

## **Foreword**

All assignments of this course are parts of one single project. Laboratory 1-4 – theoretical part, 5 – practical.

Thus, the results of laboratory work should be consistent with each other (old assignments may have issues with it) and be parts of a one single report.

## **Lab 1. Specification of system requirements. Use Case diagram**

Objective: To study the basic features for creating and editing use case diagrams

### **Tasks**

1. Choose one of the company type from the excel list or use your own company type. In the course of the assignments, you will have to describe and suggest some business processes automating of the selected company.
2. Define list of high-level customer's needs, which going to be solved by the information system implementation. Not less than 5 use cases in list, volume 0,5-1 sheet A4.
3. Create Glossary of subject domain terms, which you will use next.
4. Create Use Case diagram for the described use cases. Diagram should include situation with at least two actors collaboration. Create Use Case diagram image (png/jpeg/gif).  
Add image to doc report (see template in <https://github.com/j-avdeev/EnterpriseSystemsDevelopment/tree/master/Assignment%20Reports%20Template>)
5. Write script for each use case using template: use case name, actors, goal, short description, basic script, exceptions.
6. Complete scripts with examples of documents to be created by your information system. For example, Bill in café, Internet invoice, Order in the online store, Medical services bill, etc.

### **Notice**

For UML diagram plotting you can use draw.io (<https://www.draw.io/>), StarUML (<http://staruml.io/>) or another available software tools.

## Lab 2.

## Specification of system requirements

Objective: To explore the possibilities to describe the requirements for the designed software

### Tasks

1. Create valid IDEF0 diagrams for the general company processes up to 3d level detailing. At 3d decomposition level should be at least one process with at least two actors collaboration.
2. Add IDEF0 diagrams images to doc report.

For IDEF0 diagram plotting you can use:

- Ramus Educational ([http://www.ramussoftware.com/en/index.php?option=com\\_docman&Itemid=6](http://www.ramussoftware.com/en/index.php?option=com_docman&Itemid=6)) does not work with modern JRE.
- Microsoft Visio (non-Free).
- Another available software tools (Libre Office Impress, draw.io, etc.).

### Notice

You have to prepare at least 4 diagrams: A-0, A0, 2 or more decomposed A0 blocks.

Model level	
0	Top level A-0, one block. Arrows show object connection with environment.
1	A0. First level, contain top processes.
2	Second level, top processes decompositions. You have to show at least 2 decomposed A0 blocks.

## Lab 3.

## Class diagram

Objective: To study the basic features for creating and editing class diagrams

### Tasks

1. Study the possibility of describing the static structure of the information system. Learn how to allocate in the system of the basic classes and describe their properties and behavior. Create Class diagram. Describe at least 5 classes with relations.
2. Add Class diagram image to doc report.
3. After diagram create table like:

Class name	Property/Method	Data type, comments

### Notice

For UML diagram plotting you can use draw.io (<https://www.draw.io/>), StarUML (<http://staruml.io/>) or another available software tools.

## **Lab 4. (BPMN) diagram**

## **Business Process Model and Notation**

Objective: To study the basic features to create and edit BPMN diagrams

### **Tasks**

1. Create BPMN diagram for chosen business process, which include collaboration of at least 2 actors. Use BPMN notation (<http://www.bpmn.org/>)
2. Add BPMN diagram image to doc report.

### **Notice**

For BPMN diagram plotting you can use Bizagi Modeler (<http://www.bizagi.com/en/products/bpm-suite/modeler>) or another available software tools

## Lab5. UML diagram

Objective: To study the basic features for creating and editing UML dynamic diagrams.

1. Study theory about UML dynamic diagrams.
2. Create 2 Activity diagram for basic processes of your information system.
3. Create 1-2 Sequence diagram for basic process of your information system.
4. Choose 1-2 object that has some states during its life in the system. Create Statechart diagram for this object.
5. Add all diagrams to doc report with necessary comments.

### Notice

For UML diagram plotting you can use draw.io (<https://www.draw.io/>), StarUML (<http://staruml.io/>) or another available software tools.

## Lab6. Business process implementation

Objective: To study the business process implementation with Cuba Platform

### Tasks

1. Create Cuba Platform project, which will implement one of business processes of previously selected organization.
2. Add section to doc report image, which should include:
  - Selected business process description (several sentences). It is desirable that the business process be the same as business process described in assignment #4.
  - Instructions for running the application, prerequisites.
  - Step-by-step instruction with demonstration of business process automation using the application.
3. Send zipped Cuba Project files and doc report to j-avdeev@yandex.ru

### Notice

Use Cuba Platform documentation (for example <https://doc.cuba-platform.com/bpm-latest/bpm.html>).

Yes, can use your preferable framework (not Cuba Platform) to create a web application to automate chosen business process.