INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

IJRCM

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

Indexed & Listed at:

Ulrich's Periodicals Directory ©, ProQuest, U.S.A., EBSCO Publishing, U.S.A., Cabell's Directories of Publishing Opportunities, U.S.A.,

Open J-Gage, India [link of the same is duly available at Inflibnet of University Grants Commission (U.G.C.)],

Index Copernicus Publishers Panel, Polandwith IC Value of 5.09 &number of libraries all around the world.

Circulated all over the world & Google has verified that scholars of more than 2840 Cities in 164 countries/territories are visiting our journal on regular basis.

Ground Floor, Building No. 1041-C-1, Devi Bhawan Bazar, JAGADHRI – 135 003, Yamunanagar, Haryana, INDIA

http://ijrcm.org.in/

CONTENTS

CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to recent developments & practices in the areas of Computer Science & Applications; Commerce; Business; Finance; Marketing; Human Resource Management; General Management; Banking; Economics; Tourism Administration & Management; Education; Law; Library & Information Science; Defence & Strategic Studies; Electronic Science; Corporate Governance; Industrial Relations; and emerging paradigms in allied subjects like Accounting; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Rural Economics; Co-operation; Demography: Development Planning; Development Studies; Applied Economics; Development Economics; Business Economics; Monetary Policy; Public Policy Economics; Real Estate; Regional Economics; Political Science; Continuing Education; Labour Welfare; Philosophy; Psychology; Sociology; Tax Accounting; Advertising & Promotion Management; Management Information Systems (MIS); Business Law; Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labour Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; International Relations; Human Rights & Duties; Public Administration; Population Studies; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism & Hospitality; Transportation Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic; Web Design and emerging paradigms in allied subjects.

Anybody can submit the **soft copy** of unpublished novel; original; empirical and high quality **research work/manuscript** ***anytime*** in ***M.S. Word format*** after preparing the same as per our **GUIDELINES FOR SUBMISSION**; at our email address i.e. infoijrcm@gmail.com or online by clicking the link **online submission** as given on our website (***FOR ONLINE SUBMISSION, CLICK HERE***).

GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1. **COVERING LETTER FOR SUBMISSION:**

DATED: _____

THE EDITOR
IJRCM

Subject: **SUBMISSION OF MANUSCRIPT IN THE AREA OF .**

(e.g. Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/Engineering/Mathematics/other, please specify)

DEAR SIR/MADAM

Please find my submission of manuscript entitled '_____' for possible publication in your journals.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published elsewhere in any language fully or partly, nor is it under review for publication elsewhere.

I affirm that all the author (s) have seen and agreed to the submitted version of the manuscript and their inclusion of name (s) as co-author (s).

Also, if my/our manuscript is accepted, I/We agree to comply with the formalities as given on the website of the journal & you are free to publish our contribution in any of your journals.

NAME OF CORRESPONDING AUTHOR:
Designation:
Affiliation with full address, contact numbers & Pin Code:
Residential address with Pin Code:
Mobile Number (s):
Landline Number (s):
E-mail Address:
Alternate E-mail Address:

NOTES:

a) The whole manuscript is required to be in ***ONE MS WORD FILE*** only (pdf. version is liable to be rejected without any consideration), which will start from the covering letter, inside the manuscript.
b) The sender is required to mentionthe following in the **SUBJECT COLUMN** of the mail:
New Manuscript for Review in the area of (Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/ Engineering/Mathematics/other, please specify)
c) There is no need to give any text in the body of mail, except the cases where the author wishes to give any specific message w.r.t. to the manuscript.
d) The total size of the file containing the manuscript is required to be below **500 KB**.
e) Abstract alone will not be considered for review, and the author is required to submit the complete manuscript in the first instance.
f) The journal gives acknowledgement w.r.t. the receipt of every email and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of manuscript, within two days of submission, the corresponding author is required to demand for the same by sending separate mail to the journal.

2. **MANUSCRIPT TITLE:** The title of the paper should be in a 12 point Calibri Font. It should be bold typed, centered and fully capitalised.

3. **AUTHOR NAME (S) & AFFILIATIONS:** The author (s) **full name**, **designation**, **affiliation** (s), **address**, **mobile/landline numbers**, and **email/alternate email address** should be in italic & 11-point Calibri Font. It must be centered underneath the title.

4. **ABSTRACT:** Abstract should be in fully italicized text, not exceeding 250 words. The abstract must be informative and explain the background, aims, methods, results & conclusion in a single para. Abbreviations must be mentioned in full.

