THE CHESSMASTERS CLUB

A Web application dedicated to chess lovers

IBM

THE GREAT MIND CHALLENGE

SOFTWARE REQUIREMENT SPECIFICATION ON THE CHESSMASTERS CLUB BY :

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1.1 Methodology

> *Any sufficiently advanced technology is indistinguishable from magic.*
>
> *Arthur C. Clarke*

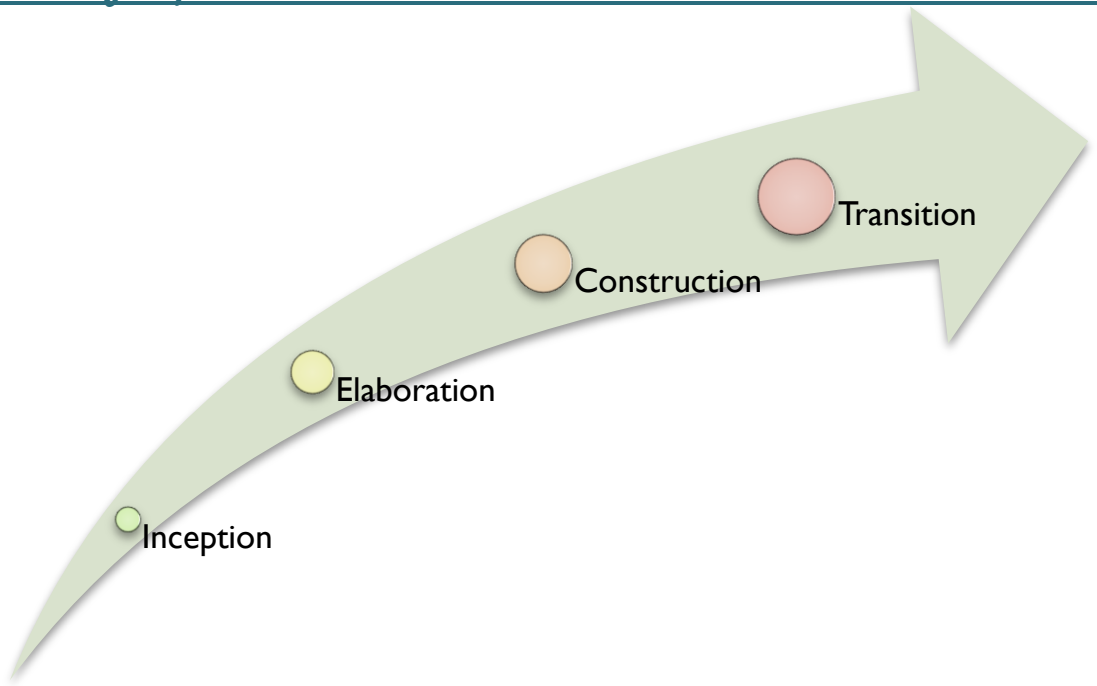
Our project primarily focuses on the step by step implementation of the profound Rational Unified Process. Rational Unified process is an iterative software development process framework created by the Rational Software Corporation, a division of IBM.

It strongly advocates bottom-up approach where we start from the scratch , building brick by brick , to construct our project as a whole .RUP is based on a set of building blocks, or content elements, describing what is to be produced, the necessary skills required and the step-by-step explanation describing how specific development goals are to be achieved.

The main building blocks, or content elements, are the following:

- Roles (who) – A Role defines a set of related skills, competencies and responsibilities.
- Work Products (what) – A Work Product represents something resulting from a task, including all the documents and models produced while working through the process.
- Tasks (how) – A Task describes a unit of work assigned to a Role that provides a meaningful result.

The major phases involved in the Rational Unified Process are:



INCEPTION PHASE

The primary objective is to scope the system adequately as a basis for validating initial costing and budgets.

