COMP 4339 – Software Analysis & Design

Bioinformatics Algorithms – Online Tool
Use Case Model

Version 0.01

Document history

Date	Version	Description	Author
10/28/2016	1.0	Tool that will provide bioinformatics algorithms for processing of biological data and some other techniques as mapping of the genes and similar.	Medina Colic

Contents

1 Introduction

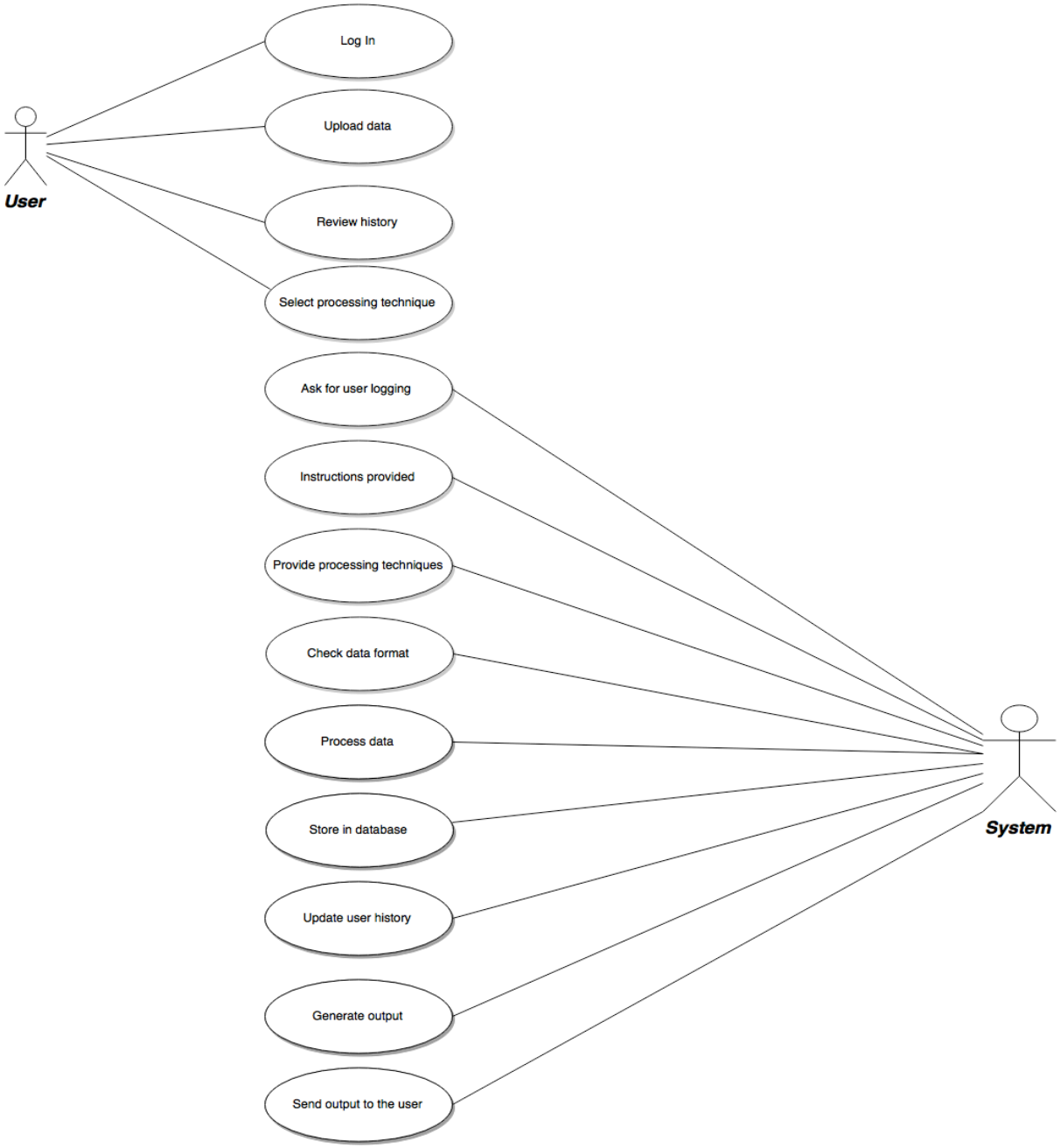
1.1 Purpose of this document

This document provides a coherent view of the Use Cases and Actors of the system as well as the system boundaries. The Use Cases are weighed and prioritized.

