7th International Conference on
Combinatorics, Cryptography, Computer Science and Computing
November. 16-17, 2022

Text Encryption by Image Encryption key with Based on Generalized Singular Value Decomposition (GSVD)

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ABSTRACT

This paper we will address the encryption process text is generally through a number of processes of dispersion of the later values in a matrix is A through remittances linear in addition to the use of GSVD enters, including one key which is gray image or to be possible colored but to be converted to a grayscale image, where work will begin the application process distracting initial. In a compound to generate new matrices B1 and B2 of the original text matrix and which enters the mean of the matrix of images key .The second phase of the dispersion is using GSVD on the last matrices with the matrix of the key and switch C matrix among the two spectral for the new matrices B1 with key and B2 with key to generation new matrices B11,B22, which represents putting as correlative F = [B11;B22] the matrix of the initial of the encoded text. For purpose of ascertaining the accuracy of the work we calculated the matrix of absolute value of the difference between the matrix of numbers for original text characters lettering before encryption and matrix of numbers for text characters after decryption to show us zero matrix, as well as the calculation of the average values of this matrix was zero

KEYWORDS: Text, Encryption text, Image, GSVD .

1 INTRODUCTION

Every day, the demand for effective network security grows tremendously. Businesses are required to safeguard sensitive information against loss or theft. Not only must organisations address their security requirements, but they must also be aware of where the computer is susceptible and how to defend it. Currently, a user must be connected in any way, anywhere, and at any time.

The word cryptography is derived from the Greek words kryptos, meaning concealed, and graphein, meaning writing. It has always been necessary to exchange information in secret. There are several examples in history of individuals attempting to conceal information from rivals. Cryptography, the study of encrypting and decrypting data, may be dated back to Egypt around the year 2000 BC.

It was initially employed in Egypt to communicate surreptitiously with the assistance of regular hieroglyphics. Julius Caesar (100-44 BC) created a basic substitution cypher that is still in use today. During the first and second world wars, the necessity for secrecy expanded tremendously, resulting in the development of several novel cryptographic systems.

As civilization has progressed, so has the demand for more complex measures of data protection. As the globe gets more connected, the need for information and electronic services rises, and with it, so does reliance on electronic systems. It is normal practise to exchange sensitive information such as credit card details via the Internet. Cryptography is one of the most important technologies for privacy, trust, access control, electronic payments, corporate security, authentication, and many more applications in today's information society. Cryptography is not just for governments and highly experienced specialists; it is available to everyone.

Since ancient times, cryptography or encryption has been employed in the military domain. He asserted that the Pharaohs were the first to use encryption for multicasting between military sectors. It was also said that the Arabs have a long history of endeavours in the realm of encryption. The Chinese used a number of cryptography and encryption technologies to convey messages during the battle. It was their objective, through the use of encryption, to conceal the real shape of the communications so that if they fell into the hands of the adversary, they would be impossible to read. Julius Kaiser, one of the Roman Emperors, employed the best approach in the past. The employment of this science, "encryption," and connection to the globe networked via open networks has become an important requirement in the modern day. And where these networks are utilised to electronically communicate information, both among private individuals and between private and public institutions, whether military or civilian. Methods must be reserved to ensure information secrecy. It has made significant efforts from across the world to create best solutions for them to communicate data without the possibility of leaking this info. Because of the rapid development of computers and the enormous growth of networks, particularly the World Wide Web of the Internet, work and study in the subject of cryptography is still ongoing.

1.1 What is encryption or cryptography

Encryption is the study of using mathematics to encrypt and decode data so that sensitive information may be stored or sent through insecure networks, such as the Internet, and it cannot be read by anyone other than the person supplied to him. Because encryption science is used to keep information secure and secret, analysis and decryption (Cryptanalysis) is the science of breaking and breaching encrypted connections.

1.2 Encryption goals

There are four main objectives behind the use of cryptology are as follows:

1 - secrecy or privacy (Confidentiality):
Service is used to save the information content of all persons except the who are allowed access them.

2 - Data Integration (Integrity):
This service is used to store the information about changes made (delete, add, or edit) by those who are not allowed to do so.

3 - Proof of the identity (Authentication):
This service is used to prove the identity of the data handling (authorized).

4 - Do not of ingratitude (Non-repudiation):

This service is used to prevent the person from undeniable that doing something.The basic purpose of encryption is to give these services to individuals in order to keep their information secure.

1.3 How to do Encryption

The encryption algorithm is a mathematical function that is utilised in the encryption and decryption processes. It works in conjunction with a key, password, number, or wholesale to encrypt readable messages. The single reading text encrypts to many encrypted messages with various keys. And the security of encrypted data is dependent on two critical factors (strength encryption algorithm and a secret key).

Fig.1.: the modus operandi encryption

1.4 Encryption types

Currently, there are two types of encryption and are as follows:

1 - conventional encryption (Conventional Cryptography).

2 - Public-key encryption (Public Key Cryptography).

Papers should use 11-point Times New Roman font. The styles available are bold, italic and underlined. It is recommended that text in figures should not smaller than 10-point font size.

-Conventional encryption:

Also called (Cryptography Symmetric). It uses a single key to the process of encryption and decryption of data. This type of encryption is depends on the secret key used. Where the person who owns the key can decryption and read the content of messages or files. An example of this; if person(1) wants to send an encrypted message to the person(2) , he must find a secure way to send the key to the person(2). If got any third person on this key he could read all encrypted messages between person(1) and person(2).