ELABORATION PHASE

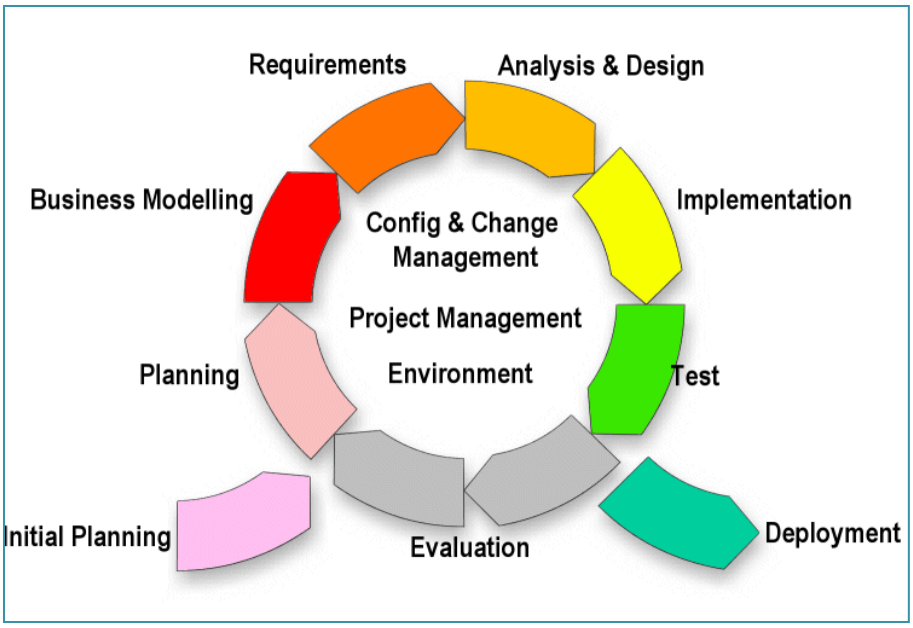
The primary objective is to mitigate the key risk items identified by analysis up to the end of this phase. The elaboration phase is where the project starts to take shape

CONSTRUCTION PHASE

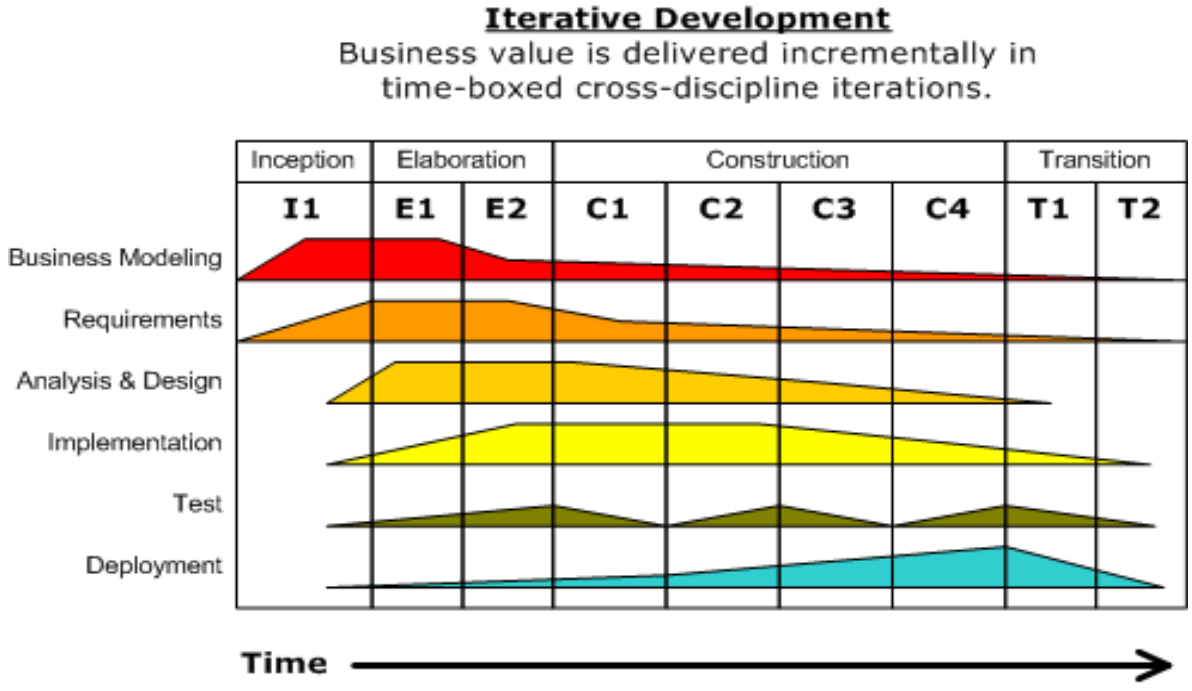
The primary objective is to build the software system. In this phase, the main focus is on the development of components and other features of the system.