1.2 References

1. Project Idea Proposal
2. Project Topic Form
3. User Stories
4. StakeHolders Questionnaire

2 Use Case Diagram



3 Use Case Details

Use Case Name:	Log In		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	User		
Brief Description:	User provides its user data (email, etc.) and system creates its account.		
Triggering events:	User wants to use a tool		
Related Use cases:	Might review the activity history		
Pre-conditions:	System up and running Account information should be ready		
Post-conditions:	User account created User email address stored		
Flow of Activities:	User	System	
	1. User wants to use the online tool and enters name, surname and email address. 2. User confirms the entered data.	1.1 System creates a new user account. 1.2 System returns user entered information and asks for confirmation of it. 2.1 System stores the user data in the database	
Exception Conditions:	1. User data incomplete. 2. User email address isn't valid.		

Use Case Name:	Upload data		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	User		
Brief Description:	User uploads it data for processing.		
Triggering events:	User needs processed data		
Related Use cases:	Wants to calculate GC percent of its data and/or other biological features.		
Pre-conditions:	Created user account Data in format that system accepts		
Post-conditions:	Data uploaded for processing		
Flow of Activities:	User	System	
	1. User wants to upload data	1.1 System checks if the data format is compatible with data formats it accepts. 1.2.1 If yes, proceed to select the features you want to use 1.2.2 If no, upload a valid data format.	
Exception Conditions:	Wrong data format.		

Use Case Name:	Review history		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	User		
Brief Description:	User reviews previous activities performed using the tool.		
Triggering events:	Wants to recall previous data and information.		
Related Use cases:	Don't want to calculate or process something again, so recalling it from the history of activities is easier for a user.		
Pre-conditions:	Previous activities.		
Post-conditions:	List of activities user has completed using the tool.		
Flow of Activities:	User	System	
	1 Requests to review the activities history	1.1 System locates the user account in database and pulls all activities synchronized with that user	
Exception Conditions:	No previous activities.		

Use Case Name:	Select processing technique		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	User		
Brief Description:	User should select which features of the tool or which processing technique it wants to use.		
Triggering events:	Wants to analyze or process biological data.		
Related Use cases:	Selecting which feature to use.		
Pre-conditions:	Created account. Ready valid data format.		
Post-conditions:	Selected technique. Ready to submit for processing.		
Flow of Activities:	User	System	
	1. Selects the feature or processing method	1.1 Once again confirms the data format 1.2 Process the data	
Exception Conditions:	Not valid data format.		

Use Case Name:	Ask for user logging		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	System asks for user logging in order to allow full access.		
Triggering events:	Users prompt to use the tool		
Related Use cases:	User wants to use the full features of the tool.		
Pre-conditions:	Up and running system.		
Post-conditions:	User logged in. All features available.		
Flow of Activities:	System	User	
	1. Provide the log in information	1.1 User provides log in information	
Exception Conditions:	Not valid user log in information.		

Use Case Name:	Instructions provided		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	Provides instructions how to use the tool.		
Triggering events:	Users prompt to use the tool		
Related Use cases:	For easier and quicker usage of the tool, instructions are provided by the system.		
Pre-conditions:	Up and running system.		
Post-conditions:	Instructions provided		
Flow of Activities:	System	User	
	1. Provides the instructions how to use the tool	1.1 User reads the instructions and benefits from the tool.	
Exception Conditions:	User is a beginner and struggles with understanding the instructions provided.		

