***Project Report***

***OF***

***PROJECT ON***

***“ENCRYPTOR AND DECRYPTOR CUM CHATTING APPLICATION”***

***Introduction:***

* Encryptor:

It is used to convert normal text into cipher text. It helps protect private information, sensitive data, and can enhance the security of communication between the client apps and the servers.

* Decryptor:

It is used to convert cipher text into normal text. Decryption reverses all the encrypted texts and changes it back to its readable original form.

* CHATTING BOT:

Along with the encryptor and decryptor our application can also work as a chatting bot, meaningly the users can send or receive messages from the other connected servers. (Basically, can be used to share the important encrypted data.)

These processes are very important for keeping confidential data such as usernames, passwords, etc safe from hackers.

***Overview***:

* Creating a simple GUI using tkinter.
* Any type of algo like IDEA, MD5, HMAC, AES, etc can be used to cipher ordinary text.
* In order to solve real life problems which includes leak of data we are making a python app which can not only encrypt data but also decrypt it if the person has the encrypted key.

**Modules used:**

* **Tkinter:**

It is a [Python](https://en.wikipedia.org/wiki/Python_(programming_language)) [binding](https://en.wikipedia.org/wiki/Language_binding) to the [Tk](https://en.wikipedia.org/wiki/Tk_(software)) [GUI](https://en.wikipedia.org/wiki/Graphical_user_interface) toolkit. It is the standard Python interface to the Tk GUI toolkit, and is Python's [*de facto* standard](https://en.wikipedia.org/wiki/De_facto_standard) GUI. Tkinter is included with standard [GNU/Linux](https://en.wikipedia.org/wiki/GNU/Linux), [Microsoft Windows](https://en.wikipedia.org/wiki/Microsoft_Windows) and [macOS](https://en.wikipedia.org/wiki/MacOS) installs of Python. The name *Tkinter* comes from *Tk interface*.

* Base64:

In [computer programming](https://en.wikipedia.org/wiki/Computer_programming), **Base64** is a group of [binary-to-text encoding](https://en.wikipedia.org/wiki/Binary-to-text_encoding) schemes that represent [binary data](https://en.wikipedia.org/wiki/Binary_data) (more specifically, a sequence of 8-bit bytes) in sequences of 24 bits that can be represented by four 6-bit Base64 digits.

* Socket:

The client-server model is one of the most used communication paradigms in networked systems. Clients normally communicates with one server at a time. From a server’s perspective, at any point in time, it is not unusual for a server to be communicating with multiple clients. Client need to know of the existence of and the address of the server, but the server does not need to know the address of (or even the existence of) the client prior to the connection being established. Client and servers communicate by means of multiple layers of network protocols. In this course we will focus on the TCP/IP protocol suite.

* Pillow:

**Python Imaging Library** is a [free and open-source](https://en.wikipedia.org/wiki/Free_and_open-source_software) additional [library](https://en.wikipedia.org/wiki/Library_(computing)) for the [Python programming language](https://en.wikipedia.org/wiki/Python_(programming_language)) that adds support for opening, [manipulating](https://en.wikipedia.org/wiki/Image_editing) many different [image file formats](https://en.wikipedia.org/wiki/Image_file_formats). It is available for [Windows](https://en.wikipedia.org/wiki/Microsoft_Windows), Mac OS X and [Linux](https://en.wikipedia.org/wiki/Linux).

***Advantages:***

1) Unauthorised person cannot access any sensitive type of data.

2) Using encryption is a great way to reduce data leaks.

3) Improve security of data.

***Disadvantages:***

1. Encryption requires a password to encrypt and decrypt the file if you forget the password that you used, you may never be able to recover the data. If you use a password that is easy to guess, your encrypted data is less secure.
2. Encryption of data can lead to huge data loss.

**Usage in industry:**

* It is used in all types of multinational companies such as Google, Instagram, Facebook, etc.

**References:**

* Google, Stack overflow, Python documentation, etc.

***Team Members:***

Vansh pundir: 2110993856

Advitiya Bharti Gupta: 2110993858