- **How to use and run the project:**

1. update RSSReader/data/outbox/config.xml to set your preference (optional)

2. start ActiveMQ

3. start the RSSReader project

4. start the RSSDisplay project

***Important note:** When running the RSSDisplay project, please make sure starting the project from **the main method of the GUIStarter class**, rather than the main method of the GUI class. GUIStarter acts as an extra starter class which does not inherit from javafx.application.Application.

Otherwise, there might be an error: "JavaFX runtime components are missing, and are required to run this application." See https://stackoverflow.com/questions/56894627/how-to-fix-error-javafx-runtime-components-are-missing-and-are-required-to-ru.

- **Overview:**

This Maven project is basically an RSS reader, which polls RSS feeds from news sources and organizes them based on topics and sources. It allows customized configuration in an XML configuration file. For example, a user can specify topics and sources he is interested in, words he doesn't want to see, and his reading speed.

The project consists of two parts — RSSReader and RSSDisplay.

- **RSSReader:**

Load user configuration from the data/inbox/config.xml file.

Read URLs from data/inbox/sources.txt, split the file into individual URLs, and route URLs to different SEDA components based on their topics.

Poll from URLs in the SEDA components and send the polled RSS feeds to corresponding JMS topics.

Subscribe to JMS topics that the user is interested in. Consume RSS feeds from the JMS topics and send them to jms:queue:RSS_ALL for further processing.

Consume RSS feeds from jms:queue:RSS_ALL. Process the feeds based on user configuration, and send them to data/outbox. The data/outbox folder is organized by topics and sources. Processing includes: filtering out messages that contain words the user doesn't want to see, filtering out sources the user doesn't want to see, enriching the message by adding estimated reading time, transforming body from xml string to a string in a specific format.

Files involved:

data/inbox/sources.txt:

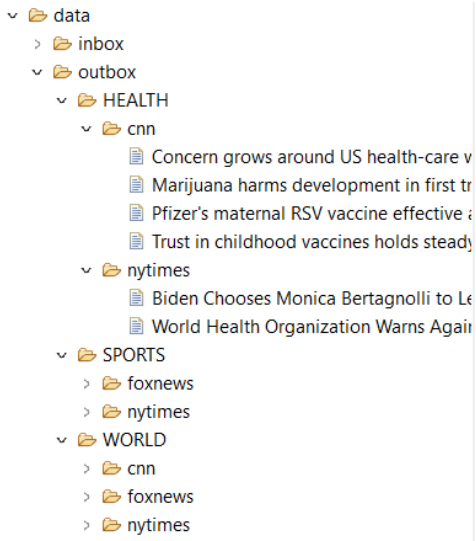
This is the file which stores URLs of RSS sources, that the app will poll from.

data/inbox/config.xml:

A file where user can make personalized configuration. See annotation in the file for more details.

data/outbox/:

A folder which stores polled RSS feeds in .txt file format. The folder is organized in the following hierarchy:



JMS topics:

RSS_HEALTH	0	93	92	Send To Active Subscribers Active Producers Delete
RSS_OTHER	0	70	0	Send To Active Subscribers Active Producers Delete
RSS_SCIENCE	0	63	0	Send To Active Subscribers Active Producers Delete
RSS_SPORTS	0	38	38	Send To Active Subscribers Active Producers Delete
RSS_TECH	0	93	0	Send To Active Subscribers Active Producers Delete
RSS_WORLD	0	92	92	Send To Active Subscribers Active Producers Delete

JMS queue:

Queues:

Name	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
RSS_ALL	187	0	222	35	Browse Active Consumers Active Producers atom rss	Send To Purge Delete

A sample message in JMS queue RSS_ALL:

note the header ‘topic’ and the header ‘source’ set by the program

Headers	
Message ID	ID:LAPTOP-RB3TL8KV-53525-1684743003217-1:1:1:1:17:1
Destination	queue://RSS_ALL
Correlation ID	
Group	
Sequence	0
Expiration	0
Persistence	Persistent
Priority	4
Redelivered	false
Reply To	
Timestamp	2023-05-22 03:10:08:591 CDT
Type	