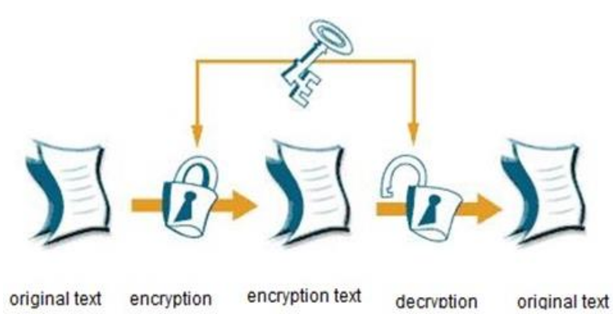

Fig.2.: explains work using the per encryption key

-Some examples of conventional encryption systems:

Caesar code: It is an ancient mechanism devised by Julius Kaiser to send encrypted signals between army sectors that proved efficient during his time. However, with the advancement of computer technology, this approach can no longer be used to increase the speed of detecting the content of encrypted communications. The following example exemplifies Caesar code's mode of operation: If we encrypt the word "SECRET" using the key value 3, we rearrange the placements of the characters such that the third letter is a letter "D," and so the order of the letters is as follows:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Letters after using the new value of it from the key "3" to be in the following form:

D E F G H I J K L M N O P Q R S T U V W X Y Z A B C

As a result, the word "SECRET" will become "VHFUHW." To allow anybody else to view the encrypted communication, email him the key value "3."

Data Encryption Standard (DES): This system was developed at the end of the 1970s by the National Security Agency in the United States, and it is of the feasibility not to use it with the development of computer systems and increase the speed of data handling, as it has been revealed the content of encrypted messages in a short time.AES, IDEA, 3DES, blowfish,: a modern and sophisticated systems and proven in the present era in the field of encryption.

All of the examples of the former depends on the principle of one key for encryption and decryption process.

-Public-key encryption:

Also known as (Cryptography Asymmetric). This method was established in the 1970s in the United Kingdom and was only utilised by select segments of the government. And it is based on the presence of two keys, the public key and the private key, since the public key is used to encrypt communications and the private key is used to decode messages. The public key is sent to everyone, whereas the secret key is not sent to anybody. It must send you an encrypted message, encrypting with the public key and then decrypting with the private key. Asymmetric).

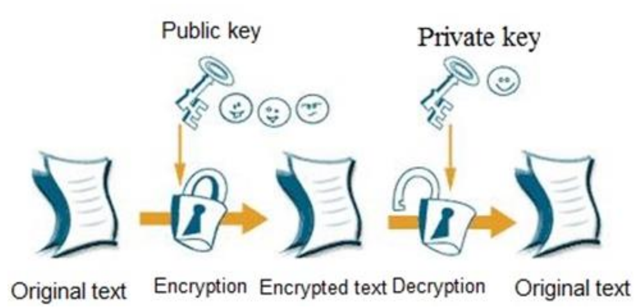

Fig.3.: explains work of the encryption using Public key and private key

Some examples of public key encryption systems:

PGP, DSA, Deffie-Hellman, Elgamal, RSA

All of these systems depend on the principle of asymmetrical encryption or encryption using public key and private key.

Advantages and disadvantages of conventional encryption and encryption using Public key:

Conventional encryption much faster than using the modern systems of computer, but uses only one key. It is susceptible to more breakthroughs. But the encrypt by public key is used two keys in the encryption and decryption process, which is stronger and less susceptible to breakthroughs, but it is slower than traditional encryption.

As a consequence of these benefits and drawbacks, current systems employ both approaches, where they use the classic method of encryption or exchange of the only secret key between the parties of correspondence is done through the use of the method of encryption by the public key.

1.5 Measuring the strength of encryption

Encryption may be strong or weak, as the measure of strength of encryption is the time and resources required for the process of detecting that non-encrypted texts from the encrypted texts. As a result of strong encryption is cipher text that hard to detect with the time or provide the tools necessary to do so.

Data communicated via the Internet is routed through several servers and/or routers, providing numerous chances for third parties to intercept the communication. Interception cannot be avoided; instead, the data must be rendered unreadable (encrypted) during transmission, with a method for the intended receiver to convert the intercepted transmission back to its readable form (decryption process). Encryption is the process of transforming a communication such that only the sender and receiver can view it. When a message is encrypted, it is changed into a new form by passing the contents through a substitution algorithm, shifting algorithm, table references, or mathematical operations. All of these operations yield a form of the data that is unreadable; the encrypted form frequently resembles random characters or nonsense. When a communication is encrypted, its original, readable form is restored. Encryption can provide robust data security, giving sensitive data the highest level of protection. As a generic phrase, cryptography is used to prevent unwanted access to sensitive or secret information. Encryption, a cryptographic implementation, is the transformation of data into an apparently unintelligible assortment of letters that cannot be read as basic text when examined. The definition of simple text is normal written text, such as this document. The procedure used to encrypt data is known as a cypher, or cypher text, which is a representation of the original data in a different form; plaintext refers to unencrypted data. Decryption is the process of turning encrypted data (cypher text) back into its original form (plaintext), allowing it to be read. Encryption's objective is to render data unreadable to unauthorised readers and exceedingly difficult to understand when attacked. The security of encrypted data is determined by various variables, including the method employed, the key size, and how the algorithm was implemented in the product.

