Test Project Session 2

IT Software Solution for Business

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Introduction

In this session, you will design a software solution for Belle Croissant Lyonnais, a bakery aiming to modernize its operations and expand its services. You will gather requirements, create a system architecture, data model, and user interface designs to address the bakery's needs.

This session assesses your ability to:

- Gather and analyze requirements from various stakeholders.

- Design a scalable and flexible software system.

- Create intuitive and user-friendly interfaces.

- Communicate technical solutions effectively.

Contents

This session package contains the following materials:

1. **Session Instructions (PDF):** Detailed instructions and evaluation criteria with clear visual aids and diagrams.

2. **Belle Croissant Lyonnais Business Model Canvas (PDF)**: A one-page visual summary of the bakery's key partners, activities, resources, value propositions, customer relationships, channels, customer segments, cost structure, and revenue streams.

3. **User Personas (PDF):** Detailed descriptions of typical users (bakery staff, manager, customers), including their goals, needs, pain points, and technical proficiency.

4. **Session Instructions (PDF):** Detailed instructions outlining the tasks to be completed and deliverables expected for this session.

5. **Common Folder:** This folder contains additional resources such as the Belle Croissant Lyonnais logo, icons, style guide, and other design assets that can be used throughout the development of the application.

Description of Project and Tasks

In this session, you will design the foundation for the Belle Croissant Lyonnais software solution:

Guidelines:

1. **Easy to Understand:** Make diagrams and designs clear and intuitive.

2. **Comprehensive:** Cover all essential aspects of the system.

3. **Accurate:** Ensure all representations align with the provided business model and user personas.

4. **Standardized:** Use industry-standard notations and methodologies.

5. **On Time:** Complete all tasks within the allocated timeframe.

Technical Considerations:

1. **Requirements Analysis:** Identify key actors, use cases, and system interactions.

2. **ERD Design:** Create a normalized diagram representing entities, attributes, and relationships.

3. **UI Design:** Develop wireframes for both desktop (staff) and mobile (customer) interfaces.

4. **API Design:** Specify a RESTful endpoint for customer management.

5. **Tool Usage:** Utilize Microsoft Visio for diagram creation.

Additional Considerations:

- Focus on core functionality and prioritize the most important elements.

- Consider both current and future needs of the bakery.

- Ensure all diagrams and designs are visually appealing and easy to interpret.

- Adhere to RESTful principles and best practices in API design.

- Consider the provided user personas when designing the user interface.

Instructions to the Competitor

2.1 Requirements Elicitation and Analysis

Objective:
Demonstrate your ability to effectively gather and analyze requirements for the Belle Croissant Lyonnais new software system, and visually represent them using a standardized diagram.

Tasks:

1. Review the provided "Belle Croissant Lyonnais Business Model Canvas" and "User Personas" documents.

2. Identify key actors (users and external systems) involved in the system and their interactions.

3. Identify use cases (actions or processes) that each actor performs within the system.

4. Create a Use Case Diagram using Microsoft Visio that visually represents the identified actors, use cases, and their relationships.

Deliverables:

- **File Name:** Session2_UseCaseDiagram.pdf

- **File Type:** PDF file (.pdf)

Additional Notes:

- Focus on the core functionality of the system and prioritize the most important use cases.
- Consider both current and future needs of the bakery, as outlined in the Business Model Canvas and User Personas.
- Ensure that the diagram is visually appealing and easy to interpret.
- Do not include any explanations, justifications, or interpretations in the diagram.

2.2 Entity-Relationship Diagram (ERD) Design

Objective:

Design a normalized Entity-Relationship Diagram (ERD) that models the data entities, attributes, and relationships for the Belle Croissant Lyonnais software solution.

Tasks:

1. **Identify Entities:** Based on the functional requirements and the Class Diagram from task 2.2, identify the main entities required for the system.

2. **Define Attributes:** For each entity, list its relevant attributes (data elements), including their data types and any constraints.

3. **Establish Relationships:** Determine the relationships between entities (e.g., one-to-one, one-to-many, many-to-many) and indicate the cardinality (e.g., 1, 0.., *1..*) for each relationship.

4. **Normalization:** Ensure that the ERD is normalized to at least the third normal form (3NF) to eliminate data redundancy and ensure data integrity.

5. **Create ERD:** Draw the normalized ERD using Microsoft Visio, following standard Chen or Crow's Foot notation.

Deliverables:

- **File Name:** Session2_ERD.pdf

- **File Type:** PDF file (.pdf)

Additional Notes:

- Focus on the core data entities and relationships that are essential for the system's functionality.

- Refer to the "Belle Croissant Lyonnais Business Model Canvas" and "User Personas" documents for additional context and understanding of the bakery's data needs.

- The evaluation will focus on the technical correctness and clarity of the ERD, not the specific database technology or implementation details.

2.3 User Interface (UI) Design

Objective:

Design intuitive and visually appealing wireframes for the Belle Croissant Lyonnais software solution, catering to both staff (desktop) and customer (mobile) needs.

Tasks:

Design wireframes for the following screens for the staff interface to be deployed in a desktop environment:

- **Dashboard:** Overview of sales, inventory, orders, and customer data. Include key metrics and visualizations.

- **Order Management:** View, create, edit, and process orders (in-store and online).

- **Inventory Management:** View and update inventory levels, track ingredient usage, and generate reports.

- **Customer Management:** View customer profiles, loyalty program status, and purchase history.

Deliverables:
- **File Name:** Session2_Wireframes_Staff.pdf

- **File Type:** PDF file (.pdf)

Additional Notes:
- Focus on the core functionality and user flow, rather than intricate design details.

- Consider the user personas provided to tailor the UI to their needs and expectations.

2.4 API Design

Objective:
Design a RESTful API endpoint specifically for managing customers within the Belle Croissant Lyonnais software solution.

Task:
1. Analyze the functional requirements related to customer management from Task 2.1.

2. Design a single API endpoint that adheres to RESTful principles and best practices.

   o Specify the endpoint URL (e.g., /api/customers).

   o Choose the appropriate HTTP method(s) for the supported operations (e.g., GET, POST, PUT, DELETE).

   o Define the required and optional parameters for each operation, including data types and validation rules.

   o Describe the expected response data structure and data types for each operation (JSON format).

Deliverable:
- **File Name:** Session2_CustomerAPI_Design.txt

- **File Type:** Text file (.txt)

Additional Notes:
- This task focuses solely on designing the API endpoint, not implementing it.

- The example provided in Sample-API.pdf is just one possible way to design the endpoint. Competitors are encouraged to come up with their own solutions that adhere to RESTful principles.

- The evaluation will focus on the correctness and clarity of the endpoint design.