Organizational Issues (V)

Working as a Group

❑ Working as a group is not always easy

❑ Miscommunication, lack of experience, and social conflicts can impede a group's success

❑ It is up to each individual group member to take a professional attitude and contribute to the group's success

❑ This requires reliability as well as the willingness and ability to communicate and work hard

❑ Social problems such as conflicts between group members should be discussed with the instructor who will then take the role of an intermediator and aim to bring the group back to work.

❑ Working remotely as a group has additional challenges

Organizational Issues (VI)

Working as a Group (*continued*)

❑ Usual distribution of a task into subtasks: One subtask for each group member, each group member works on the assigned subtask

❑ Problem: Experience shows that sometimes group members do not perform their assign task, do not inform the other group members about it, and do not deliver the expected sub-result

❑ Possible negative consequences
  ❖ Whole group effort is put into question
  ❖ Remaining group members have to compensate the detected gap in a very short amount of time at the end of the semester
  ❖ In the worst case, the group can fail.

Organizational Issues (VII)

Working as a Group (*continued*)

❑ Recommendation: Assign more than one group member to a subtask

	Task 1	Task 2	Task 3	Task 4
Group member	1, 2	2, 3	3, 4	4, 1

red	*mainly* responsible member
blue	*supportive* member

❑ Two group members assigned to a task

 ❖ can talk to each other

 ❖ solve problems and find solutions together

 ❖ decide to talk to the whole group if necessary

 ❖ implement the subtask together

❑ Strategy avoids that a group member has to work alone and does not make progress

Examples of Project Ideas (I)

❑ *Coursework Management Tool*

   ❖ Develop a system to store course related information in a university

   ❖ Store data about users (students, faculty) and coursework (course, semester, year, student grades, etc.)

   ❖ Users should, for example, be able to
- login and enter and view grades
- manage the course material
- perform updates on profile or grades
- import and export data
- get an analysis of their grade data
- see their overall performance in comparison to the average class performance

   ❖ Examples: UF eLearning, CourseWork@Wikipedia

Examples of Project Ideas (II)

❑ *Crime Analysis*

  ❖ Use real world crime data to find out

    ▪ which kind of crime is committed most

    ▪ in which area of a city and in which period of time one should not be present

    ▪ the crime rate evolution with respect to different kinds of crime over the last n months/years

    ▪ the locations where crimes are committed most

  ❖ Examples: none

❑ *Genealogy database*

  ❖ Develop a database of information

    ▪ about people and their ancestors

    ▪ with additional information such as birth place, education, etc.

    ▪ to enable the user to construct the family tree

  ❖ Examples: FamilySearch.org, Ancestory.com

Examples of Project Ideas (III)

❑ *Shopping and eCommerce application*

  ❖ Develop a website to help merchants sell products and customers buy them.

  ❖ Provide functionality to store user and product information

  ❖ Offer user roles (seller, buyer, administrator)

  ❖ Provide a shopping cart

  ❖ Supply additional features such as a ranking and reviews of users and products as well as a trend analysis to find the most popular products over time

  ❖ Examples: OpenCart, eBay, Amazon

❑ Others

  ❖ Census database

  ❖ Banking

  ❖ NBA/NFL data

  ❖ Car rentals

Project Phases

❑ Project phases

❖ Project consists of 5 phases

- Phase I: Requirements Analysis

- Phase II: Entity-Relationship Diagram Design and User Interface Design

- Phase III: Database Schema Construction

- Phase IV: Project Software Implementation

- Phase V: Project Software Demonstration

❖ Phases I and II are design phases, phases III and IV are implementation phases

❖ In phase V each group has to perform an online project software demonstration

❖ Each group has to submit a PDF document for the phases I, II, and III

❖ Phases I, II, III, and V are graded

Project Phase I: Requirements Analysis (I)

❑ Here: Discussion of the first phase only

❑ Main objectives of the group as application developer and database designer
  ❖ Propose and understand an appropriate project topic
  ❖ Identify its main data management needs
  ❖ Explore and motivate its potential for interesting queries
  ❖ Analyze the needed user functionality

❑ The *first project deliverable* should present a clear and structured description and motivation of the selected project topic and its requirements that the group thinks the software solution should later fulfil

❑ Group should carefully deliberate on the requirements and functions and precisely describe them in their document

Project Phase I: Requirements Analysis (II)

❑ Example questions a group should ask themselves

- ❖ What are the main functions that the web-based user interface should provide?

- ❖ How do the different functions work together? Sometimes there are dependencies between different functions.

- ❖ Which real world data are needed to support the functions identified before?

- ❖ Can such real world data be found in the Internet?

- ❖ What (colloquial) queries are important for the application?

- ❖ Which public domain and/or proprietary software is needed to perform the task? (The database system used must be CISE Oracle.)

Project Phase I: Requirements Analysis (III)

❑ Focus of the project should be on the database part and not so much on the application part

- ❖ A group should not design and implement highly sophisticated main memory algorithms
- ❖ A group should focus on database queries that evaluate large volumes of stored data
- ❖ The application part (user interface) must be highly functional
- ❖ Different user functions must cooperate nicely together
- ❖ A fancy layout of the user interface is not required but appreciated

❑ Important aspects that a group should consider

- ❖ Each group must demonstrate in their deliverable that
  - ▪ their application would really benefit from database support
  - ▪ new information (such as trends) can be derived from the stored data

Project Phase I: Requirements Analysis (IV)

❑ Important aspects that a group should consider (*continued*)

❖ A simple retrieval of data from the database (that is, search) or the pure connection of different tables (that is, joins) are not sufficient

❖ Sales application as an example: Group stores many sales numbers in their database

❖ Example function: Search for sales data of interest in the database and display them in the user interface
  ▪ But searching only identifies an interesting subset of all data stored in the database
  ▪ Further, DBMS are specialized for search tasks, and the respective SQL queries are relatively simply structured.

❖ This project aims at more interesting queries that
  ▪ derive new information which is not explicitly stored in the database
  ▪ can be derived from the data in the database by *computations*

Project Phase I: Requirements Analysis (V)

❑ Important aspects that a group should consider (*continued*)

❖ More interesting queries are

- What were the total monthly sales in 2012?

- Which item was sold most (so that we have to pre-order more of it)?

- Which item was a slow seller (and should therefore be removed from the inventory since it only wastes storage space)?

- How many items does the store have in stock?

- How have the total sales (in general, of product X, of products X, Y, and Z) developed in the last n months? Can a trend be recognized? It could be that the sales are low in the summer months so that advertising efforts could be put in place in these months.

- When were the most successful or most lossy m months in the last n months?

- Provide a ranking of all customers based on the decreasing amount of money they have spent in the store in last n months.

❖ Answers to these queries are *not* directly stored in the sales data

Project Phase I: Requirements Analysis (VI)

❑ Important aspects that a group should consider (*continued*)

  ❖ But they can be derived, that is, computed by (complex) database queries

  ❖ Therefore: Each group has to *list a number of* (*at least five*) *database queries* in their deliverable in order to show that their application has the potential to have such interesting database queries

❑ Only the first submission of a group's first deliverable will be graded

❑ If the first submission is so dissatisfactory that the group cannot move on with the next phase, a revision will be requested from the group that will not be considered for (re)grading

❑ Therefore: Put enough effort into this deliverable

❑ It is *not* the task of this phase to determine and describe solutions to the requirements