Use Case Name:	Processing techniques		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	Bioinformatics algorithms on which the tools is running and performing the processing techniques available to the user.		
Triggering events:	Users prompt to use the tool		
Related Use cases:	Features have biological significance, generated by expert biologist and computer programmers.		
Pre-conditions:	Up and running system. Written bioinformatics algorithms.		
Post-conditions:	Features ready to be used by the user.		
Flow of Activities:	System	User	
	1. Bioinformatics algorithms on the front end, responsible for processing the data	1.1 User selects the processing techniques and triggers the algorithms, which is responsible for it.	
Exception Conditions:	Large data. Incorrect method for a provided data.		

Use Case Name:	Check data format		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	A check if the data format provided as user's input is competent with the formats system allows.		
Triggering events:	Users prompt to use the tool		
Related Use cases:	Suitable data format for further processing.		
Pre-conditions:	Up and running system.		
Post-conditions:	Ready to process the data		
Flow of Activities:	System	User	
	1. If data provided is in correct format proceed to select your processing technique 2. If not, please upload the data in a correct format	1.1 Users provides the input data 1.2 Correct data 2.1 Incorrect data	
Exception Conditions:	Not valid user log in information.		

Use Case Name:	Process data		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	After user selects processing technique, system applies it on the input data.		
Triggering events:	Users prompt to use the tool		
Related Use cases:	Using the tool's features.		
Pre-conditions:	Up and running system. Selected processing method.		
Post-conditions:	Processed data. Ready to be stored in output file.		
Flow of Activities:	System	User	
	1. Matches the input data and selected method. 2. Applies the method. 3. Stores the output		
Exception Conditions:	If data is large processing might take time or the system might crash.		

Use Case Name:	Store in database		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	After processing data store it in database		
Triggering events:	Users prompt to use the tool and receive the output.		
Related Use cases:	Storing the result data so user can recall it later on.		
Pre-conditions:	Up and running system. Selected processing method. Completed processing.		
Post-conditions:	Processed data. Stored in the database.		
Flow of Activities:	System	User	
	1. Stores the result data in the database	1.1 When recalling the activities history can easily access it again.	
Exception Conditions:	If data is large processing might take time or the system might crash.		

Use Case Name:	Update user history		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	Updates the activities history after every new activity user does within the tool		
Triggering events:	User's new activity.		
Related Use cases:	User activities stored in case user wants to recall them.		
Pre-conditions:	System up and running. Performed user activities		
Post-conditions:	Updated list of user activities after every new activity		
Flow of Activities:	System	User	
	1. Stores the user activities in a stack 2. Every new user's activity is at the top of a stack		
Exception Conditions:	Miss the activity update in case of internet cut-off		

Use Case Name:	Generate output		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	System collects the generated/processed data from database and stores it in a file, ready to be sent to the user.		
Triggering events:	Finishing the processing.		
Related Use cases:	Bring the result from database and store it to the file.		
Pre-conditions:	Up and running system. Finished processing method		
Post-conditions:	Results stored in a file.		
Flow of Activities:	System	User	
	1. Collects the results from database 2. Stores it into a file		
Exception Conditions:	Too large data.		

Use Case Name:	Send output to user		
Created By:	Medina Colic	Last Updated By:	
Date Created:	10/29/2016	Last Revision Date:	
Actors:	System		
Brief Description:	Generated output is sent to user's email.		
Triggering events:	Finishing the data processing.		
Related Use cases:	Share the result data with user		
Pre-conditions:	User information in database. Email information provided on user's profile.		
Post-conditions:	Results sent to the user.		
Flow of Activities:	System	User	
	1. Is it your email address? (email address from user's profile) 2. If yes, it is sent. If no, please enter the new email address on which you would like to receive your results.	1.1 User answers yes or no.	
Exception Conditions:	Not valid user email address.		