# CSC360-02: Assignment 2 – Mortgage Lender and Borrower

# In this assignment, you will develop two applications to represent a bank loan lending system, and a mortgage borrower. The borrower sends a loan request message to a JMS topic. The lender subscribes to the topic and receives the loan request message. The lender sends a loan approval message back to the borrower using the borrower’s private queue specified in the JMSReplyTo field.

# Part I - Borrower

The borrower sends out a loan request message to a JMS topic named “topic.loan.request”. MapMessage format is used to send out the loan request.

The MapMessage consists of the following name-value pairs:

* Borrower: String
* Salary:double
* LoanAmount:double
* PaymentScheme:int

The borrower sets the JMSReplyTo field in the JMS message header to a queue named “queue.your\_student\_ID”. The borrower may receive multiple proposals from different lenders. The lender sends back the loan proposal JMS ObjectMessage. The borrower then chooses the best offer and sends the ACCEPT text message back to the lender. The JMSCorrelationID of the ACCEPT message is set to the lender’s loan proposal message ID.

Print out the loan proposals your application received from the lenders.

# Part II – Bank Lender

The bank application creates a durable subscriber named “bank.your\_student\_ID” to subscribe the mortgage loan request messages from the “topic.loan.request.” It also creates a subscriber to a topic “topic.fed.interest” for receiving the latest federal bank interest rate in the StreamMessage format every 2 minutes. Once a loan request message is received, the bank will qualify the loan application based on the bank rules. The bank lender sends back the loan proposal ObjectMessage to the borrower’s queue using a JMSReplyTo field. The LoanProposalData class is provided for you to create the loan proposal ObjectMessage. The loan proposal message expires in 7 days. The JMSReplyTo field is set to the queue “queue.your\_student\_ID” in the loan proposal message header. The JMSCorrelationID is set to the borrower’s JMSMessageID in the loan request message. The lender then waits for the borrower to send back the ACCEPT or REJECT text message.

Print out both the accepted and rejected loan proposals from the borrowers. The output should include the original loan request information.

Bank rules:

1. The bank rule prohibits issuing loans to their own employees and direct relatives. Therefore, your bank loan application should filter out the loan request generated from your own borrower.
2. The total loan amount cannot exceed 500,000.
3. The loan amount to salary ratio cannot exceed 3.0.
4. The loan proposal is valid for one week.
5. Mortgage interest rates issued to borrowers cannot exceed 10% or lower than the federal interest rate published to “topic.fid.interest”.
6. PaymentScheme (mortgage term) can only be obtained in 1, 2, 3, 4, 5, 7, 10 and 30 year terms.

Federal Interest Rate StreamMessage

long millis; // Time in millisecond

double one\_year\_rate; // 1-year

double two\_year\_rate; // 2-year

double three\_year\_rate; // 3-year

double four\_year\_rate; // 4-year

double five\_year\_rate; // 5-year

double seven\_year\_rate; // 7-year

double ten\_year\_rate; // 10-year

double thirty\_year\_rate; // 30-year

## Class

**public** **class** LoanProposalData **implements** Serializable

## Methods

**public** **void** setBankName(String bankName)

**public** **void** setReason(String reason)

**public** **void** setLoanAmount(**double** loanAmount)

**public** **void** setPaymentScheme(**int** paymentScheme)

**public** **void** setInterestRate(**double** interestRate)

**public** **void** setApprovedFlag(**boolean** bool)

**public** String getBankName()

**public** String getReason()

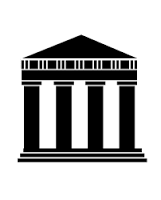
**public** **double** getLoanAmount()

**public** **int** getPaymentScheme()

**public** **double** getInterestRate()

**public** **boolean** getApprovedFlag()

Borrower/Lender Message Flow Diagram



topic.fed.interest

topic.loan.request

queue.12345678

queue.11111111

queue.22222222

Bank Lender 11111111

1

Borrower 12345678

1 1

Bank Lender 22222222

Bank Lender 12345678