Now we can answer the following question:

2 GENERALIZED SINGULAR VALUE DECOMPOSITION (GSVD)

The GSVD on the matrix pair (H_b^T, H_w^T), will give orthogonal matrices $U \in \mathcal{R}^{k\times k}, V \in \mathcal{R}^{n\times n}$, and a nonsingular matrix $X \in \mathcal{R}^{m\times m}$, such that:

$$\begin{bmatrix} U & 0 \\ 0 & V \end{bmatrix}^T KX = \begin{bmatrix} E_1 & 0 \\ E_2 & 0 \end{bmatrix} \dots\dots\dots\dots\dots\dots (1)$$

$$Where\ E_1 = \begin{bmatrix} I_b & 0 & 0 \\ 0 & D_b & 0 \\ 0 & 0 & 0_b \end{bmatrix}, E_2 = \begin{bmatrix} 0_w & 0 & 0 \\ 0 & D_w & 0 \\ 0 & 0 & I_w \end{bmatrix}$$

$Here\ I_b \in \mathcal{R}^{r\times r}$ is an identity matrix with

$$r = rank(K) - rank(H_w^T), D_b = diag(\alpha_{r+1}, \dots, \alpha_{r+s}),$$

$and\ D_w = diag(\beta_{r+1}, \dots, \beta_{r+s}) \in \mathcal{R}^{s\times s}$

$are\ diagonal\ matrices\ with$

$s = renk(H_b) + rank(H_w) - rank(K), satisfying$

$1 > \alpha_{r+1} \geq \dots \geq \alpha_{r+s} > 0, 0 < \beta_{r+1} \leq \dots \leq \beta_{r+s} < 1,$

$and\ \alpha_i^2 + \beta_i^2 = 1\ for\ i = r+1, \dots, r+s.$

It follows from (1) that:

$$X^T H_b H_b^T X = \begin{bmatrix} E_1^T E_1 & 0 \\ 0 & 0 \end{bmatrix} \equiv D_1,$$

$$X^T H_w H_w^T X = \begin{bmatrix} E_2^T E_2 & 0 \\ 0 & 0 \end{bmatrix} \equiv D_2$$

And by last description of (GSVD)

Let $A \in \mathcal{R}^{m\times n}\ and\ B \in \mathcal{R}^{p\times n}\ have\ rank(A^T, B^T) = n,$

Then there are orthogonal matrices U,V and Q such that:

$U^T AQ = E_1 R, \quad V^T BQ = E_2 R$

Where R is a $n \times n$ upper triangular and nonsingular, and

$$E_1 = \begin{array}{c|ccc} & l & k & n-l-k \\ \hline l & I_1 & & \\ k & & D_1 & \\ m-l-k & & & O_1 \end{array},$$

$$E_2 = \begin{array}{c|ccc} & l & k & n-l-k \\ \hline p-n+l & O_2 & & \\ k & & D_2 & \\ n-l-k & & & I_2 \end{array}$$

$I_1 \in \mathcal{R}^{l\times l}\ and\ I_2 \in \mathcal{R}^{(n-l-k)\times(n-l-k)} are\ identity$

$matrices, O_1 \in \mathcal{R}^{(m-l-k)\times(n-l-k)}\ and\ O_2 \in \mathcal{R}^{(p-n+l)\times l}$

$are\ zero\ matrices,$

$D_1 = diag(\alpha_{l+1}, \dots, \alpha_{l+k}), \qquad D_2 = diag(\beta_{l+1}, \dots, \beta_{l+k})$

$1 > \alpha_{l+1} \geq \dots \geq \alpha_{l+k} > 0, 0 < \beta_{l+1} \leq \dots \leq \beta_{l+k} < 1,$

$\alpha_i^2 + \beta_i^2 = 1\ \ \forall\ i$

3 METHODOLOGY

The application of the algorithm labeled on the Selection of text to clarification the steps:

3.1 First / text encryption

The full algorithm to encrypt the text in general:

1- Beginning we define one gray image key to entered within the matrix of text encryption phases.
2- Identify the numbers that correspond to the letters in the text you want to encrypt, including commas, the point of the bow, and anything else that fits within the numbers that make up the text and are stored in the computer's memory. Most of the time, you can choose a special table that shows how the characters and signals used to write the text are numbered.
3- Using the method of (DATA CUBE) we transform the numbers of text components to three-dimensional matrix. Let this matrix A.
4- In this step, we will use the method of distracting the matrix numbers to create a matrix B1 and B2
Key1=double(key) , key2=mean(key1)
And if key2=0 then we can assume key2 is equal 1 because it is the key to not characterized by high secrecy.
we reply the dimensions of the matrix key1 to new dimensions to conform the dimensions of A
Let the dimensions of A is n,m.
Key1=imresize(key1,[n m])
$B1 = Key2 * A \ , B2 = Key1.* A$
Regarding to calculate (B2), the multiplication operation between (key1) and (A) are a multiple each element in (key1) with the corresponding element in (A).
5- Apply GSVD Distracting the numbers:

In this step, we will apply (GSVD Distracting the numbers) to conduct a spectral analysis of the matrices B1,B2 with the key1 and for the purpose of a switch between the c1 and c2 in the matrices analyzes.

$[UB1, VB1, XB1, CB1, SB1] = GSVD(B1, key1)$,
$[UB2, VB2, XB2, CB2, SB2] = GSVD(B2, key1)$
$B11 = UB1 * CB2 * XB1^T$,
$B22 = UB2 * CB1 * XB2^T$
$F = [B11; B22]$
F is the matrix of the text code.

3.2 Second / Text decryption:

The full algorithm to decrypt of the text.
Now, with phases of decode matrix of text.
We have matrix is encrypted $= F$

1- Determine the dimensions of the matrix F (only rows and columns) that it equal (2n,m)
2- Divide the matrix F to restore matrices $B11_{new} = F(1{:}n, 1{:}m)$
$and \quad B22_{new} = F(n+1{:}2n, 1{:}m)$.
3- define the same image key that we used in the encryption and perform the same mathematical processors that as follows:-
Key1=double(key) , key2=mean(key1)

And if key2=0 then we can assume key2 is equal 1 because it is the key to not characterized by high secrecy.
Key1=imresize(key1,[n m])

4- Reflect the impact of (GSVD) that is in step 5 of the encryption process to restore matrices $B1_{new}$ *and* $B2_{new}$.

