prompt re-selection.

UC-15: Group Order & Split Payment

Primary Actor: Customer

Stakeholders & Interests:

- **Customer:** Ability to place a group order with friends/family and share payment fairly.
- **Restaurant Staff:** Receive clear, consolidated order details without confusion.
- **Platform Admin/Owner:** Increase order volume and customer engagement.
- **Developers/IT Staff:** Ensure smooth handling of multiple payers and avoid duplicate charges.

Preconditions: Customer is logged in and initiates a new order.

Trigger: Customer selects "Start Group Order" option at checkout.

Main Flow:

1. Customer starts a group order session and invites participants (via link or app).
2. Each participant adds their items to the shared cart.
3. System updates the group cart in real-time with participant selections.
4. At checkout, system offers "Split Payment" option.
5. Participants choose payment method and enter their share.
6. System validates all payments and confirms once total is fully covered.

7. Restaurant staff receives a single consolidated order.

Subflows:

- 2a. Participants can edit or remove only their own items.
- 5a. One participant pays the full amount → System marks as settled.
- 5b. Partial split allowed → Remaining amount prompts for coverage by group members.

Alternative Flows:

- 1a. Invitation link expired → System prompts initiator to resend.
- 5c. A participant's payment fails → System alerts them and allows retry or reassignment of amount.
- 6a. Timeout during payment → Cancel group checkout and revert to cart stage.

Reflection:

➔ **How We Decided What NOT to Do**

Our primary goal was to define the leanest possible version of the product that still delivered core value: allowing a customer to successfully order food for pickup and a staff member to fulfill that order. This focus required us to ruthlessly prioritize and consciously defer features that, while valuable, were not essential for this initial transaction loop. Our decisions were guided by the following principles:

1. Exclude Niche & Highly Specialized Functions: We deferred features that served a small subset of users or addressed complex regulatory requirements. While important, the development effort required for these features would have significantly delayed the launch of the core product.

- **Examples Deferred:** UC-03: Detailed Nutrition/Allergen Information, UC-16: WIC Vendor Oversight, and UC-20: Health Researcher Data Downloads. These require extensive database work, new user roles, and compliance expertise that are better suited for a post-launch phase.

2. Defer Full Delivery & Logistics Complexity: We made the strategic decision to focus exclusively on a **pickup-only model** for the MVP. Building a full delivery logistics system is akin to building a second product within the first, involving a new user type (Delivery Staff), real-time GPS tracking, and route optimization.

- **Examples Deferred:** All **Delivery Staff** use cases (UC-11, 12, 13, 14) and, consequently, UC-05: Customer Tracks Order Delivery in Real-Time. This simplifies the initial build immensely, allowing us to perfect the in-store operations first.

3. Postpone Advanced Business & Marketing Automation: Features aimed at optimizing revenue, scaling to a multi-restaurant marketplace, or managing advanced business operations were deemed non-essential for an initial launch. The priority is to prove the system works before trying to optimize it.

- **Examples Deferred:** UC-31: Surge Pricing, UC-17: Multi-State Sales Tax, and UC-18: Advanced Promotional Campaigns. These are powerful tools for a mature business but represent premature optimization for an MVP.

4. Consolidate Redundant or Implicit Functions: Several use cases from the initial list described tasks that are inherent parts of a larger, selected feature. To keep the roadmap clean and focused, we folded these into their parent use cases rather than tracking them as separate deliverables.

- **Examples Consolidated:** UC-19: System Processes Payment is a non-negotiable part of UC-24: Customer Checkout. Similarly, UC-08: Staff Accepts/Rejects Order is the logical first step of UC-26: Staff Fulfills Customer Order**.**

➔ Potential Negative Impacts & Stakeholder Disappointments

By scoping down to an MVP, we acknowledge that the initial product will not meet the full expectations of all stakeholders. This could lead to some disappointment:

- **For Customers:**
  - The most significant disappointment will be the **complete lack of a delivery option**. This is now a standard expectation for food apps.
  - Users with dietary restrictions or health concerns will be disappointed by the **absence of detailed nutrition and allergen information** (UC-03).
  - The overall experience will feel basic, lacking features like **combo suggestions** (UC-32) or **scheduled ordering** (UC-33) that they may be used to on other platforms.
- **For the Cafe Owner:**
  - The Owner will be disappointed by the **lack of immediate revenue-optimization tools**. They cannot implement surge pricing to manage demand or run automated marketing campaigns to boost sales. The initial product is a functional utility, not a powerful business growth engine.
- **For Staff:**
  - Staff may be disappointed if the initial order fulfillment interface (UC-26) is too basic. They might have hoped for more advanced kitchen management tools, like automated ticket printing or better workflow visualizations, which are not part of the core MVP.

➔ Changes Made to the MVP to Appease Stakeholders

Understanding these potential disappointments, we have made small, low-effort adjustments to the MVP plan. These changes do not significantly increase scope but show key stakeholders that their needs are acknowledged and are on the roadmap.

1. For Health-Conscious Customers (Mitigating Lack of UC-03):

- **Change:** During **Milestone 2 (Menu & Inventory Core)**, we will add a simple, free-text "Allergen & Dietary Notes" field to each menu item (UC-27).
- **Why:** This is a crucial compromise. While it's not a structured, searchable database, it allows staff to manually enter critical information like "Contains nuts" or "Can be made gluten-free." This provides essential safety information with minimal development overhead, appeasing a critical user need until a full nutrition system can be built.

2. For the Revenue-Focused Owner (A Nod to UC-32):

- **Change:** In **Milestone 4 (The Core Transaction Loop)**, we will add a simple "You might also like..." feature to the checkout screen. This will be a manually curated association (e.g., Staff can flag that a "Latte" pairs well with a "Croissant").
- **Why:** This introduces a basic upselling mechanic into the MVP. It doesn't require a complex recommendation algorithm but still provides a tool to help increase the average order value, showing the owner that revenue-driving features are a priority.

3. For Customers Expecting Delivery (Managing Expectations):

- **Change:** Throughout the user interface, we will add clear messaging: "Pickup Only. Delivery Coming Soon!" We will also add a simple email signup form for users who want to be notified when delivery becomes available.
- **Why:** This directly addresses the biggest potential disappointment. By being transparent and proactive, we manage customer expectations and demonstrate that delivery is a high-priority feature on the future roadmap, reducing frustration with the current MVP's limitations.

Prompt History:

Gemini:

- https://g.co/gemini/share/729225bf97e4

ChatGPT:

- https://chatgpt.com/share/68c21a8b-adc8-800b-a3ba-6dfe58fe7af7
- https://chatgpt.com/c/68c11098-586c-8331-9077-7f76553f606f

Claude:

- https://claude.ai/share/3ecb27af-1c03-4cda-b047-373614cd2133
- https://claude.ai/public/artifacts/50da21f9-4f9a-44b2-827a-78ca9619c0c1

Perplexity:

- https://www.perplexity.ai/search/the-attached-document-contains-hjI22AFFSpmiKLMUPG.HFA

NotebookLM:

- **https://docs.google.com/document/d/1WnesRDGT9FQxZV5BINq_0yVsV_ZmAxJiqVb4XD9jfml/edit?usp=sharing**