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**Implementation of (RMI) to Solve Heterogeneity in
Distributed Systems**

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Abstract

A distributed system is an application that executes a collection of protocols to coordinates the actions of multiple processes on a network such that components cooperate together to perform a single or small set of related tasks.

There are a lot of advantages in distributed system including the ability to connect remote users with remote resources in an open and scalable way.

This research aims to solve one of the problems of distributed information systems is the problem of heterogeneity, and the heterogeneity according the different programming languages or databases or operating systems and this is the subject research .

In this research was to use the middleware using one of the techniques which (RMI) for the design of chat application.

We used to design the Java application (Text Pad) and another (Text Pad) by putting Client in device work under the Linux operating system and Sever in another device works under the Windows operating system.

المستخلص

النظام الموزع هو تطبيق ينفذ مجموعة من البروتوكولات لتنسيق الإجراءات من عمليات متعددة على شبكة بحيث تتعاون المكونات معا لأداء واحدة أو مجموعة من المهام ذات الصلة.

هناك الكثير من المزايا في نظام توزيع بما في ذلك القدرة على توصيل المستخدمين عن بعد مع الموارد البعيدة بطريقة منفتحة وقابلة للتطوير.

يهدف هذا البحث لحل واحدة من مشكلات النظم المعلومات الموزعة وهي مشكلة عدم التجانس , ويكون عدم التجانس باختلاف لغات البرمجة او اختلاف قواعد بيانات او نظم التشغيل وهذا موضوع البحث .

في هذا البحث تم استخدام مفهوم الوسيط وذلك باستخدام احدى من تقنياته وهو (RMI) لتصميم تطبيق دردشة .

واستخدمنا لتصميم هذا التطبيق جافا (TextPad) و (TextPad)اخرى وذلك بوضع Client في جهاز يعمل تحت نظام التشغيل لينكس Server في جهاز اخر يعمل تحت نظام تشغيل ويندوز .

1.1 Introduction

Distributed systems become are used in wide ranges because availability of powerful yet cheap microprocessors (PCs, workstation), continuing advances in communication technology.

RMI (Remote Method Invocation) is a way that a programmer, using the Java programming language and development environment, can write object-oriented programming in which objects on different computers can interact in a distributed network. Resource sharing is the main motivating factor for constructing distributed systems. Resources such as printers, files, web pages or database records are managed by servers of the appropriate type. For example, web servers manage web pages and other web resources, Resources are accessed by clients. But to today Distributed systems have passed many of challenges, these challenges due difference in work environments; they must be constructed from a variety of different networks, operating systems such as Linux, Windows, Mac , computer hardware , programming languages such as Java, C, C++, C# or between various databases such as Oracle, Ms Access, which creates problem heterogeneity. And middleware can deal with the other differences.

Concept of middleware used between the different work environments (heterogeneity) and there are many techniques that were used for the application of the concept of the middleware, for example: JDBC, RMI, RPC, CORBA …. etc.

In this research I use the technology RMI (Java) for the design of the application of a simple chat between two devices working under different operating systems.

1.2 Research Problem

The main problem of research it focuses on RMI to solve Heterogeneity in distributed system.

1.3 Main Objective

Developing Chat Application working under control of two different operating systems.

1.3.1 Sub Objective

- To apply of the concept of Distributed information Systems.

- To solve Heterogeneity problem.

- To apply of the concept of Middleware by use RMI

1.4 Research Methodology

This section briefly explains the methodology adopted in this research, we used middleware techniques (RMI) to link the Java language by placing Java in device works under the Linux operating system and the Java in another device works under the Windows operating system.

In this research, we have designed and interfaces in Java work chat application.

1.5 Research Structure

The study is presented in five chapters, chapter one is introductory, chapter two reviewed same related literature. Chapter three is Middleware, The research methodology and Implantation is disused in chapter four. Finally chapter five summarized the conclusion of research.