# Project Phase II: **CYBERMINER**

# Requirements Specification

Versions 2

CS/SE 6362 Advanced Software Architecture (Fall 2015)

**Submitted to:**

**Dr. Lawrence Chung,**

**Associate Professor,**

**Department of Computer Science,**

**The University of Texas at Dallas,**

**Richardson, TX -75080**

**Submitted By:** Team Name: Quick Search

**Sruthi Chappidi,** [**sxc105920@utdallas.edu**](mailto:sxc105920@utdallas.edu)**,**

**Barbara Maweu,** [**bmk101020@utdallas.edu**](mailto:bmk101020@utdallas.edu)

**Maryellen Oltman,** [**mco130030@utdallas.edu**](mailto:mco130030@utdallas.edu)

**Twinkle Sharma,**[**txs151730@utdallas.edu**](mailto:txs151730@utdallas.edu)**.**

**Team Website:** [**www.utdallas.edu/~maryellen.oltman**](http://www.utdallas.edu/~maryellen.oltman)

## **Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author(s)** |
| 11/10/2015 | 1.0 | Preliminary version of CYBERMINER system architecture | Barbara Maweu  Sruthi Chappidi  Maryellen Oltman |
| 12/1/2015 | 2.2 | Update Functional and Nonfunctional requirements | All |

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# Introduction

The team will be working on developing Cyberminer, a web search engine using the KWIC software system. This application will be implemented using an object-oriented architectural style by building a Java applet which will be accessible via the internet.

A web search engine is a web-based tool that is designed to search and locate information on the World Wide Web. Popular examples of a search engine include Google, Yahoo! and Bing. These search engines utilize automated software applications (referred to as robots, bots, crawlers or spiders) to travel through the web following links from page to page and site to site. The information gathered by these automated software applications is used to create searchable indices of the web information. Web search engine results are generally presented on a webpage as line results often referred to as search engine results pages (SERPs).

## **Purpose**

The purpose of our project is to develop and architect a web search engine called Cyberminer. Cyberminer will be developed using KWIC index System (Keyword In Context) from Project I. This System provides a convenient search mechanism for information in a long list of lines, such as book titles, or online documentation entries. The System upon accepting a list of keywords will return a list of URL’s whose descriptions contain any of the given words.

We analyzed functional and nonfunctional requirement, design architecture styles, implementation and test the system. The System architecture style shall be an Abstract Data Type (ADT) style as this will provide clear object-oriented structure, and allow to build a Java applet (or an equivalent) with desire qualities of high cohesion and low coupling.

## **Scope**

The Cyberminer web search engine shall be designed, implemented and tested to satisfy list of functional and nonfunctional requirements. Based on design specification, the system should be implemented using Java applet. Finally, we describe user manual as a guideline for using Cyberminer system. All the materials of project will be available on the team web site.

## **Definitions, Acronyms, and Abbreviations**

* Cyberminer: A search engine that uses the KWIC system as a component and thus maintains a database of URLs whose description contains any of the searched words
* KWIC: KeyWord In Context describes a way to display related and accurate results to a specific search query.
* Architecture acronym if applicable
* UML (Unified Modeling Language): This provides a way to describe structure, behavior and architecture of application along with business process and data structure

## **Project Deliverables**

**Phase 1**:

Phase 1.1: Interim Project I

Deliverables: Preliminary Definition, PPT, and Presentation

Due Date: September 29th

Team Leader: Barbara Maweu

Phase 1.2: Final Part I

Deliverables: Project Report, Presentation, and Design Plans  
 Due Date: October 15th

Team Leader: Sruthi Chappidi

**Phase 2**:

Phase 2.1: Interim Project II

Deliverables: Outline, Project Plan, Updated Interim Project Report

Due Date: November 10th

Team Leader: Maryellen Oltman

Phase 2.2: Final Part II

Deliverables: Hard Copy of Project Report, Presentation and Demo  
 Due Date: December 1st

Team Leader: Twinkle Sharma

# Requirement Specifications

## **Functional Requirements**

Here we define the function of the Cyberminer web search engine and its components. These functional requirements will drive the choice of software architecture of the Cyberminer system.

* FR1.0 – The Cyberminer web search engine shall accept a list of keywords as input.
  + FR1.1 – The Cyberminer shall detect and correct typographical errors in the user input (Autofill).
* FR2.0 – The Cyberminer web search engine shall return a list of URLs whose descriptions contain the keywords.
  + FR2.1 – The Cyberminer will allow the user to specify an OR, AND, or NOT search.
  + FR2.2 – The Cyberminer will allow the user to specify case-sensitive or case-insensitive search.
  + FR2.3 – The Cyberminer shall filter out user-specified symbols (which are not considered meaningful) from the search.
  + FR2.4 – The Cyberminer shall allow the user to click on the resulting URL(s) to be taken to the corresponding website (hyperlink enforcement).
  + FR2.5 – The Cyberminer shall allow the user to specify the number of results per page.
    - FR2.5.1 – The Cyberminer shall allow the user to navigate between pages.
  + FR2.6 – The Cyberminer will allow the user to specify the listing order of the query results in ascending alphabetical order, or most-frequently-accessed order.
    - FR2.6.1 – The Cyberminer may allow the user to specify the listing order in a per-payment fashion.
* FR3.0 – The Cyberminer shall allow the user to report broken (out-of-date) URLs.
* FR4.0 – The Cyberminer shall allow multiple search engines to run concurrently.

## **Non-Functional Requirements**

Here we define the characteristics or quality attributes of the Cyberminer system.

* NFR1.0 – Understandability
  + The system shall use icons and descriptions that are naturally understandable by the intended users.
  + The user interface should be easy to understand
* NFR2.0 – Portability
  + The system shall run on Internet Explorer, Chrome and Mozilla browser.
* NFR3.0 – Enhanceability
  + The system shall support ability to easily enhanceable by adding new modules or functions.
* NFR4.0 – Reusability
  + The system modules could be used as sub modules for other complicated systems.
* NFR5.0 – Perfomance
  + The system shall support concurrent searches.
* NFR6.0 – User Friendly
  + The system shall promptly accept inputs and respond to search requests.
* NFR7.0 – Adaptable
  + The system shall run on Chrome web browser.