5. **KEYWORDS:** Abstract must be followed by a list of keywords, subject to the maximum of five. These should be arranged in alphabetic order separated by commas and full stops at the end.

6. **MANUSCRIPT:** Manuscript must be in ***BRITISH ENGLISH*** prepared on a standard A4 size ***PORTRAIT SETTING PAPER***. It must be prepared on a single space and single column with 1" margin set for top, bottom, left and right. It should be typed in 8 point Calibri Font with page numbers at the bottom and centre of every page. It should be free from grammatical, spelling and punctuation errors and must be thoroughly edited.

7. **HEADINGS:** All the headings should be in a 10 point Calibri Font. These must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.

8. **SUB-HEADINGS:** All the sub-headings should be in a 8 point Calibri Font. These must be bold-faced, aligned left and fully capitalised.

9. **MAIN TEXT:** The main text should follow the following sequence:

INTRODUCTION

REVIEW OF LITERATURE

NEED/IMPORTANCE OF THE STUDY

STATEMENT OF THE PROBLEM

OBJECTIVES

HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

FINDINGS

RECOMMENDATIONS/SUGGESTIONS

CONCLUSIONS

SCOPE FOR FURTHER RESEARCH

ACKNOWLEDGMENTS

REFERENCES

APPENDIX/ANNEXURE

It should be in a 8 point Calibri Font, single spaced and justified. The manuscript should preferably not exceed ***5000 WORDS***.

10. **FIGURES &TABLES:** These should be simple, crystal clear, centered, separately numbered &self explained, and **titles must be above the table/figure**. **Sources of data should be mentioned below the table/figure**. It should be ensured that the tables/figures are referred to from the main text.

11. **EQUATIONS:**These should be consecutively numbered in parentheses, horizontally centered with equation number placed at the right.

12. **REFERENCES:** The list of all references should be alphabetically arranged. The author (s) should mention only the actually utilised references in the preparation of manuscript and they are supposed to follow **Harvard Style of Referencing**. The author (s) are supposed to follow the references as per the following:

- All works cited in the text (including sources for tables and figures) should be listed alphabetically.
- Use (**ed.**) for one editor, and (**ed.s)** for multiple editors.
- When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc, in chronologically ascending order.
- Indicate (opening and closing) page numbers for articles in journals and for chapters in books.
- The title of books and journals should be in italics. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.
- For titles in a language other than English, provide an English translation in parentheses.
- The location of endnotes within the text should be indicated by superscript numbers.

PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:

BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, Kurukshetra University, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

CRYPTOGRAPHY: THE ESSENTIAL PART OF MODERN ERA

CHARU JAIN
HEAD
DEPARTMENT OF COMPUTER SCIENCE
ECB POLYTECHNIC COLLEGE
BIKANER

ABSTRACT

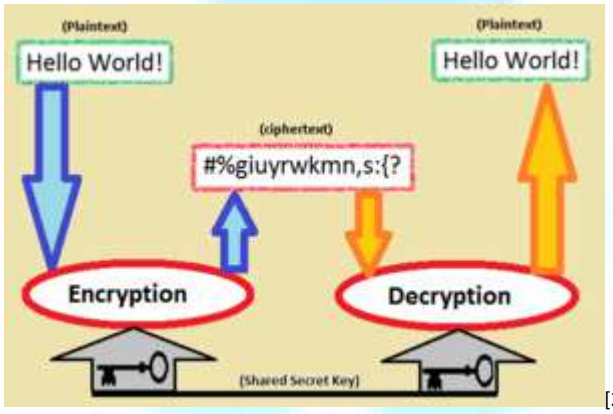
In today's era cryptography is an important part of preventing private data from being stolen. It can be used to authenticate that the sender of a message is the actual sender and not a fraud. For sending the message many types of algorithms are used so that a message can send without any alteration. It ensures confidentiality because only a reader with the correct deciphering algorithm or key can read the encrypted message. Finally, it can protect the integrity of information by ensuring that messages have not been altered. Many types of cryptography algorithms are used but in this paper we introduce public key cryptography for strong authentication.

KEYWORDS
cryptography, private data.