$[UB11_{new}, VB11_{new}, XB11_{new}, CB11_{new}, SB11_{new}] = GSVD(B11_{new}, key1)$

$[UB22_{new}, VB22_{new}, XB22_{new}, CB22_{new}, SB22_{new}] = GSVD(B22_{new}, key1)$

5- $B1_{new} = UB11_{new} * CB22_{new} * XB11_{new}{}^{T}$,

$$B2_{new} = UB22_{new} * CB11_{new} * XB22_{new}{}^{T}$$

6- $A_{new} \frac{B1_{new}}{key2}$

The last matrix A_{new} represent the numerical values of the letters of the cipher text after decryption they include the error increase or decrease of less than 0.5 which is cannot represent the numerical values for letters. So we

approximation of each value to the nearest integer, as in below:

$45.456 \cong 45$, $36.743 \cong 37 \ldots etc$

Bringing we produces matrix of numerical values for letters of cipher text identical to the original matrix and without any error.

From the last matrix, we get back the letters and symbols that match its numerical values so that the original text is shown without any mistakes.

4 THE RESULT

Below the text that we will encrypt it and the key used and will be followed by results

1- The text, which we will encrypt it:

[This paper we will address the encryption process text is generally through a number of processes of dispersion of the later values in a matrix is A through remittances linear in addition to the use of GSVD enters, including one key which is text or a gray Image or to be possible colored but to be converted to a grayscale image]

2- Image Key:

Fig.. the key image

The numbers corresponding to the components of The text

84 104 105 115 32 112 97 112 101 114 32 119 101 32 119 105 108 108 32 97
100 100 114 101 115 115 32 116 104 101 32 101 110 99 114 121 112 116 105
111 110 32 112 114 111 99 101 115 115 32 116 101 120 116 32 105 115 32
103 101 110 101 114 97 108 108 121 32 116 104 114 111 117 103 104 32 97
32 110 117 109 98 101 114 32 111 102 32 112 114 111 99 101 115 115 101
115 32 111 102 32 100 105 115 112 101 114 115 105 111 110 32 111 102 32
116 104 101 32 108 97 116 101 114 32 118 97 108 117 101 115 32 105 110
32 97 32 109 97 116 114 105 120 32 105 115 32 65 32 116 104 114 111 117
103 104 32 114 101 109 105 116 116 97 110 99 101 115 32 108 105 110 101
97 114 32 105 110 32 97 100 100 105 116 105 111 110 32 116 111 32 116 104
101 32 117 115 101 32 111 102 32 71 83 86 68 32 101 110 116 101 114 115
44 32 105 110 99 108 117 100 105 110 103 32 111 110 101 32 107 101 121 32
119 104 105 99 104 32 105 115 32 116 101 120 116 32 111 114 32 97 32 103
114 97 121 32 73 109 97 103 101 32 111 114 32 116 111 32 98 101 32 112
111 115 115 105 98 108 101 32 99 111 108 111 114 101 100 32 98 117 116
32 116 111 32 98 101 32 99 111 110 118 101 114 116 101 100 32 116 111 32
97 32 103 114 97 121 115 99 97 108 101 32 105 109 97 103 101

Matrix of the encryption of numbers for the text :

1.0e+004 *

Columns 1 through 6						Columns 7 through 12						Columns 13 through 18						Columns 19 through 20	
1.1334	1.5652	0.4318	1.4033	1.3763	1.3088	1.4977	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.4033	1.3628	1.3493	1.5382	0.4318	0.4318	1.4842	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.4168	1.6192	1.4168	1.4977	0.9580	1.3898	1.5922	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000
1.5517	1.5652	1.5517	1.5787	1.1199	1.5382	1.3628	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000
0.4318	0.4318	1.5112	1.3898	1.1604	1.3088	1.5382	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.5112	1.4168	1.3628	1.4033	0.9175	1.6327	1.5652	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.3088	1.5517	1.5382	0.4318	0.4318	0.4318	1.3628	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.5112	0.4318	1.5517	1.5382	1.3628	0.9850	1.3493	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.3628	1.3898	1.4168	1.3628	1.4842	1.4707	0.4318	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000
1.5382	1.3628	1.4977	1.4707	1.5652	1.3088	1.5652	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000
0.4318	1.4842	1.4842	1.4168	1.3628	1.3898	1.4977	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.6057	1.3628	0.4318	1.5652	1.5382	1.3628	0.4318	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.3628	1.5382	1.4977	1.5652	1.5517	0.4318	1.3088	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.4318	1.3088	1.3763	1.3088	0.5937	1.4977	0.4318	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.6057	1.4573	0.4318	1.4842	0.4318	1.5382	1.3898	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.4168	1.4573	1.5652	1.3358	1.4168	0.4318	1.5382	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.4573	1.6327	1.4033	1.3628	1.4842	1.5652	1.3088	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.4573	0.4318	1.3628	1.5517	1.3358	1.4977	1.6327	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.4318	1.5652	0.4318	0.4318	1.4573	0.4318	1.5517	-0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000
1.3088	1.4033	1.4573	1.4573	1.5787	1.3223	1.3358	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000
1.3493	1.5382	1.3088	1.4168	1.3493	1.3628	1.3088	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.3493	1.4977	1.5652	1.4842	1.4168	0.4318	1.4573	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000
1.5382	1.5787	1.3628	1.3628	1.4842	1.5112	1.3628	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.3628	1.3898	1.5382	1.3088	1.3898	1.4977	0.4318	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.5517	1.4033	0.4318	1.5382	0.4318	1.5517	1.4168	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000
1.5517	0.4318	1.5922	0.4318	1.4977	1.5517	1.4707	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
0.4318	1.3088	1.3088	1.4168	1.4842	1.4168	1.3088	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.5652	0.4318	1.4573	1.4842	1.3628	1.3223	1.3898	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.4033	1.4842	1.5787	0.4318	0.4318	1.4573	1.3628	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.3628	1.5787	1.3628	1.3088	1.4438	1.3628	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
0.4318	1.4707	1.5517	1.3493	1.3628	0.4318	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.3628	1.3223	0.4318	1.3493	1.6327	1.3358	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.4842	1.3628	1.4168	1.4168	0.4318	1.4977	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.3358	1.5382	1.4842	1.5652	1.6057	1.4573	-0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
1.5382	0.4318	0.4318	1.4168	1.4033	1.4977	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.6327	1.4977	1.3088	1.4977	1.4168	1.5382	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.5112	1.3763	0.4318	1.4842	1.3358	1.3628	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.5652	0.4318	1.4707	0.4318	1.4033	1.3493	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000
1.4168	1.5112	1.3088	1.5652	0.4318	0.4318	-0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.4977	1.5382	1.5652	1.4977	1.4168	1.3223	-0.0000	0.0000	-0.0000	-0.0000	0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
1.4842	1.4977	1.5382	0.4318	1.5517	1.5787	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
0.4318	1.3358	1.4168	1.5652	0.4318	1.5652	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.5112	1.3628	1.6192	1.4033	1.5652	0.4318	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.5382	1.5517	0.4318	1.3628	1.3628	1.5652	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.4977	1.5517	1.4168	0.4318	1.6192	1.4977	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
1.3358	1.3628	1.5517	1.5787	1.5652	0.4318	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.3628	1.5517	0.4318	1.5517	0.4318	1.3223	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.5517	0.4318	0.8770	1.3628	1.4977	1.3628	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1.5517	1.4977	0.4318	0.4318	1.5382	0.4318	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.4318	1.3763	1.5652	1.4977	0.4318	1.3358	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000