TRANSITION PHASE

The primary objective is to 'transit' the system from development into production, making it available to and understood by the end user.



Diagrammatic Schema showing the process flow of RUP



Timeline of the Rational Unified Process

1.2 The Purpose

The ChessMasters Club is a web application built solely aiming at creating an exciting interface for chess lovers. It is a platform for chess enthusiasts to sharpen their skills, compete and have fun playing the great game of chess. It also caters to the needs of the learners with a wide variety of tutorials, videos and forums serving the purpose.

1.3 The Scope

The application primarily has two users :

Chess Players

The users of the application who are registered and posses their own unique username and password .They may avail features of competing against fellow users, participate in tournaments, watch tutorials, videos, view and post in forums, chat and enjoy a wide range of features.

Administrator

The authorizer and controller of the application . He is designated to add/delete users , most importantly organize tournaments, mange content in the form of tutorials, videos etc. He can also view the generated reports and graph to perform necessary changes in the application.

Other salient features include

- All users have their own profiles which they may update & modify . It is viewable to all registered users on Chess Masters Club.
- Online chat , forums to initiate participation and extension of technical help to those in need.
- Tutorials, videos and chess related material to sharpen skill and generate enthusiasm of the users.
- ***We strongly believe "Analysis makes solution simpler"***
  A concise and crystallized feedback mechanism at all junctures to generate reports for the benefit of the admin. It is then looked upon to implement suggestive changes and improve user's experience.

1.4 Definitions, Acronyms and Abbreviations

> *"Simplicity is the ultimate sophistication."*
> *– Leonardo da Vinci*

Admin: The administrator of the Web Application. He is the authorizer and posses power to add/delete users. He plays a significant role by organizing tournaments.

Tomcat: Apache Tomcat (or Jakarta Tomcat or simply Tomcat) is an open source servlet container developed by the Apache Software Foundation (ASF). Tomcat implements the Java Servlet and the JavaServer Pages (JSP) specifications from Sun Microsystems, and provides a "pure Java" HTTP web server environment for Java code to run.

J2EE – The Java Enterprise Edition is the industry standard for developing portable, robust, scalable and secure server-side Java Technology applications. It is built on the solid foundation of Java Platform, Standard Edition(Java SE).

DB2 - IBM DB2 is a relational model database server developed by IBM. It has been used to maintain the database records of rankings, players, user profiles, tournaments, games. This software provides safe and reliable database management.

JSP- JavaServer Pages (JSP) is a technology that helps software developers create dynamically generated web pages based on HTML, XML, or other document types.

UML- Unified Modeling Language is a standard language for writing software blueprints. It may be used to visualize, specify, construct and document.

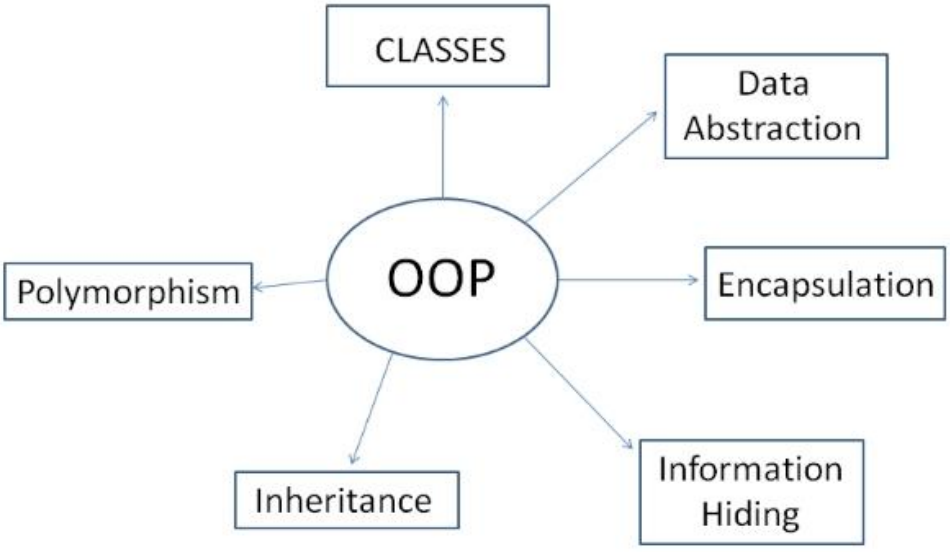
XML- eXtensible Markup Language is a text based markup language used to store data in a structured format. The term extensible implies that one can use his own tags to define the format of the data .