Properties	
breadcrumbId	ID-LAPTOP-RB3TL8KV-53524-1684743001786-0-273
topic	WORLD
CamelJmsDeliveryMode	2
source	nytimes

Message Actions

Delete

Copy

Move

-- Please select --

Message Details

```
<?xml version="1.0" encoding="UTF-8"?>
<rss xmlns:dc="http://purl.org/dc/elements/1.1/" version="2.0">
  <channel>
    <title>NYT &gt; World News</title>
    <link>https://www.nytimes.com/section/world</link>
    <description />
    <language>en-us</language>
    <copyright>Copyright 2023 The New York Times Company</copyright>
    <pubDate>Mon, 22 May 2023 07:13:19 GMT</pubDate>
    <dc:date>2023-05-22T07:13:19Z</dc:date>
    <dc:language>en-us</dc:language>
    <dc:rights>Copyright 2023 The New York Times Company</dc:rights>
    <image>
      <title>NYT &gt; World News</title>
      <url>https://static01.nyt.com/images/misc/NYT_logo_rss_250x40.png</url>
      <link>https://www.nytimes.com/section/world</link>
    </image>
    <item>
      <title>He Promised Change in Thailand. But Will He Be Allowed to Lead?</title>
      <link>https://www.nytimes.com/2023/05/19/world/asia/thailand-pita-limjaroenrat-election.html</link>
      <atom:link xmlns:atom="http://www.w3.org/2005/Atom" href="https://www.nytimes.com/2023/05/19/world/asia/thailand-pita-limjaroenrat-election.html" rel="standout" />
      <media:content xmlns:media="http://search.yahoo.com/mrss/" height="151" medium="image" url="https://static01.nyt.com/images/2023/05/19/multimedia/19thailand-future-01-bwg
      <media:credit xmlns:media="http://search.yahoo.com/mrss/">Lauren DeCicca for The New York Times</media:credit>
      <media:description xmlns:media="http://search.yahoo.com/mrss/">Pita Limjaroenrat, leader of Thailand鈥 Move Forward Party, at the party headquarters in Bangkok on Thurs
      <description>Pita Limjaroenrat聽led his party to victory in the Thai election and seems poised to become the next prime minister, unless the military blocks him.</descrip
      <category domain="http://www.nytimes.com/namespaces/keywords/nyt_per">Pita Limjaroenrat</category>
      <category domain="http://www.nytimes.com/namespaces/keywords/nyt_geo">Thailand</category>
      <category domain="http://www.nytimes.com/namespaces/keywords/des">Elections</category>
      <category domain="http://www.nytimes.com/namespaces/keywords/des">Coups D'Etat and Attempted Coups D'Etat</category>
      <category domain="http://www.nytimes.com/namespaces/keywords/des">Politics and Government</category>
      <category domain="http://www.nytimes.com/namespaces/keywords/des">International Relations</category>
      <category domain="http://www.nytimes.com/namespaces/keywords/des">Demonstrations, Protests and Riots</category>
      <category domain="http://www.nytimes.com/namespaces/keywords/des">Legislatures and Parliaments</category>
      <pubDate>Mon, 22 May 2023 01:50:49 GMT</pubDate>
      <guid isPermaLink="false">https://www.nytimes.com/2023/05/19/world/asia/thailand-pita-limjaroenrat-election.html</guid>
      <dc:creator>Sui-Lee Wee</dc:creator>
      <dc:date>2023-05-22T01:50:49Z</dc:date>
    </item>
  </channel>
</rss>
```

- **RSSDisplay:**

RSSDisplay uses Camel routes to consume RSS .txt files (generated by RSSReader) in RSSReader/data/outbox. It constructs an RSSFeed object from each .txt file. The RSSFeed object is then added to 'items' variable (of the type 'ObservableList<RSSFeed>'). The 'items' variable stores all the RSS items to display.

