Linnæus University

2DV604 Assignment 1 – 1st level decomposition

Grading: Your submission will receive a grade from U or G where U is Failed. You are allowed to improve your work after the initial submission before the deadline. The assigned grade is final, i.e., you will not get an opportunity to correct/improve after grading.

We will organize re-takes with a special set of re-take tasks.

This is an individual assignment in which you begin working on a system's architecture, focusing on decisions and challenges related to dividing the problem into parts. The **Pet Shop** system description is only a draft, so you may need to study and reflect on similar systems for ideas.

- *Document all assumptions you make.*
- *Submission dates and time are final.*

Your responses must be your own! You may not copy code, models, or text (from books, articles, blogs, wikis) or use any form of generative AI or equivalent tools!
Any use GenAi to complete the assignment is **forbidden**!

Before grading, each submission will undergo a plagiarism/cloning detection system. If we detect plagiarism, the submission will fail, and a formal investigation will be initiated.

Task 1. Focus on the functionalities in the description. Which functional components, cohesive modules with closely related responsibilities, can you identify? What responsibilities (functionally) does each component have?
Reply in text with component name and description of responsibility. You may also use CRC-cards in the process and as a means of documentation.

Task 2. Analyze the dependencies between components, that is, the collaboration in CRC-cards. What functions that other components are responsible for does a component "require" to fulfill its allocated responsibilities?

Answer in text and identify functionality that other components need. Describe them as the "provides" interface for the component. Similarly, you document functionality a component needs in the "requires interface". You may extend your CRC-card, if you used that technique in task 1.

Task 3.
Draw a UML component diagram with the components you have identified, connect the components interfaces, provides⟵⟶ requires. Make sure that your model is complete, that is, all required interfaces are provided.

Linnaeus University

Department of Computer Science
Professor Dr. Jesper Andersson
SE-351 95 Växjö • *Visiting address* B-House, Campus Växjö • *Telephone* +46 470 708460 • *Email* jesper.andersson@lnu.se • Lnu.se

Task 4.

Focus on the physical architecture (system architecture). What parts does the system consist of, what devices are included, and what software is installed on each device?

1. List the artefacts or components used (manifestations), provide a single paragraph as description.
2. List the deployment targets, that is devices or nodes.
3. What type of communication paths are required?
4. **Advanced: Add execution environments. Not mandatory**

Report in text.

Task 5.

Draw a UML deployment diagram that combines the manifestations, deployment targets and the communication paths you identified in task 4.

System Overview
The Pet Shop Management System should facilitate the operation of a pet shop, providing functionalities to manage pets for sale, customers, orders, products, and services. The aim of the system is to streamline the day-to-day operations of the pet shop, ensuring a smooth interaction between customers, employees, and inventory.

Key Features
1. **Pet Management** The system allows the pet shop to maintain a database of different pets available for sale (e.g., dogs, cats, fish), including their details such as breed, age, price, and health status. Employees can add, update, and remove pets from the inventory.
2. **Customer Management** It enables the registration and management of customer profiles, including contact information, preferences, and order history. Customers can easily view available pets and products.
3. **Order Processing** Customers can place orders for pets and related products (e.g., food, toys, accessories). The system captures order details and tracks the order's status until fulfillment.
4. **Product Management** This includes managing various products sold at the pet shop, such as pet food, toys, grooming supplies, etc. Employees can add new products, update existing product details, and keep track of inventory levels.
5. **Service Management** The system could also include grooming services or training sessions provided by the pet shop. Customers can book appointments, and employees can manage service calendars.
6. **Supplier Management** The system can manage suppliers who provide pets and pet-related products. Employees can track supplier information and manage orders placed with them.
7. **Reporting** The system generates reports on sales, inventory levels, and customer orders to help the management make informed business decisions.

Target Users
The main users of the Pet Shop Management System include:
- Pet shop employees and managers who need to manage daily operations and inventory.
- Customers searching for pets or pet-related products and services.
- Suppliers providing pets and products to the shop.

User Roles
- Customer Can browse pets, place orders, manage their profiles, and view order history.
- Employee Can manage pets, customers, products, orders, and services. They also have the ability to generate reports.
- A Supplier (Optional) Can provide inventory information to the store to update product availability and status.

Summary by product manager
The Pet Shop Management System aims to create a user-friendly experience for both customers and employees by providing an efficient way to handle tasks related to pet sales, product management, and customer service. With its various management features, the system enhances the operational efficiency of the pet shop while delivering excellent service to customers.