HTTP – Hyper Text Transfer Protocol is a service protocol that supports only one request per connection of the user. It's a stateless protocol.

1.5 TOOLS USED

Object Oriented Programming :

Popularly known as OOP's , it is defined as an approach that provides a way of modularizing programs by creating partitioned memory area for both data and functions that can be used as templates for creating copies of such modules on demand. Object-oriented programming **(OOP)** is a programming paradigm that represents concepts as "objects" that have data fields (attributes that describe the object) and associated procedures known as methods. Objects, which are instances of classes, are used to interact with one another to design applications and computer programs



Features of the OOP concept.

Java

Java is an object-oriented programming language developed by Sun Microsystems a company best known for its high end UNIX workstations. Java language was designed to be small, simple, and portable across platforms, operating systems, both at the source and at the binary level, which means that Java programs (applet and application) can run on any machine that has the Java virtual machine (JVM) installed.

J2EE

Java EE as it is also called is an industry standard for developing portable, robust, scalable and secure server side java technology applications. It is built on the solid foundation of Java Platform of Java Standard Edition (JAVA SE). It provides an API for object-relational mapping, distributed and multi-tier architectures, and web services. The platform incorporates a design based largely on modular components running on an application server. Software for Java EE is primarily developed in the Java programming language. The platform emphasizes Convention over configuration and annotations for configuration. Optionally XML can be used to override annotations or to deviate from the platform defaults.

Database platform – DB2

DB2 Database is the database management system that delivers a flexible and cost effective database platform to build robust on demand business applications and supports the J2EE and web.

IBM Rational Rhapsody

It is a modeling environment based on UML, Rhapsody is a visual development environment for systems engineers and software developers creating real-time or embedded systems and software. Rational Rhapsody uses graphical models to generate software applications in various languages including C, C++, Ada, Java and C#. Rational Rhapsody helps diverse teams collaborate to understand and elaborate requirements, abstract complexity visually using industry standard languages (UML, SysML, AUTOSAR, DoDAF, MODAF, UPDM), validate functionality early in development, and automate delivery of high quality products.

Eclipse IDE – "The IDE -a smarter way to code"

Eclipse is a multi-language software development environment comprising a workspace and an extensible plug-in system. It is written mostly in Java. It can be used to develop applications in Java and, by means of various plug-ins, other programming languages. The Eclipse SDK (which includes the Java development tools) is meant for Java developers. Users can extend its abilities by installing plug-ins written for the Eclipse Platform, such as development toolkits for other programming languages, and can write and contribute their own plug-in modules.

Apache Tomcat WebServer

Apache Tomcat (or simply Tomcat, formerly also *Jakarta Tomcat*) is an open source web server and servlet container developed by the Apache Software Foundation (ASF). Tomcat implements the Java Servlet and the JavaServer Pages (JSP) specifications and provides a "pure Java" HTTP web server environment for Java code to run. . Apache Tomcat includes tools for configuration and management, but can also be configured by editing XML configuration files.

1.6 References :

"There is no friend as loyal as a book. "
Ernest Hemingway

- ✓ IBM TGMC Sample Synopsis.
- ✓ IBM – www.ibm.in/developerworks.
- ✓ Java - www.sun.com
- ✓ Wikipedia - *www.wikipedia.com*
- ✓ HeadFirst Publications Servlets and JSP – 2nd edition

- ✓ DataBase Management – http://www.oracle.com/technetwork/tutorials/index.html

1.7 Technologies to be used

> *"One machine can do the work of fifty ordinary men. No machine can do the work of one extraordinary man. "*
>
> *Elbert Hubbard*

- Apache Tomcat
- Eclipse IDE
- DB2 : Relational Database Management
- IBM Rational architect – Rhapsody Modeller