User can choose between different displaying strategies — table view display and list view display (by default).

Items in the table view and the list view are clickable. Once clicked, a new window will pop up, showing the content from the html link of the RSS item.

Generate RSS feed summary

User can enter a folder path in the text field. The app will generate an RSS feed summary for all the .txt files in the folder. An RSS feed summary is basically a collection of all the RSS item titles.

List view:

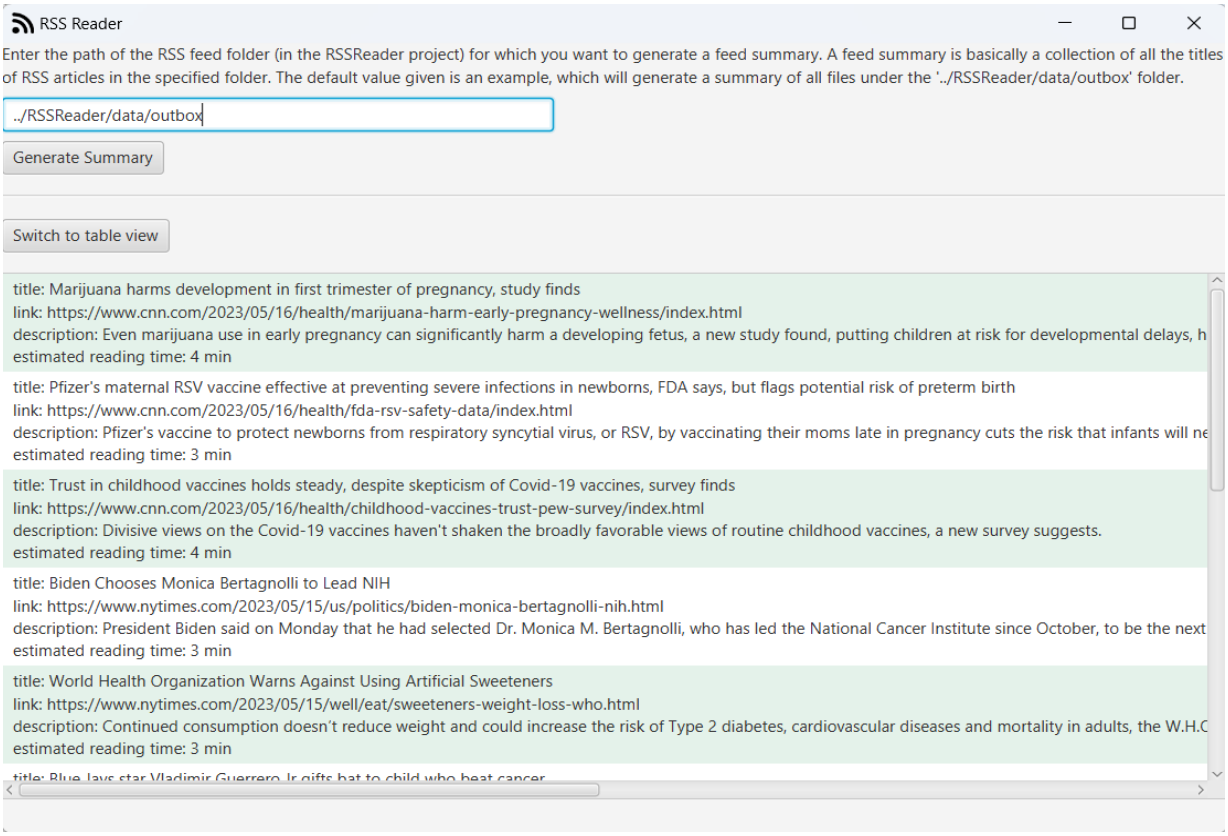
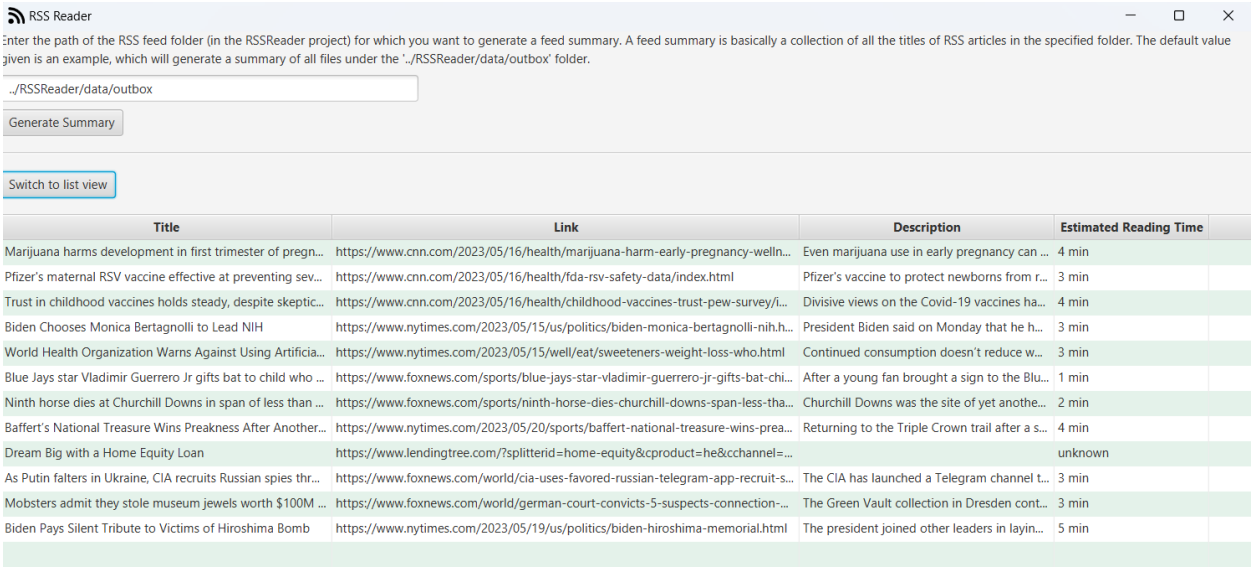


