APPENDIX 3. TRAINING PROBLEMS FOR DATABASE AND APPLICATION DEVELOPMENT

A3.1 Essential problem

Create two related tables, define table columns by yourself considering the features of problem domain and tasks given for data querying.

The result of the task is a set of DDL queries that create a database and specified tables with the corresponding columns and rows, as well as two stored procedures corresponding to the task.

The constants specified in the tasks (for example, 2010, 5, etc.) must be passed as parameters of stored procedures.

Call each stored procedure with three sets of parameters – with the one specified in the task and with two arbitrary.

Save the rows obtained using the query in the second stored procedure into the new table, specifying the appropriate name for it. After calling the second stored procedure, display the contents of the created table. Cancel the transaction started before calling the second stored procedure. Prove that the transaction was indeed canceled.

Table A3.1

No.	First table	Second table	Data querying
1	Publishing house	Book	1) books published between 2010 and 2015, sorted by the name of the publisher in alphabetical order; 2) publishers that published less than 5 books in 2013, sorted by the number of books published in descending order
2	Hotel	Guest	1) guests staying between 2005 and 2020, sorted by hotel name in alphabetical order;

No.	First table	Second table	Data querying
			2) hotels that received more than 10 guests in 2012, sorted by the number of guests received in descending order
3	Club	Member	1) members registered between 2000 and 2010, sorted by club name in alphabetical order; 2) clubs with less than 10 members in 2007, sorted by number of registered members in descending order
4	Flower store	Bouquet	1) bouquets sold between 2017 and 2019, sorted by store name in alphabetical order; 2) stores that had more than 5 sales in 2018, sorted by number of sales in descending order
5	Insurance	Client	1) clients who get insurance between 2015 and 2020, sorted by name of insurance in alphabetical order; 2) insurance that had less than 7 sales in 2019, sorted by number of sales in descending order
6	Organization unit	Employee	1) employees who worked between 2011 and 2014, sorted by the name of the department in alphabetical order; 2) departments that had more than 2 employees in 2013, sorted by number of employees in descending order
7	Distance course	Student	1) students who were registered between 2018 and 2021, sorted by course name in alphabetical order; 2) courses with less than 5 students in 2020, sorted by number of students in descending order

No.	First table	Second table	Data querying
8	Grocery store	Supply contract	1) contracts concluded between 2006 and 2009, sorted by store name in alphabetical order; 2) stores that had more than 10 contracts in 2008, sorted by the number of contracts in descending order
9	Technical maintenance service	Application	1) applications that were processed between 2015 and 2020, sorted by the name of the service in alphabetical order; 2) services that had more than 8 applications in 2018, sorted by the number of applications in descending order
10	Café dish	Order	1) orders placed between 2011 and 2013, sorted by name of the dish in alphabetical order; 2) dishes that had less than 10 orders in 2012, sorted by the number of orders in descending order
11	Employee	Leave	1) leaves that was issued between 2000 and 2010, sorted by employee name in alphabetical order; 2) employees who had more than 2 leaves in 2006, sorted by the number of leaves in descending order
12	Car model	Rent reservation	1) reservations made between 2018 and 2021, sorted by car model in alphabetical order; 2) car models that had less than 5 reservations in 2019, sorted by the number of reservations in descending order

No.	First table	Second table	Data querying
13	Family doctor	Visiting record	1) visits recorded between 2019 and 2021, sorted by doctor's name in alphabetical order; 2) doctors who had more than 10 visits in 2020, sorted by number of records in descending order
14	Gym	Season ticket	1) season tickets issued between 2010 and 2017, sorted by name of the gym in alphabetical order; 2) gyms that had less than 5 records in 2013, sorted by the number of records in descending order

A3.2 Advanced problem

Use HTML and PHP to develop the small web application that will connect the MySQL server and work with the database created above.

The application should allow users without specific skills (end users) to work with the database tables. The main functions are data modification and data processing.

Data modification (entering new data, deleting, or updating existing data) should be performed using application forms. End users should access data only by using application forms.

The application should provide view and update operations on data stored in one or several tables. It is recommended to group forms by their functions using a menu, main form, etc.

It is recommended to use stored procedures created using the queries mentioned in the table above to generate reports. Reports might include graphical materials (graphs, diagrams, etc.) if it is necessary.