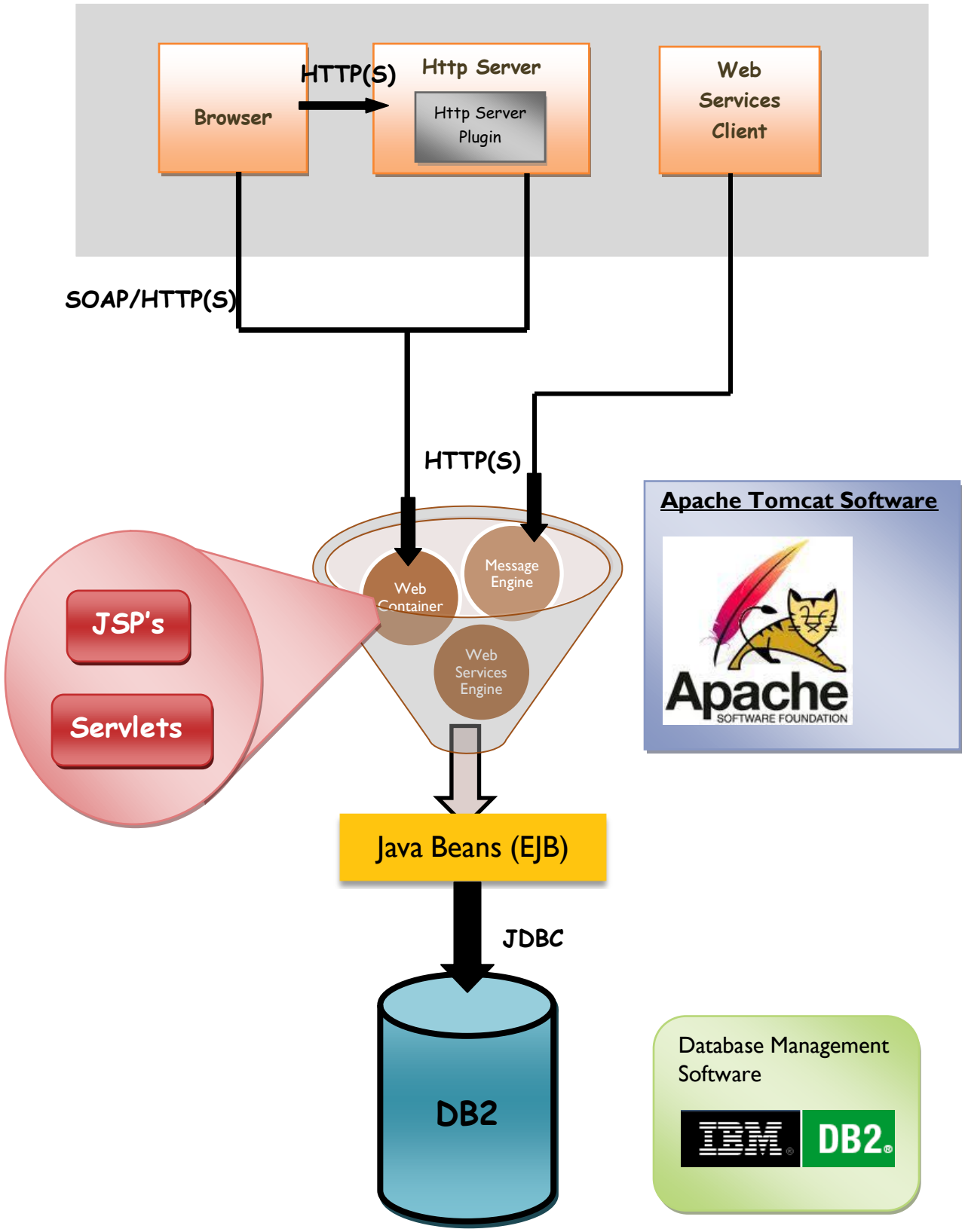
1.8 Overview

The plan:

- Registration for users.
- Online forum for users to play chess against other users.
- Online forum for users to play against server's computer.
- Rankings to encourage healthy competition and competitive spirit.
- Online videos and tutorials to facilitate learning and improvement.
- Online forum and online chat to help user's clear queries and communicate with other users.
- Tournaments to foster development and imbibe sportsmanship. Also, to encourage budding talents and nurture them into talented players.