Table view:



Title	Link	Description	Estimated Reading Time
Marijuana harms development in first trimester of pregn...	https://www.cnn.com/2023/05/16/health/marijuana-harm-early-pregnancy-wellness/index.html	Even marijuana use in early pregnancy can ...	4 min
Pfizer's maternal RSV vaccine effective at preventing sev...	https://www.cnn.com/2023/05/16/health/fda-rsv-safety-data/index.html	Pfizer's vaccine to protect newborns from r...	3 min
Trust in childhood vaccines holds steady, despite skeptic...	https://www.cnn.com/2023/05/16/health/childhood-vaccines-trust-pew-survey/index.html	Divisive views on the Covid-19 vaccines ha...	4 min
Biden Chooses Monica Bertagnolli to Lead NIH	https://www.nytimes.com/2023/05/15/us/politics/biden-monica-bertagnolli-nih.html	President Biden said on Monday that he h...	3 min
World Health Organization Warns Against Using Artificia...	https://www.nytimes.com/2023/05/15/well/eat/sweeteners-weight-loss-who.html	Continued consumption doesn't reduce w...	3 min
Blue Jays star Vladimir Guerrero Jr gifts bat to child who ...	https://www.foxnews.com/sports/blue-jays-star-vladimir-guerrero-jr-gifts-bat-child-who-gives-him-sign	After a young fan brought a sign to the Blu...	1 min
Ninth horse dies at Churchill Downs in span of less than ...	https://www.foxnews.com/sports/ninth-horse-dies-churchill-downs-span-less-than-month	Churchill Downs was the site of yet anothe...	2 min
Baffert's National Treasure Wins Preakness After Another...	https://www.nytimes.com/2023/05/20/sports/baffert-national-treasure-wins-preakness.html	Returning to the Triple Crown trail after a s...	4 min
Dream Big with a Home Equity Loan	https://www.lendingtree.com/?splitterid=home-equity&cproduct=he&cchannel=...		unknown
As Putin falters in Ukraine, CIA recruits Russian spies thr...	https://www.foxnews.com/world/cia-uses-favored-russian-telegram-app-recruit-spies-ukraine-war	The CIA has launched a Telegram channel t...	3 min
Mobsters admit they stole museum jewels worth $100M ...	https://www.foxnews.com/world/german-court-convicts-5-suspects-connection-dresden-green-vault-heist	The Green Vault collection in Dresden cont...	3 min
Biden Pays Silent Tribute to Victims of Hiroshima Bomb	https://www.nytimes.com/2023/05/19/us/politics/biden-hiroshima-memorial.html	The president joined other leaders in layin...	5 min