INTRODUCTION

Cryptography comes from Greek words meaning "hidden writing". It is the science of hiding information so that unauthorized users cannot read the message. It converts readable data or cleartext into encoded data called ciphertext. This process is called encryption. Decryption is the reverse, in other words, moving from the unintelligible cipher text back to plaintext. A cipher (or cypher) is a pair of algorithms that create the encryption and the reversing decryption. By encryption and decryption the original message can be send to the receiver. In this paper firstly we describe about cryptography. In second part of paper three types of algorithms that are used for encrypt or decrypt the messages are discussed. Last part of the paper tells about public key encryption.
This diagram gives the brief idea about cryptography.

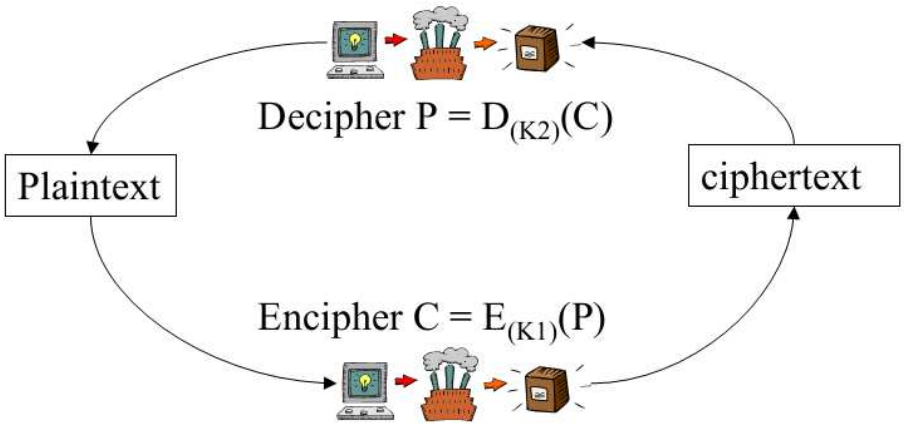
DIAGRAM 1



[2]

There is one more word that is frequently used in encryption and decryption is KEY. Some algorithm used public key and some used private key.
Public key:- This is the key that is known to everyone.
Private Key:- This is the key that is known only to receiver and sender.
Below the diagram shows how the plaintext is converted into ciphertext and then again decrypted using key.

DIAGRAM 2



[1]

Cryptography can be divided into several areas of study. Three types of algorithms used for encryption are:

