GUJARAT TECHNOLOGICAL UNIVERSITY

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INNOVATION COUNCIL (GIC)

Patent Search & Analysis Report (PSAR)

Date of Submission : 25/09/2016

Dear **Rathod Harshrajsinh Vijaysinh,**

Studied Patent Number for generation of PSAR	:	**16BE7_130020107086_5**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Google Patents
Web link of database	:	https://patents.google.com/
2. Keywords Used for Search	:	Website,Backend,Interaction,ERP
3. Search String Used	:	Website and Backend interaction with ERP
4. Number of Results/Hits getting	:	2172

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	Computer/IT Engineering
6. Invention is Related to/Class of Invention	:	Related to Accessing a ERP application
6 (a) : IPC class of the studied patent	:	G06Q 10/06 (20130101); Y10S 707/99944 (20130101) ;G06F 9/00 (20060101);
7. Title of Invention	:	Accessing a ERP application over the internet using strongly typed declarative language files
8. Patent No.	:	US6854120B1
9. Application Number	:	US09483069
9 (a) : Web link of the studied patent	:	https://patents.google.com/patent/US6854120B1/en?q=website&q=backend&q=interaction&q=erp
10. Date of Filing/Application (DD/MM/YYYY)	:	14/01/2000
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12. Publication/Journal Number	:	US 232595449
13. Publication Date (DD/MM/YYYY)	:	08/02/2005
14. First Filled Country : Albania	:	United States

15. Also Published as

Sr.No	Country Where Filled	Application No./Patent No.
1	United States	6504554
2	United States	6621505

16. Inventor/s Details.

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17. Applicant/Assignee Details.

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1	International Business Machines Corporation	Armonk, NY

18. Applicant for Patent is : College

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

An article of manufacture for use in a computer system comprising a computer readable medium for storing statements or instructions for use in execution in a computer in accordance with the following steps: (a) transmitting a Hypertext Markup Language (HTML) input form to a browser executed by a client computer in said network for display on a monitor attached thereto; (b) receiving a HyperText Transfer Protocol (HTTP) request from said browser to access said ERP System, wherein said request optionally includes data entered by said user into an HTML input form; (c) transferring any data entered by said user into said HTML input form and any data stored in said requested HTML page into said ERP application API; (d) transferring control to said ERP application for execution; (e) receiving output data from said ERP application in response to said transmitted data and request; (f) merging said output data from said ERP application into a strongly typed object, the strongly typed object being an object where arbitrary, implicit conversion between object types is not permitted; (g) transforming said strongly typed object into a transmittable format, such as XML or HTML; and (h) transmitting said HTML or XML object to said browser for display on said monitor attached to said client computer.

20. Specific Problem Solved / Objective of Invention

A method for executing enterprise resource planning (ERP) application requests in a computer-implemented ERP data processing system via a network, comprising the steps of: (a) transmitting a HyperText Markup Language (HTML) input form to a browser executed by a client computer in said network for display on a monitor attached thereto; (b) receiving a HyperText Transfer Protocol (HTTP) request from said browser to access said ERP System, wherein said request optionally includes data entered by said user into an HTML input form; (c) transferring any data entered by said user into said HTML input form and any data stored in said requested HTML page into said ERP application API; (d) transferring control to said ERP application for execution; (e) receiving output data from said ERP application in response to said transmitted data and request; (f) merging said output data from said ERP application into a strongly typed object, the strongly typed object being an object where arbitrary, implicit conversion between object types is not permitted; (g) transforming said strongly typed object into a transmittable format, such as XML or HTML; and (h) transmitting said HTML or XML object to said browser for display on said monitor attached to said client computer.

21. Brief about Invention

The present invention provides a method and apparatus for executing ERP application requests in a computer-implemented ERP data processing system via a network, using the steps of:

(a) transmitting a HyperText Markup Language (HTML) input form to a browser executed by a client computer in the network for display on a monitor attached thereto;

(b) receiving a HyperText Transfer Protocol (HTTP) request from the browser to access the ERP System, wherein the request optionally includes data entered by the user into an HTML input form;

(c) transferring any data entered by the user into the HTML input form and any data stored in the requested HTML page into the ERP application

API
(d) transferring control to the ERP application for execution;
(e) receiving output data from the ERP application in response to the transmitted data and request;
(f) merging the output data from the ERP application into a strongly typed Java object;
(g) transforming the strongly typed Java objects into a transmittable format, such as XML or HTML, and
(h) transmitting the HTML or XML object to the browser for display on the monitor attached to the client computer.

Referring now to the drawings in which like reference numbers represent corresponding parts throughout:

FIG. 1 schematically illustrates the hardware environment of the preferred embodiment of the present invention;

FIG. 2 shows schematically an overview of the preferred embodiment of the present invention, and in particular, shows the interaction among components in the present invention;

FIG. 3 shows schematically an overview of the preferred embodiment of the present invention, and in particular, shows the relationship between the user runtime environment and the application development environment of the present invention;

FIG. 4 is a flowchart illustrating the steps involved in creating an ERP data definition used as data access code to access data in a database accessed by ERP API's;

FIG. 5 is a flowchart illustrating the steps involved in populating strongly typed objects that correspond to a weakly typed ERP object.

