Emergent Architecture Design

Group Health informatics-2

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1. Introduction

This document provides sketches and ideas of the design of the system that is going to be built during the Context Project Health Informatics. The architecture of the system is explained in the form of high level components of the system.

1.1 Design goals

The following design goals will be maintained throughout the project:

- Availability
  By Using the Scrum method to built the system, we make sure that each week a working product is ready for the client. This way the client will have the ability to see and use the system each week. This way, if there's a feature the client doesn't like or wants differently, the changes can be made as soon as possible. The product will also be developed as a standalone application this way it isn't dependent of external factors and can always be used. This is needed so researchers can analyse their data at any time.

- Manageability
  The system will be provided with a command line which researchers can enter SQL-queries to retrieve data in additional ways that are not yet implemented. For larger modifications and additions to the system that require the code to be extended or modified, all code will be well documented and commented. This enables developers who were not involved with the initial development to work on the system.

- Performance
  Since the system is a standalone application with a local database it will have a high performance ratio. This means that the connection between the database and the interfaces should be fast enough to ensure that the user don't experience long loading times or loading times at all when displaying the results of the data files.

- Reliability
  The system should not crash more than once every hundred uses. We will strive to make sure the system will crash as little as possible, but reliability is not something that is absolutely required for this system.

- Scalability
  Since the program interprets data dynamically the product can be distributed to analyse different sorts of data files. So it could also be used to analyse data from for example diabetes patients.

- Securability
  The system is a standalone application which doesn't connect to the internet. This means that all patient data records will only be kept at the user's computer.

2.Software architecture views

This chapter describes the architecture of the system. The architecture is split into some subsystems. These subsystems will work together to create the research tool that we need to deliver.

2.1 Subsystem decomposition (sub-systems and dependencies between them)

- Parsers
  Our program contains a collection of Parsers that are designed to dynamically read data from xml, excel and txt files. This data also contains the necessary information to put this in a database.

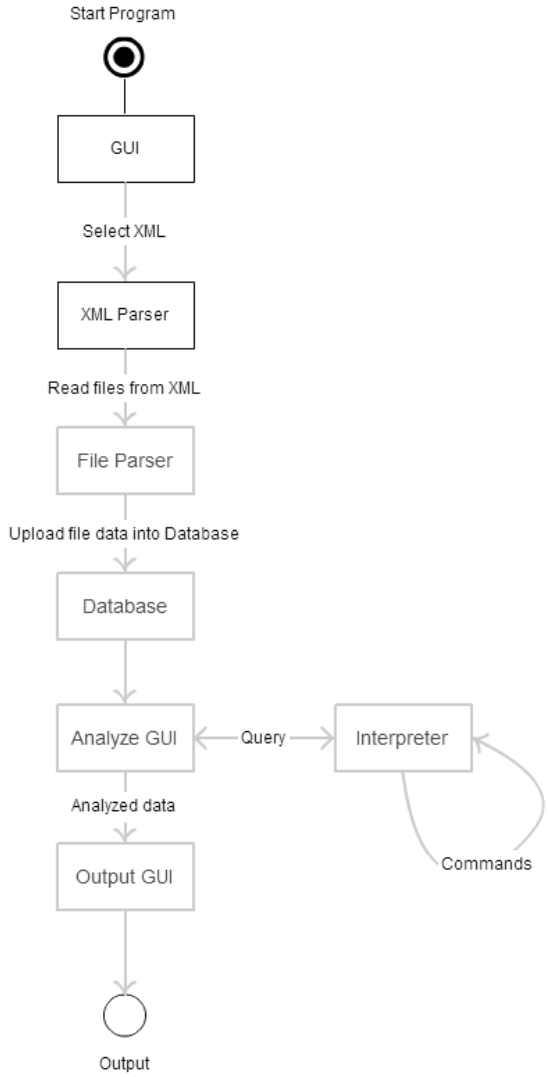
- Database
  The database receives the data from the current files, parsed in the readers. This is needed for the queries that will be run over the database.

- Interpreter
  The interpreter parses the queries the user puts in the GUI. These queries will be parsed and given to the right methods in all the 8 analysis classes.

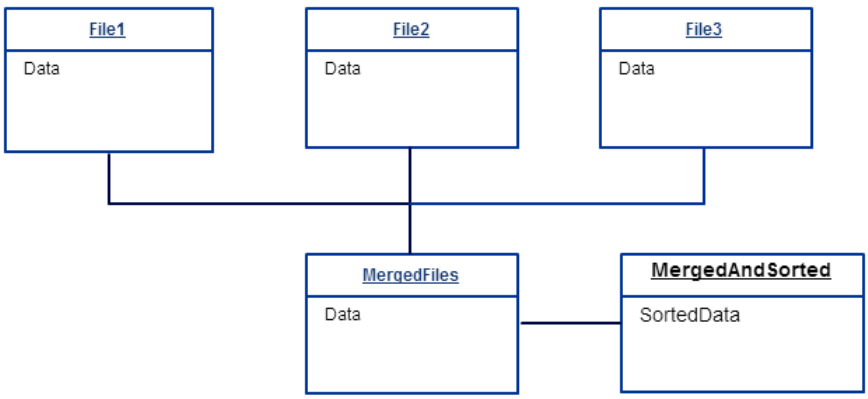
- UI
  The UI will handle the input from the user. This can be used to set all the wanted settings for the current run and ask queries. Settings like input files, queries, outputfilename etc.

Zie onderstaande flow-chart van het programma en database structuur.

Flow-chart:



Database structuur:



2.2 Hardware/software mapping (mapping of sub-systems to processes and computers, communication between computers)

The software will be only for analysts. There is a single application, which will create a temporary database. There will be no communication between computers or other hardware.
We use an overarching design for our data management. The user delivers us the tables with the data they want to process. We take those tables and store them in different tables in the database. This makes it easy for the user to reference specific data.

2.3 Persistent data management (file/ database, database design)

There is not a lot of persistent data used in this program. The only persistent data is de xml file with the settings, that the user can input.

2.4 Concurrency (processes, shared resources, communication between processes, deadlocks prevention)

Our system doesn't make use of shared resources or communication between processes, because it's a standalone application. Since we have a local database we have no real deadlock treats. But to make sure nothing will go wrong we make sure the system can only run one query at a time.

3. Glossary

Scrum - An agile software development framework which has a working product at the end of every week.
Standalone application - An application that does not load any external module, library or program.