- Hashing
- Symmetric, also called private or secret key

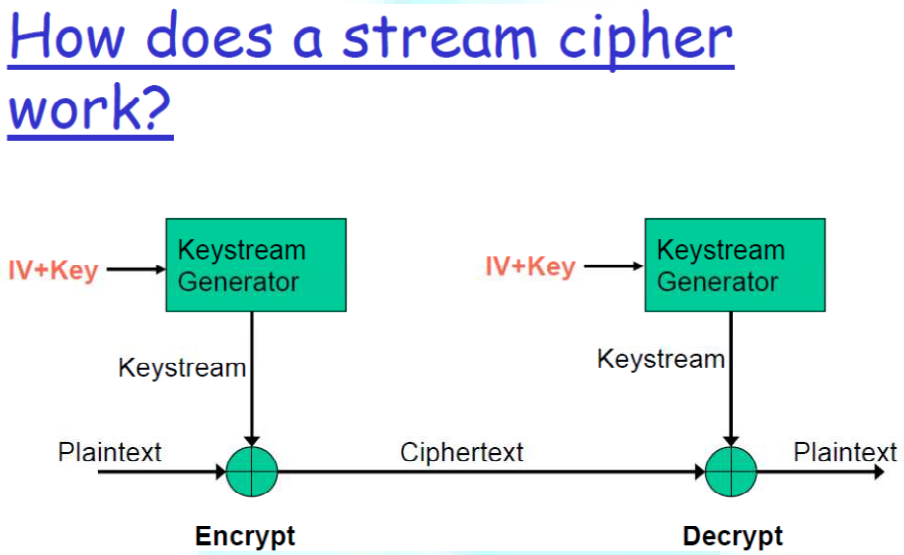
- Asymmetric, also called public key

Hashing:-Cryptographic hash functions are the cryptographic algorithms that take a message of any length as input, and output a short, fixed length hash which can be used in (for example) a digital signature. A hashing algorithm is used to create an irreversible code of a piece of information. This hashed code is called a *hash* or *digest* and is unique to the information and can be used as a signature for the data. A hash is used for comparison purposes to make sure data has not been changed; thus it ensures the integrity of a message.[3]For the good hash functions, the thing is sure that an attacker cannot find two messages that produce the same hash. MD4 is a long-used hash function which is now broken by the hackers. MD5, a strengthened variant of MD4, is also widely used but broken in practice.[2] The U.S. National Security Agency developed the Secure Hash Algorithm series of MD5-like hash functions. SHA-0 was a flawed algorithm that the agency withdrew. SHA-1 is widely deployed and more secure than MD5, but cryptanalysts have identified attacks against it. The SHA-2 family improves on SHA-1, but it isn't yet widely deployed. Thus a hash function design competition is underway and meant to select a new U.S. national standard, to be called SHA-3, by 2012.Message authentication codes (MACs) are much like cryptographic hash functions, except that a secret key can be used to authenticate the hash value upon receipt. [2]

Symmetric Key Cryptography:-Symmetric key cryptography refers to those encryption methods in which both the sender and receiver share the same key (or, less commonly, in which their keys are different, but related in an easily computable way). This was the only kind of encryption publicly known until June 1976. Symmetric key ciphers are implemented as either block ciphers or stream ciphers. A block cipher enciphers input in blocks of plaintext and the stream cipher uses individual characters as the input form.

Stream Cipher:-Stream cipher is more suitable for binary strings.

DIAGRAM 3

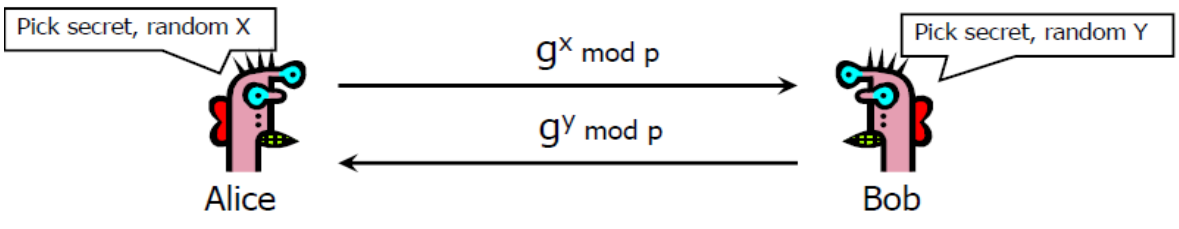


Stream ciphers, in contrast to the 'block' type, create an arbitrarily long stream of key material, which is combined with the plaintext bit-by-bit or character-by-character, somewhat like the one-time pad.[4] In a stream cipher, the output stream is created based on a hidden internal state which changes as the cipher operates. That internal state is initially set up using the secret key material. RC4 is a widely used stream cipher.[4]

Block Cipher:- Block ciphers can also be used as stream ciphers. The Data Encryption Standard (DES) and the Advanced Encryption Standard (AES) are the two main block cipher designs. These have been designated cryptography standards by the US government. After the adoption of AES design, DES's designation was finally withdrawn. Despite its deprecation as an official standard, DES remains quite popular and it is used across a wide range of applications from ATM encryption to e-mail privacy and secure remote access. After that many other block ciphers have been designed and released, with considerable variation in quality. Many have been thoroughly broken, such as FEAL.

Public-Key Cryptography:- In Symmetric-key cryptosystems the system uses the same key for encryption and decryption of a message, though a message or group of messages may have a different key than others. A major disadvantage of symmetric ciphers is the key management necessary to use them securely. Each distinct pair of communicating parties must share a different key, and possibly each cipher text exchanged as well. The number of keys required increases as the square of the number of network members, which very quickly requires complex key management schemes to keep them all strong and secret. So the management of key is the main problem in symmetric key cryptography. In a groundbreaking 1976 paper, Whitfield Diffie and Martin Hellman proposed the notion of *public-key* (also, more generally, called *asymmetric key*) cryptography in which two different but mathematically related keys are used—a *public* key and a *private* key.[2] A public key system is so constructed that calculation of one key (the 'private key') is computationally infeasible from the other (the 'public key'), even though they are necessarily related. Instead, both keys are generated secretly, as an interrelated pair.[2] In public-key cryptosystems, the public key is freely distributed, while its paired private key must remain secret. In a public-key encryption system, the *public key* is used for encryption, while the *private* or *secret key* is used for decryption. Diffie and Hellman did widespread academic efforts in finding a practical public-key encryption system. But this race was finally won in 1978 by Ronald Rivest, Adi Shamir, and Len Adleman, whose solution has since become known as the RSA algorithm.[2]The Diffie–Hellman and RSA algorithms, in addition to being the first publicly known examples of high quality public-key algorithms, have been among the most widely used.[2] Others include the Cramer–Shoup cryptosystem, ElGamal encryption, and various elliptic curve techniques.[2]