-1.1334 -1.5652 -0.4318 -1.4033 - 1.3763 -1.3088	-1.4977 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.4033 -1.3628 -1.3493 -1.5382 - 0.4318 -0.4318	-1.4842 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.4168 -1.6192 -1.4168 -1.4977 - 0.9580 -1.3898	-1.5922 0.0000 0.0000 0.0000 0.0000 0.0000	-0.0000 0.0000 0.0000 0.0000 -0.0000 0.0000	0.0000 0.0000
-1.5517 -1.5652 -1.5517 -1.5787 - 1.1199 -1.5382	-1.3628 0.0000 0.0000 0.0000 0.0000 0.0000	-0.0000 0.0000 0.0000 0.0000 0.0000 -0.0000	0.0000 0.0000
-0.4318 -0.4318 -1.5112 -1.3898 - 1.1604 -1.3088	-1.5382 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.5112 -1.4168 -1.3628 -1.4033 - 0.9175 -1.6327	-1.5652 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.3088 -1.5517 -1.5382 -0.4318 - 0.4318 -0.4318	-1.3628 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.5112 -0.4318 -1.5517 -1.5382 - 1.3628 -0.9850	-1.3493 0.0000 0.0000 -0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 -0.0000 0.0000 0.0000	0.0000 0.0000
-1.3628 -1.3898 -1.4168 -1.3628 - 1.4842 -1.4707	-0.4318 0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 0.0000 -0.0000 -0.0000 0.0000 0.0000	-0.0000 - 0.0000
-1.5382 -1.3628 -1.4977 -1.4707 - 1.5652 -1.3088	-1.5652 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	-0.0000 0.0000
-0.4318 -1.4842 -1.4842 -1.4168 - 1.3628 -1.3898	-1.4977 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.6057 -1.3628 -0.4318 -1.5652 - 1.5382 -1.3628	-0.4318 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.3628 -1.5382 -1.4977 -1.5652 - 1.5517 -0.4318	-1.3088 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 0.0000 0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-0.4318 -1.3088 -1.3763 -1.3088 - 0.5937 -1.4977	-0.4318 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.6057 -1.4573 -0.4318 -1.4842 - 0.4318 -1.5382	-1.3898 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.4168 -1.4573 -1.5652 -1.3358 - 1.4168 -0.4318	-1.5382 0.0000 0.0000 0.0000 - 0.0000 0.0000	-0.0000 0.0000 -0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.4573 -1.6327 -1.4033 -1.3628 - 1.4842 -1.5652	-1.3088 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.4573 -0.4318 -1.3628 -1.5517 - 1.3358 -1.4977	-1.6327 -0.0000 -0.0000 0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-0.4318 -1.5652 -0.4318 -0.4318 - 1.4573 -0.4318	-1.5517 0.0000 0.0000 -0.0000 0.0000 -0.0000	0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000	-0.0000 - 0.0000
-1.3088 -1.4033 -1.4573 -1.4573 - 1.5787 -1.3223	-1.3358 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 -0.0000 0.0000	0.0000 0.0000
-1.3493 -1.5382 -1.3088 -1.4168 - 1.3493 -1.3628	-1.3088 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.3493 -1.4977 -1.5652 -1.4842 - 1.4168 -0.4318	-1.4573 0.0000 0.0000 0.0000 - 0.0000 0.0000	-0.0000 0.0000 -0.0000 0.0000 -0.0000 -0.0000	0.0000 0.0000
-1.5382 -1.5787 -1.3628 -1.3628 - 1.4842 -1.5112	-1.3628 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.3628 -1.3898 -1.5382 -1.3088 - 1.3898 -1.4977	-0.4318 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.5517 -1.4033 -0.4318 -1.5382 - 0.4318 -1.5517	-1.4168 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 0.0000 -0.0000	-0.0000 - 0.0000
-1.5517 -0.4318 -1.5922 -0.4318 - 1.4977 -1.5517	-1.4707 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-0.4318 -1.3088 -1.3088 -1.4168 - 1.4842 -1.4168	-1.3088 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.5652 -0.4318 -1.4573 -1.4842 - 1.3628 -1.3223	-1.3898 -0.0000 -0.0000 0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.4033 -1.4842 -1.5787 -0.4318 - 0.4318 -1.4573	-1.3628 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.3628 -1.5787 -1.3628 -1.3088 - 1.4438 -1.3628	0.0000 0.0000 0.0000 0.0000 - 0.0000 0.0000	0.0000 -0.0000 0.0000 0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-0.4318 -1.4707 -1.5517 -1.3493 - 1.3628 -0.4318	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.3628 -1.3223 -0.4318 -1.3493 - 1.6327 -1.3358	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.4842 -1.3628 -1.4168 -1.4168 - 0.4318 -1.4977	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.3358 -1.5382 -1.4842 -1.5652 - 1.6057 -1.4573	0.0000 -0.0000 0.0000 0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 0.0000 0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.5382 -0.4318 -0.4318 -1.4168 - 1.4033 -1.4977	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.6327 -1.4977 -1.3088 -1.4977 - 1.4168 -1.5382	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.5112 -1.3763 -0.4318 -1.4842 - 1.3358 -1.3628	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.5652 -0.4318 -1.4707 -0.4318 - 1.4033 -1.3493	0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 -0.0000 -0.0000	0.0000 0.0000
-1.4168 -1.5112 -1.3088 -1.5652 - 0.4318 -0.4318	0.0000 -0.0000 -0.0000 0.0000 - 0.0000 0.0000	-0.0000 0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.4977 -1.5382 -1.5652 -1.4977 - 1.4168 -1.3223	0.0000 -0.0000 0.0000 0.0000 - 0.0000 0.0000	-0.0000 -0.0000 0.0000 0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.4842 -1.4977 -1.5382 -0.4318 - 1.5517 -1.5787	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-0.4318 -1.3358 -1.4168 -1.5652 - 0.4318 -1.5652	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.5112 -1.3628 -1.6192 -1.4033 - 1.5652 -0.4318	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.5382 -1.5517 -0.4318 -1.3628 - 1.3628 -1.5652	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.4977 -1.5517 -1.4168 -0.4318 - 1.6192 -1.4977	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
-1.3358 -1.3628 -1.5517 -1.5787 - 1.5652 -0.4318	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.3628 -1.5517 -0.4318 -1.5517 - 0.4318 -1.3223	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.5517 -0.4318 -0.8770 -1.3628 - 1.4977 -1.3628	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-1.5517 -1.4977 -0.4318 -0.4318 - 1.5382 -0.4318	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 -0.0000 -0.0000	-0.0000 - 0.0000
-0.4318 -1.3763 -1.5652 -1.4977 - 0.4318 -1.3358	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000

