

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَمَا يَدْعُونَ إِلَّا لِيُخَلَّطُوا  
بِالْإِسْلَامِ كَمَا خَلَّطُوا  
بِالدِّينِ قَبْلَ ذَلِكَ  
لَا يَخْتَلِفُ  
عِنْدَ اللَّهِ شَيْئًا سِوَ  
الْحَقِّ وَهُوَ سَمِيعٌ  
عَلِيمٌ

سورة الأنبياء

(سورة الأنبياء الآية (107)

# DEDICATION

This thesis is dedicated to my wonderful parents , my brothers and sisters who have raised me to be the person I am today. You have been with me every step of the way , through good times and bad. Thank you for all the unconditional love , guidance, and support that you have always given me , helping me to success and instilling in me the confidence that I am capable of doing anything I put my mind to. Thank you for everything.

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## المستخلص

البريد الإلكتروني هو التطبيق الأكثر شعبية على شبكة الانترنت اليوم بسبب التكلفة و البساطة و السرعة ، و الموثوقية . حيث يتم ارسال مئات الالاف من الرسائل يوميا من قبل الشركات و المستخدمين ، و لا يوجد ما يؤكد أو يبين عند فقدان أو التأخير ان المست قبل المقصود في الواقع قد استلم الرسالة ام لا ؟ لهذا في يومنا هذا اصبح جليا وبما لا يدع مجالا للشك أن البريد الالكتروني يفتقر الموثوقية الي حد ما وعلي عكس ما يظهر في عمليات الارسال والاستقبال .

الغرض من هذه الرسالة هو تقييم الوضع الحالي لنظام مخدمات البريد ويشمل ذلك التركيز علي البروتوكولات الاساسية لارسال البريد وخطوات عملها وطبيعة ماتحويه الرسائل وكيف يتم استقبالها وكذلك اسباب ومسببات اخفاق تسليم الرسائل الي غاياتها ، بالاضافة الي ذلك قمنا بدراسة الاليات والتقنيات الحالية التي تم استخدامها لزيادة فعالية الموثوقية وتعزيز الاعتمادية وعرض المزايا والعيوب والحلول المقترحة .

كما قمنا بتصميم وتنفيذ نموذج وبيئة عمل تساعد المستخدم علي الاهتمام بمنطقة عمله وتحسينها مستقلا عن إخفاقات و عيوب البروتوكول المنوط به ترحيل الرسائل عبر شبكة الانترنت ، وتمكن المستخدمين من اكتشاف وتتبع وإعادة ارسال الرسائل المفقودة أو المتأخرة بسبب الحمل الزائد علي المخدمات ، تدهور وسقوط النظام ، وتعديل وترقية المخدمات للاجهزة والمحطات الطرفية وكذلك استغلال الممر الخاص بحفظ الرسائل وتوجيهها الي الهدف المحدد .

لما تتميز به لغة الجافا عموما من خصائص في إمكانية فصل الواجهات ومكونات النظام عن البيئة التنفيذية كما انها صممت منذ البداية لتستخدم علي الشبكات. إخترانا حزمة بريد الجافا ( Javamail ) المستقله التي توفر واجهة بروتوكول مستقل لخادم البريد وطلبات النقل لارسال الرسائل وتدعم جميع بروتوكولات البريد الالكتروني (Simple Mail Transfer Protocol, POP3, Post Office Protocol and Interactive Mail Access Protocol) . وحزمة الاتاحية المتقدمة (High Availability Javamail) التي تعمل كوكيل لبريد الجافا (Javamail) وتوفر كفاءة عالية للعمليات وتهدف الي الانتاجية وزيادة الموثوقية .

وتم إختبار وتنفيذ جزء من هذا النموذج وعرض النتائج التي توصلنا اليها ومقارنتها بالنظام القائم. و اخيرا الحل البديلة وما سيتم تنفيذه في مست قبل ارسال بريد الالكتروني كامل الموثوقية .

# ABSTRACT

Electronic mail is the most popular application on the Internet today due to its cost, simplicity, speed, and reliability. Businesses and users send billions of emails daily without giving a second thought about whether or not the intended recipient actually received the email. Only in recent times has it become known that email may not be as reliable as once assumed.

This thesis aimed to assess current email systems which include mail system architecture, how it's works, review the main protocols, messages formatting and delivery issues. The causes of delivery failure will be determined.

Furthermore, the effectiveness of current mechanisms already deployed for enhancement of reliability will be studied, however, presents their benefits, limitation and suggested solutions.

Also we propose module which develop end users mail tools which operates on MUAs ,independent of MTAs ,assist users to detect, trace and retransmit lost mails due to overload, failure (e.g., disk crash), or upgrade of a server along the end-to-end, store-and-forward path from the sender to the recipient.

We are choosing java language because it is ideal platform for distributed computing, it is object oriented, it separates the interface of a component from its implementation and it was designed for use on network from the beginning.

a prototype select javamail packages that provides a protocol independent interface to mail server ,session objects , transport classes to send e-mail which includes Simple Mail Transfer Protocol ,Post Office Protocol and Interactive Mail Access Protocol. Another package High Availability javamail is a JavaMail transport proxy that adds efficiency and reliability to an underlying JavaMail provider. Tests conducted with a prototype analysis and results are compared to the use of the existing system in terms of reliability and performance. also we explain anew module advantages and drawbacks.

Finally, overview alternative solutions, conclusion of implementation and what future work could be done on that area.

## LIST of ABBREVIATION

SMTP	Simple Mail Transfer Protocol
POP3	Post Office Protocol version .3
DNS	Domain Name Server
MTA	Mail Transfer Agent
SPF	Sender Policy Framework
MUA	Mail User Agent
RFC	Request For Comment
TLS	Transport Layer Security
MIME	Multi Purpose Internet Mail Extensions
SMS	Short Message Service
DOS	Denial Of Service
WAP	Wireless Application Protocol
IP	Internet Protocol
MX	Mail Exchanger
DDNS	Dynamic Domain Name Server
DHCP	Dynamic Host Configuration Protocol
BIND	Berkeley Internet Name Domain
ISP	Internet Service Provider
LDAP	Lightweight Directory Access Protocol
MDA	Mail Deliver Agent
TTL	Time to Live
ICMP	Internet Control Message Protocol
MDN	Message Disposition Notification
DSN	Delivery Status Notification
H A	High Availability
IETF	Internet Engineering Task Force
DHT	Distributed Hash Table
JAF	JavaBeans Activation Framework
JRE	Java Runtime Environment
IMAP	Interactive Mail Access Protocol

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