DIAGRAM 4



[8]

Public-key cryptography can also be used for the implementation of digital signature schemes. A digital signature is significant of an ordinary signature. They both have the characteristic of being easy for a user to produce, but difficult for anyone else to forge. Digital signatures can also be permanently tied to the content of the message being signed. That's the reason they cannot then be moved from one document to another, for any attempt will be detectable. In digital signature schemes, there are two algorithms: one for *signing*, in which a secret key is used to process the message (or a hash of the message, or both), and one for *verification,* in which the matching public key is used with the message to check the validity of the signature. RSA and DSA are two of the most popular digital signature schemes.[2] Digital signatures are central to the operation of public key infrastructures and many network security schemes (e.g., SSL/TLS, many VPNs, etc.). These algorithms are most often based on the computational complexity of "hard" problems, often from number theory. For example, the hardness of RSA is related to the integer factorization problem, while Diffie–Hellman and DSA are related to the discrete logarithm problem. More recently, *elliptic curve cryptography* has developed in which security is based on number theoretic problems involving elliptic curves.[2] Because of the difficulty of the underlying problems, most public-key algorithms involve operations such as modular multiplication and exponentiation, which are much more computationally expensive than the techniques used in most block ciphers, especially with typical key sizes.[2] As a result, public-key cryptosystems are commonly hybrid cryptosystems, in which a fast high-quality symmetric-key encryption algorithm is used for the message itself, while the relevant symmetric key is sent with the message, but encrypted using a public-key algorithm. Similarly, hybrid signature schemes are often used, in which a cryptographic hash function is computed, and only the resulting hash is digitally signed.[2]

CONCLUSION

Secrecy is at the heart of cryptography. Security is at times viewed as a standalone component of a system's architecture, where a separate module provides security. To achieve a secure system, security must be assimilated into every component, since components designed without security can become a weak point for attacker to attack. In early cryptography, there was a confusion about what was to be kept secret. But in modern era Cryptography this problem is about to finish. Public Key Cryptography (PKC) has been the enabling technology underlying many security services and protocol sin traditional networks such as the Internet. After Diffie-Hellman PKC, in the context of wireless sensor networks, elliptic curve cryptography (ECC), one of the most efficient types of PKC, is being investigated to provide PKC support in sensor network applications so that the existing PKC-based solutions can be exploited.

REFERENCES

1. Cryptography and Network Security Xiang-Yang Li
2. en.wikipedia.org/wiki/Cryptography
3. 365 Computer Security Training Master Computer Security Basics, Anytime
4. http://i.thiyagaraaj.com
5. Security in wireless sensor networks Author: Perrig, Adrian Stankovic, John Wagner, David
6. Securing Mobile Ad Hoc Networks Alaa S. Dalghan, Mohamad M. Gamloush, Raji M. Zeitouny, and Yasser M. Shaer Electrical and Computer Engineering Department American University of Beirut
7. TinyECC: A Configurable Library for Elliptic Curve Cryptography in Wireless Sensor Networks An Liu, Peng Ning Department of Computer Science North Carolina State University Raleigh, NC 27695 Email: {aliu3, pning}@ncsu.edu
8. Overview of Public-Key Cryptography Vitaly Shmatikov

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Computer Application and Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you tosupply your critical comments and suggestions about the material published in this issue as well as on the journal as a whole, on our E-mail**infoijrcm@gmail.com** for further improvements in the interest of research.

If youhave any queries please feel free to contact us on our E-mail **infoijrcm@gmail.com**.

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-

Co-ordinator

ABOUT THE JOURNAL

In this age of Commerce, Economics, Computer, I.T. & Management and cut throat competition, a group of intellectuals felt the need to have some platform, where young and budding managers and academicians could express their views and discuss the problems among their peers. This journal was conceived with this noble intention in view. This journal has been introduced to give an opportunity for expressing refined and innovative ideas in this field. It is our humble endeavour to provide a springboard to the upcoming specialists and give a chance to know about the latest in the sphere of research and knowledge. We have taken a small step and we hope that with the active co-operation of like-minded scholars, we shall be able to serve the society with our humble efforts.

Our Other Journals