The Numbers of the text after decoding it is include error does not resemble the original numbers.

Columns 1 through 6	Columns 7 through 12	Columns 13 through 18	Columns 19 through 20
84.0000 116.0000 32.0000 104.0000 102.0000 97.0000	111.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
104.0000 101.0000 100.0000 114.0000 32.0000 32.0000	110.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 0.0000 -0.0000 -0.0000 - 0.0000 0.0000	- 0.0000 -0.0000
105.0000 120.0000 105.0000 111.0000 71.0000 103.0000	118.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000	- 0.0000 -0.0000
115.0000 116.0000 115.0000 117.0000 83.0000 114.0000	101.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000	0.0000 0.0000
32.0000 32.0000 112.0000 103.0000 86.0000 97.0000	114.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 -0.0000
112.0000 105.0000 101.0000 104.0000 68.0000 121.0000	116.0000 -0.0000 -0.0000 0.0000 - 0.0000 -0.0000	-0.0000 0.0000 -0.0000 0.0000 - 0.0000 0.0000	0.0000 0.0000
97.0000 115.0000 114.0000 32.0000 32.0000 32.0000	101.0000 -0.0000 0.0000 0.0000 0.0000 -0.0000	0.0000 -0.0000 -0.0000 -0.0000 0.0000 -0.0000	0.0000 0.0000
112.0000 32.0000 115.0000 114.0000 101.0000 73.0000	100.0000 -0.0000 -0.0000 0.0000 - 0.0000 0.0000	-0.0000 0.0000 -0.0000 -0.0000 - 0.0000 0.0000	- 0.0000 -0.0000
101.0000 103.0000 105.0000 101.0000 110.0000 109.0000	32.0000 0.0000 -0.0000 -0.0000 - 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 -0.0000	0.0000 0.0000
114.0000 101.0000 111.0000 109.0000 116.0000 97.0000	116.0000 -0.0000 -0.0000 -0.0000 0.0000 0.0000	-0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 -0.0000
32.0000 110.0000 110.0000 105.0000 101.0000 103.0000	111.0000 -0.0000 -0.0000 -0.0000 - 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
119.0000 101.0000 32.0000 116.0000 114.0000 101.0000	32.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 -0.0000
101.0000 114.0000 111.0000 116.0000 115.0000 32.0000	97.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 0.0000
32.0000 97.0000 102.0000 97.0000 44.0000 111.0000	32.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 -0.0000
119.0000 108.0000 32.0000 110.0000 32.0000 114.0000	103.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 -0.0000
105.0000 108.0000 116.0000 99.0000 105.0000 32.0000	114.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 0.0000 -0.0000	- 0.0000 -0.0000
108.0000 121.0000 104.0000 101.0000 110.0000 116.0000	97.0000 0.0000 0.0000 0.0000 0.0000 0.0000	-0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
108.0000 32.0000 101.0000 115.0000 99.0000 111.0000	121.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 0.0000
32.0000 116.0000 32.0000 32.0000 108.0000 32.0000	115.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 -0.0000
97.0000 104.0000 108.0000 108.0000 117.0000 98.0000	99.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 0.0000 -0.0000	0.0000 -0.0000
100.0000 114.0000 97.0000 105.0000 100.0000 101.0000	97.0000 -0.0000 -0.0000 0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
100.0000 111.0000 116.0000 110.0000 105.0000 32.0000	108.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 -0.0000
114.0000 117.0000 101.0000 101.0000 110.0000 112.0000	101.0000 0.0000 0.0000 0.0000 0.0000 0.0000	-0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
101.0000 103.0000 114.0000 97.0000 103.0000 111.0000	32.0000 0.0000 0.0000 0.0000 0.0000 0.0000	-0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
115.0000 104.0000 32.0000 114.0000 32.0000 115.0000	105.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 0.0000 -0.0000 -0.0000 - 0.0000 0.0000	0.0000 0.0000
115.0000 32.0000 118.0000 32.0000 111.0000 115.0000	109.0000 -0.0000 0.0000 0.0000 0.0000 -0.0000	0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000	- 0.0000 -0.0000