2. Overall Description

2.1 Product Perspective


Browser
HTTP(S)
Http Server
Http Server Plugin
Web Services Client
SOAP/HTTP(S)
HTTP(S)
Apache Tomcat Software
Apache
SOFTWARE FOUNDATION
Message Engine
Web Container
Web Services Engine
JSP's
Servlets
Java Beans (EJB)
JDBC
DB2
Database Management Software
IBM
DB2

2.2 Software Interface

Client on Internet
Web Browser, Operating System (any)

Client on Intranet
Web Browser, Operating System (any)

Web Server
Apache Tomcat, Operating System (any)

Data Base Server
DB2, Operating System (any)

Development End
Eclipse (J2EE, Java, Java Bean, Servlets, HTML, XML, AJAX), DB2, OS (Windows 7), Apache Tomcat(Web Server).

2.3 Hardware Interface

Minimum Requirements

Client side			
	Processor	RAM	Disk Space
Internet Explorer - 6	Intel Pentium III or AMD - 800 MHz	128 MB	100 MB

Server side			
	Processor	RAM	Disk Space
Eclipse IDE	Intel Pentium III or AMD - 800 MHz	1 GB	3.5 GB
DB-2		256 MB	500 MB (Excluding Data Size)

Recommended Requirements

Client side			
	Processor	RAM	Disk Space
Internet Explorer - 6	All Intel or AMD - 1 GHZ	256 MB	100 MB

Server side			
	Processor	RAM	Disk Space
Eclipse IDE	All Intel or AMD - 2 GHZ	2 GB	3.5 GB
DB2		512 MB	500 MB (Excluding Data Size)

2.4 Communication Interface

- Client (customer) on Internet will be using HTTP/HTTPS protocol.
- Client (system user) on Internet will be using HTTP/HTTPS protocol.

So what is the HTTP protocol ?

HTTP runs on top of TCP/IP. TCP is responsible for making sure that a file sent from one network node to another ends up as a complete file at the destination, even though the file is split into chunks when it's sent. IP is the underlying protocol that moves/routes the chunks (packets) from one host to another on their way to the destination. HTTP, then, is another network protocol that has Web-specific features, but it depends on TCP/IP to get the complete request and response from one place to another. The structure of an HTTP conversation is a simple **Request/ Response** sequence; a browser *requests*, and a server *responds*.

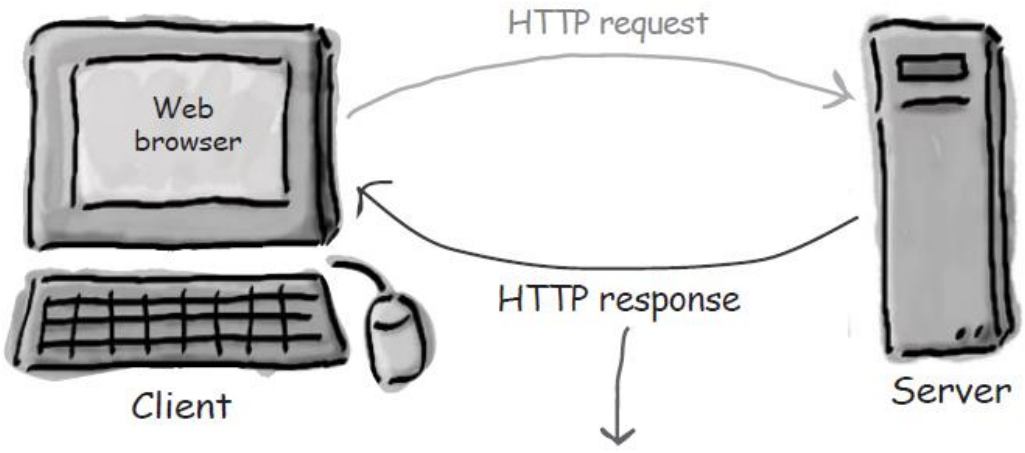


Image courtesy : Head First Publications : An Introduction to JSP & Servlets

2.5 The Constraints

- GUI is only in English
- Limited to HTTP/HTPS
- The system is working for a single server
- Only registered users can play chess games.