MINISTRY OF EDUCATION AND SCIENTIFIC RESEARCH

TECHNICAL UNIVERSITY
OF CLUJ-NAPOCA

FACULTY OF AUTOMATION AND COMPUTER SCIENCE
COMPUTER SCIENCE DEPARTMENT

DISTRIBUTED SYSTEMS

Assignment 3

Asynchronous Communication using Messaging

A3.2: Asynchronous Distributed System Application using Java or .Net Messaging Frameworks

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Contents

1. Requirements

Design, implement and test a distributed system that uses MOM to create an asynchronous communication between the client (message producer) and the server (message consumer).

1.1. Functional requirements

- The application is used by a DVD store administrator
- The administrator must send notification to its customers when a new DVD is available
- The information about the new DVD must be saved in a text file
- Each time new information about a DVD is introduced in the system, the application must send automatically notification e-mails to all the subscriber customers to notify them about the new item
- Each time new information about a DVD is introduced in the system the application must create automatically a text file and write the information about the DVD in it

1.2. Implementation technologies

- Use one of the following technologies:
  - For message producer and consumer: **Java** or **.NET**
  - For message queue:
    - **Java:** JMS, Java API of RabbitMQ
    - **.NET:** MSMQ, .NET API of RabbitMQ

2. Deliverables

- A solution description document (about 4 pages, Times New Roman, 10pt, Single Spacing) containing:
  a) Conceptual architecture of the distributed system.
  b) UML Deployment diagram.
  c) Readme file containing build and execution considerations.
- Source files. The source files will be uploaded on the personal *bitbucket* account created at the *Lab resources* laboratory work, following the steps:
  - Create a repository on *bitbucket* with the exact name: *DS2018_Group_FirstName_LastName_Assignment_3*
  - Push the source code and the documentation (push the code not an archive with the code or war files)
  - Share the repository with the user *utcn_dsrl*
- The source files will be uploaded on the personal *bitbucket* account created at the *Lab resources* laboratory work

3. Evaluation

3.1. Assignment Related Basic Questions

During project evaluation and grading you will be asked details about the following topics:

- Types of communication: Point-to-Point vs Publish-Subscribe
- Explain the usage of the following objects: Message, MessageProducer, MessageConsumer

3.2. Grading

The assignment will be graded as follows:

Points	Requirements
5 p	• Web page for introducing information about the new DVD • Message Sender, Message Queue and Message Receiver • Documentation
2 p	Sending email from Message Receiver
1 p	Creating text file from Message Receiver
2p	Answers of Reinforcement Learning Questions of A3.1

4. Bibliography

1. http://www.coned.utcluj.ro/~salomie/DS_Lic/

2. **JMS, MSMQ:**
   Lab Book: I. Salomie, T. Cioara, I. Anghel, T.Salomie, *Distributed Computing and Systems: A practical approach*, Albastra, Publish House, 2008, ISBN 978-973-650-234-7

3. **RabbitMQ**
   Tutorial
   - **https://www.rabbitmq.com/getstarted.html**
   - https://dzone.com/articles/getting-started-rabbitmq-java

   Installation:
   - https://www.rabbitmq.com/install-windows.html
   - http://www.erlang.org/download.html