32.0000 97.0000 97.0000 105.0000 110.0000 105.0000	97.0000 -0.0000 -0.0000 0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 0.0000 - 0.0000 0.0000	0.0000 -0.0000
116.0000 32.0000 108.0000 110.0000 101.0000 98.0000	103.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 0.0000
104.0000 110.0000 117.0000 32.0000 32.0000 108.0000	101.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 -0.0000 0.0000 - 0.0000 0.0000	0.0000 0.0000
101.0000 117.0000 101.0000 97.0000 107.0000 101.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
32.0000 109.0000 115.0000 100.0000 101.0000 32.0000	0.0000 0.0000 -0.0000 0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 0.0000 - 0.0000 -0.0000	- 0.0000 -0.0000
101.0000 98.0000 32.0000 100.0000 121.0000 99.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
110.0000 101.0000 105.0000 105.0000 32.0000 111.0000	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 0.0000 0.0000 0.0000 -0.0000	0.0000 0.0000
99.0000 114.0000 110.0000 116.0000 119.0000 108.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
114.0000 32.0000 32.0000 105.0000 104.0000 111.0000	0.0000 -0.0000 0.0000 -0.0000 - 0.0000 -0.0000	0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000	0.0000 0.0000
121.0000 111.0000 97.0000 111.0000 105.0000 114.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
112.0000 102.0000 32.0000 110.0000 99.0000 101.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
116.0000 32.0000 109.0000 32.0000 104.0000 100.0000	-0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 -0.0000 0.0000 0.0000 0.0000 -0.0000	- 0.0000 0.0000
105.0000 112.0000 97.0000 116.0000 32.0000 32.0000	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	- 0.0000 0.0000
111.0000 114.0000 116.0000 111.0000 105.0000 98.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 -0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
110.0000 111.0000 114.0000 32.0000 115.0000 117.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
32.0000 99.0000 105.0000 116.0000 32.0000 116.0000	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 0.0000 - 0.0000 0.0000	0.0000 0.0000
112.0000 101.0000 120.0000 104.0000 116.0000 32.0000	0.0000 -0.0000 0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000	- 0.0000 -0.0000
114.0000 115.0000 32.0000 101.0000 101.0000 116.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
111.0000 115.0000 105.0000 32.0000 120.0000 111.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
99.0000 101.0000 115.0000 117.0000 116.0000 32.0000	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000	- 0.0000 -0.0000
101.0000 115.0000 32.0000 115.0000 32.0000 98.0000	0.0000 0.0000 -0.0000 -0.0000 - 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000
115.0000 32.0000 65.0000 101.0000 111.0000 101.0000	0.0000 -0.0000 0.0000 -0.0000 - 0.0000 -0.0000	0.0000 -0.0000 0.0000 -0.0000 0.0000 -0.0000	- 0.0000 0.0000
115.0000 111.0000 32.0000 32.0000 114.0000 32.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 0.0000 0.0000 0.0000 0.0000 0.0000	0.0000 -0.0000
32.0000 102.0000 116.0000 111.0000 32.0000 99.0000	0.0000 -0.0000 -0.0000 -0.0000 - 0.0000 -0.0000	-0.0000 -0.0000 -0.0000 0.0000 - 0.0000 -0.0000	0.0000 0.0000

Average the absolute value of the difference between the elements of Matrix of The numbers after decoding and Matrix of The numbers before the encryption is equal $(1.3031\mathrm{e}-013)$

The Numbers of the text after decoding and its treatment mathematically to approximated to the nearest integer its quite similar to the original matrix and the zeros at its end which representing spaces been added at the beginning of the encryption need for programming and do not affect the content of the text