FIG. 6 shows a student course list panel and the fields associate with the panel.

FIG. 7 shows a strongly typed Student Course List Java Object.

FIG. 8 is a flowchart illustrating the steps involved in invoking strongly typed objects, and converting strongly typed objects into a format requested by a web client; and,

FIG. 9 depicts the defining of a sub-graph of data objects.

22. Key learning Points

ERP Web Gateway

Referring to FIG. 2, the ERP Web Gateway 16 is designed to be sufficiently flexible and powerful, yet be available on multiple platforms, such as OS/2, AIX, MVS, etc. as long as a Java Virtual Machine is available on the platform. Further, the ERP Web Gateway 16 is designed to work with existing Web and ERP application development tools, with minimal modifications required to such tools.

These goals led also to the development of the code generation and run-time environment of the present invention. The ERP Web Gateway introduces an interface object, the ERP Connector 17, to map the procedural ERP Application native API. It also incorporates a mechanism that allows input data from an HTML-format input form to be inserted as parameters for the ERP Application. Another mechanism is incorporated to allow the ERP Application results to be merged into HTML report forms. The runtime engine of the ERP Web Gateway 16 reads the XML template files to generate the appropriate Java objects with their attributes and report forms. The use of XML instead of a new or hybrid language, allows the full expressive power without artificial limitations. Both object definitions and report forms can be laid out in any fashion as long as the specification are conformed to the XML syntax.

Interaction Among Components

FIG. 2 shows schematically an overview of the preferred embodiment of the present invention, and in particular, shows the interaction among components in the present invention. The user interacts with the Web browser executing on a client computer 12 remotely located from the Web server 14. At some point, the user executes an HTTP command via the Web browser on client 12 that results in communication with an HTFP daemon executing on the Web server 14. The Web server 14 would then transmit an initial or home page in HTML format to the Web browser on client 12 for presentation to the user. The ERP Web Connector 16 would be invoked by the user selecting a hyperlinked item from the home page. The ERP Web Connector 16 conforms to a web server interface, such as the Common Gateway Interface (CGI) defined for Web servers 14, or the Java Servlet API and thus can be invoked from an HTML page in one of two ways: either by an HTTP anchor reference or by an HTTP form action.

23. Summary of Invention

To overcome the limitations in the prior art described above, and to overcome other limitations that will become apparent upon reading and understanding the present specification, the present invention discloses a method and apparatus for executing pre-defined API calls in an ERP system via the Internet. In accordance with the present invention, Web users can request information from ERP software via HTML input forms, which request is then used to create an sequence of ERP API calls for execution by the ERP software. The results output by the ERP software are themselves transformed into HTML or XML/XSL format for presentation to the Web user. The specification of the ERP interface is done through the specification of ERP data definition.

One aspect of the invention provides a method for executing ERP application requests in a computer-implemented ERP data processing system via a network, comprising the steps of: (a) transmitting a HyperText Markup Language (HTML) input form to a browser executed by a client

computer in the network for display on a monitor attached thereto; (b) receiving a HyperText Transfer Protocol (HTTP) request from the browser to access the ERP System, wherein the request optionally includes data entered by the user into an HTML input form; (c) transferring any data entered by the user into the HTML input form and any data stored in the requested HTML page into the ERP application API (d) transferring control to the ERP application for execution; (e) receiving output data from the ERP application in response to the transmitted data and request; (f) merging the output data from the ERP application into a strongly typed Java object; (g) transforming the strongly typed Java objects into a transmittable format, such as XML or HTML, and (h) transmitting the HTML or XML object to the browser for display on the monitor attached to the client computer.

Preferably the merging step comprises the step of merging the output data from the ERP application into a strongly typed object form using an ERP Web Gateway, wherein the strongly typed object form comprises strongly typed Java objects.

In another aspect the HTML input form, dynamic ERP Application data access, Java objects definitions and HTML report form are stored in form of XML files; wherein the XML file strongly couples the data in the ERP Application to the Java objects and the XML file which specifies the presentation of the Application data.

Yet another aspect of the invention provides a method of converting ERP data in a database managed by an ERP application and accessed through an ERP API and ERP Message Agent API (MAAPI) to strongly typed data in Java objects comprising the steps of: (a) reading a XML file containing the definition of the Java objects and their attributes; or HyperText Markup Language (HTML) statements which specifies presentation format; (b) parsing each of the declarations and HTML statements to identify definitions of objects and their attributes; and (c) creating the respective objects with their attributes (d) populating the objects with data from the ERP data.

24. Number of Claims : 8

25. Patent Status : Expired Patent

26. How much this invention is related with your IDP/UDP?

< 70 %

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words)

After studying each patent thoroughly and by answering all the previous questions, this concludes the description of the preferred embodiment of the invention. The following describes some alternative embodiments for accomplishing the present invention. For example, any type of computers, such as a mainframe, minicomputer, or personal computer, could be used with the present invention. In addition, any software program adhering (either partially or entirely) to the HTTP protocol or the HTML or ERP Application that exposes a set of external API could benefit from the present invention