# Application Engineering

# Exam II
# Fall 2013

## (Two Hours)

## Prof K. Bugrara

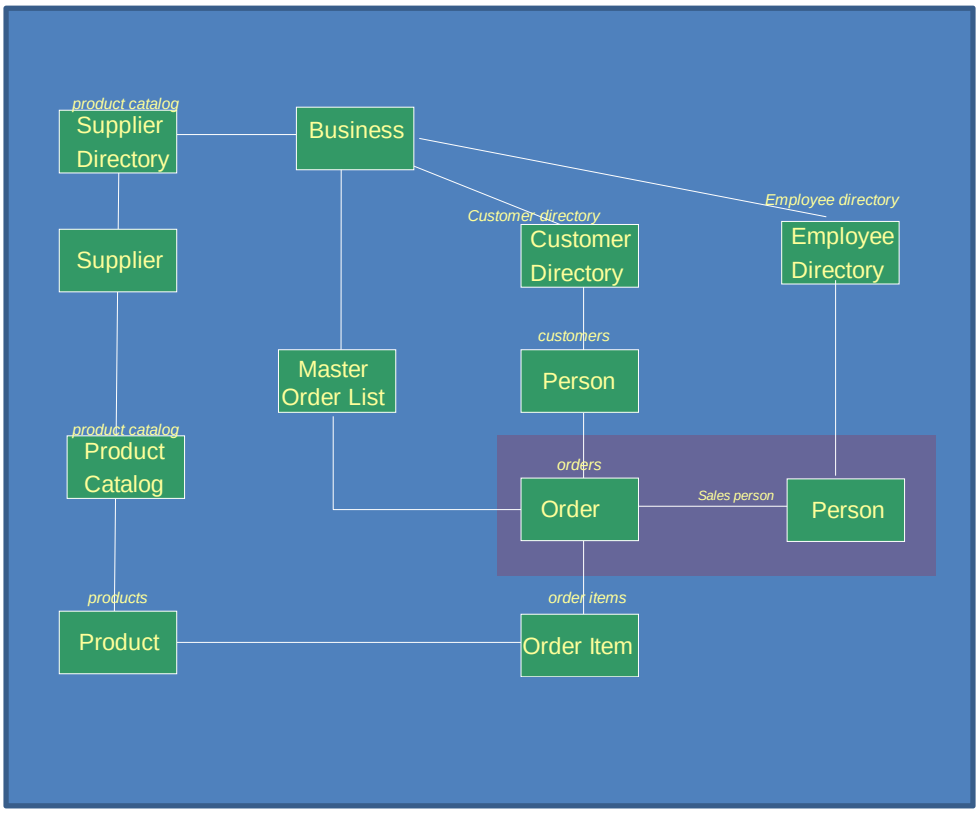
The purpose of this exam is to assess your software engineering skills and determine how much you have learned working on homework assignments.

Please answer the exam questions to the best of your abilities. **If something is not clear to you then make whatever reasonable assumptions you see appropriate and be sure to clearly explain your assumptions.** The exam proctor will not answer any exam questions whatsoever.

Please be clear and concise. Follow the same format you used for the homework exercises.

1. We have used our own unique methodology for engineering applications quickly. The approach highlights all essential components for the step by step construction of software system.
    a. Explain the structure of this methodology and how it works. Draw diagrams to illustrate the key aspects of system construction.
    b. Define the logical steps for building a complete application.
    c. What are the essential components (classes) that must exist in any application domain for this methodology to work?

2. The model below provides a hint at an application to help a business run efficiently. A) Use our methodology from the previous question to identify all the key roles (uses-case) in the system and their work responsibilities.




B) State at least 5 critical business intelligence questions that can improve business performance? Your answers here must focus on the model given above.

C) For each of the five critical BI question in B, use plain language to show the logic of how you calculate the values (use the foreach notation).

3. For the model given above, show the best classes where to place the following calculations
    a. GetTotalRevenuesByProduct();
    b. GetTotalNumberOfCacelledOrders()
    c. GetTotalSubmittedOrdersBySalesPerson(name) //take the sales person name as input
    d. getAllProductsThatAreNotAvailable() //with zero availability
    e. CalculateNumberOfProductsSoldBelowTargetForAnOrder(orderid) // //order identified by orderid
    f. CalculateNumberOf ProductsSoldBelowTargetForASalesPerson(name);

4) For each of the following items write java code with clean syntax to explain how to implement each one of them. You can assume you have helper methods with no need to implement them.

a) CalculateNumberOfProductsSoldBelowTargetForAnOrder(orderid);
b) CalculateNumberOfProductsSoldBelowTargetForASalesPerson(name)