Columns 1 through 10										Columns 11 through 20									
84	116	32	104	102	97	111	0	0	0	0	0	0	0	0	0	0	0	0	0
104	101	100	114	32	32	110	0	0	0	0	0	0	0	0	0	0	0	0	0
105	120	105	111	71	103	118	0	0	0	0	0	0	0	0	0	0	0	0	0
115	116	115	117	83	114	101	0	0	0	0	0	0	0	0	0	0	0	0	0
32	32	112	103	86	97	114	0	0	0	0	0	0	0	0	0	0	0	0	0
112	105	101	104	68	121	116	0	0	0	0	0	0	0	0	0	0	0	0	0
97	115	114	32	32	32	101	0	0	0	0	0	0	0	0	0	0	0	0	0
112	32	115	114	101	73	100	0	0	0	0	0	0	0	0	0	0	0	0	0
101	103	105	101	110	109	32	0	0	0	0	0	0	0	0	0	0	0	0	0
114	101	111	109	116	97	116	0	0	0	0	0	0	0	0	0	0	0	0	0
32	110	110	105	101	103	111	0	0	0	0	0	0	0	0	0	0	0	0	0
119	101	32	116	114	101	32	0	0	0	0	0	0	0	0	0	0	0	0	0
101	114	111	116	115	32	97	0	0	0	0	0	0	0	0	0	0	0	0	0
32	97	102	97	44	111	32	0	0	0	0	0	0	0	0	0	0	0	0	0
119	108	32	110	32	114	103	0	0	0	0	0	0	0	0	0	0	0	0	0
105	108	116	99	105	32	114	0	0	0	0	0	0	0	0	0	0	0	0	0
108	121	104	101	110	116	97	0	0	0	0	0	0	0	0	0	0	0	0	0
108	32	101	115	99	111	121	0	0	0	0	0	0	0	0	0	0	0	0	0
32	116	32	32	108	32	115	0	0	0	0	0	0	0	0	0	0	0	0	0
97	104	108	108	117	98	99	0	0	0	0	0	0	0	0	0	0	0	0	0
100	114	97	105	100	101	97	0	0	0	0	0	0	0	0	0	0	0	0	0
100	111	116	110	105	32	108	0	0	0	0	0	0	0	0	0	0	0	0	0
114	117	101	101	110	112	101	0	0	0	0	0	0	0	0	0	0	0	0	0
101	103	114	97	103	111	32	0	0	0	0	0	0	0	0	0	0	0	0	0
115	104	32	114	32	115	105	0	0	0	0	0	0	0	0	0	0	0	0	0
115	32	118	32	111	115	109	0	0	0	0	0	0	0	0	0	0	0	0	0
32	97	97	105	110	105	97	0	0	0	0	0	0	0	0	0	0	0	0	0
116	32	108	110	101	98	103	0	0	0	0	0	0	0	0	0	0	0	0	0
104	110	117	32	32	108	101	0	0	0	0	0	0	0	0	0	0	0	0	0
101	117	101	97	107	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	109	115	100	101	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	98	32	100	121	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	101	105	105	32	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	114	110	116	119	108	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	32	32	105	104	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	111	97	111	105	114	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	102	32	110	99	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	32	109	32	104	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	112	97	116	32	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	114	116	111	105	98	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	111	114	32	115	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	99	105	116	32	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	101	120	104	116	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	115	32	101	101	116	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	115	105	32	120	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	101	115	117	116	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
101	115	32	115	32	98	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	32	65	101	111	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	111	32	32	114	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	102	116	111	32	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Average the absolute value of the difference between the elements of Matrix of The numbers after decoding and Matrix of The numbers before the encryption is equal =0 in the two case (key is text or image)

The text after decryption of all encryption keys:-

This paper we will address the encryption process text is generally through a number of processes of dispersion of the later values in a matrix is A through remittances linear in addition to the use of GSVD enters, including one key which is text or a gray Image or to be possible colored but to be converted to a grayscale image

Average the absolute value of the difference between the elements of Matrix of the numbers after decoding and its treatment mathematically to approximated to the nearest integer and matrix of The numbers before the encryption is equal =0.

4.1 Encryption and decryption time:

Encryption time = 0.0160 second.
Decryption time= 0.0620 second

5 DISCUSSION

1- The algorithm uses technology (GSVD) as a basis to encrypt text in any language.
2- This algorithm is based any grayscale image as an encryption key.
3- Is possible use a color image as the key through more than one way in which to deal either convert to grayscale image or taking one of the bands of the color image as the key.
4- This is the first algorithm in its stride and used the analyze of the matrix and nature encryption keys.
5- The resulting text after decryption is identical to the original text and the error rate zero.
6- The rate of encryption time is equal (0.0235second).
7- The rate of decryption time is equal (0.0625second).
8- The time of encryption and decryption calculated according on the speed by processors of personal computer that least of the times of encryption and decryption known.
9- The program adopted in the implementation of this algorithm is a program MATLAB.
10- Can be developed this algorithm to encrypt any fingerprint or an object after converting it to a digital matrix and is available for use any other object convertible to a digital matrix as an encryption key algorithm gives more complexity and strength of the traditional methods of encryption.

6 CONCLUSION

1- This algorithm is multi-functional, where encrypted text by used the encrypted key (image) as desired by the user with GSVD.
2- The encryption algorithm is a composition of 2 dispersal operations and substituted one confidential key above which makes it impossible strong disassemble code the means and decoding programs currently available.
3- Brought together the algorithm between three scientific fields within two specialists are: the competence of two fields in mathematics that matrix algebra and numerical analysis in addition to the competence of computers and programming language MATLAB.
4- The level of encryption algorithm is characterized by high precision and so under standards of accuracy results used the mean of error.
5- was characterized this algorithm their implementation quickly by computer compared to other encryption algorithms concerning the text.
6- alone in this algorithm is the introduction the technique of GSVD..

7 ACKNOWLEDGEMENTS

I am very thankful to everyone who helped me in preparing and working, in particular, my daughters, Maryam Mohammed Abdul Hameed, and Mrs. Iman Abdul Sajjad Abdul Zahra.

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