- **Design patterns used:**

Strategy:

Display strategies in RSSDisplay.

Relevant classes: DisplayStrategy, ListDisplayStrategy, TableDisplayStrategy

Command:

Used to turn a request into a stand-alone object, to separate business logic and user interface.

GenerateSummary, and StartCamelRoute implement the Command interface.

Composite:

Used in the summary generation part. MyRSSFile is the component class. MyRSSFolder, MyRSSRegularFile extend it. MyRSSRegularFile refers a regular file, which is not a directory. When a MyRSSFolder generates summary, it doesn't care if a child file is a regular file or a folder. In this sense, the leaf class and the composite class behave the same.

Iterator:

Used in multiple places, including Java built-in iterators. Example: when generating a summary, MyRSSFolder uses an iterator to iterate through its child files.

- **Enterprise integration patterns used:**

Point-to-Point Channel:

All channels except pub/sub channels are point-to-point channels. Examples: SEDA components (in the RSSMain class in RSSReader project), and the JMS component using JMS queues (jms:queue:RSS_ALL).

Publish-Subscribe Channel:

JMS topics such as RSS_HEALTH, RSS_TECH, etc. User can subscribe to topics he's interested in.

Event-Driven Consumer:

According to Camel documentation, the default consumer model in Camel is event based (i.e. asynchronous).

Polling Consumer:

The Camel RSS component is by default a polling consumer, which polls feeds every a certain length of time. The interval between one poll and the next poll can be configured using the 'delay' endpoint option.

Splitter:

Example: In the RSSMain class in the RSSReader project, the content of 'sources.txt' file, which contains multiple URLs, is split into individual URLs based on newline characters.

Content-Based Router:

Used to route URLs in the sources.txt file to different seda components, based on the topic keywords in the URLs. See RSSMain class in RSSReader project.

Message Filter:

Used in many places.

Example: RSSFilter class in RSSReader project. This class has two methods. ‘filterWords’ is used to filter out messages that contain words the user doesn’t want to see. ‘filterSources’ is used to filter out messages from sources that the user doesn’t want to see.

Message Translator:

According to https://camel.apache.org/components/3.20.x/eips/message-translator.html, this pattern can be implemented in many ways.

Example: The processor in TXTFeedFormatter class of the RSSReader project acts as a translator. It extracts information from xml string, and translates the xml string to a string which will be stored in a local .txt file with a specific format.

Content Enricher:

Used to add estimated reading time information to the feed message. See ContentEnricher class in RSSReader project.

Selective Consumer:

According to https://camel.apache.org/components/3.20.x/eips/selective-consumer.html, the Selective Consumer EIP can be implemented in two ways, one is using Components which supports message selecting, the other is using the Filter EIP. Therefore, in this sense, usage of the Filter EIP can be considered as using the Selective Consumer EIP.