

FINAL YEAR PROJECT

“Data Concealment using LSB substitution techniques”



TEAM		FACULTY
Mr. Gaurav Walia	Mr. Himalaya Monga	Mr. Sanjiv Kumar Tomar
E.No.: A2305208370 Class - 8CS3	E.No. : A2305208372 Class – 8CS3	Senior Lecturer
B.Tech (CS&E) 08-12	B.Tech (CS&E) 08-12	ASET, AUUP

Explanation of the Project Title:

- We aim to create a secure data sharing system with the intent of cross sharing of data of multiple file type in a hidden shell. This is the process of **data concealment**.
- We have used **the techniques of LSB substitution**, wherein the input data file's attributes are put in the output data file, replacing it's Least Significant Bits.

Application Features

- FEATURES OF THE APPLICATION:

Concealing *Plain text* in an *Image File*.

Concealing *Plain text* in an *Audio File*.

Concealing *Plain text* in a *Video File*. (NEW)

Concealing *Image* in an *Image File*.

Concealing *Image* in an *Audio File*.

Concealing *Image* in a *Video File*. (NEW)

Concealing *Audio* in an *Image File*.

Concealing *Audio* in an *Audio File*.

Concealing *Audio* in a *Video File*. (NEW)

Concealing *Video* in an *Image File*. (NEW)

Concealing *Video* in an *Audio File*. (NEW)

Concealing *Video* in a *Video File*. (NEW)

- ADDED FEATURES:

Dynamic *File Compression*

Password *Encryption* for compressed files

Implementation so far :

- Implementation as per the project goal, has been **completed!**
- Concealment of **all types** of files (Plain text, image, audio & video)
- All modules of Concealment are **finished**

Product Functions:

The software will perform following functions:

- Password protection of message
- Password protection of file
- Compression of message
- Compression of file
- Password protection and compression of message/
File
- Embedding all above into an image, audio and video

Basic Flow Chart

IMAGE

Get_byte_data(image)
[Writable Raster]

MESSAGE

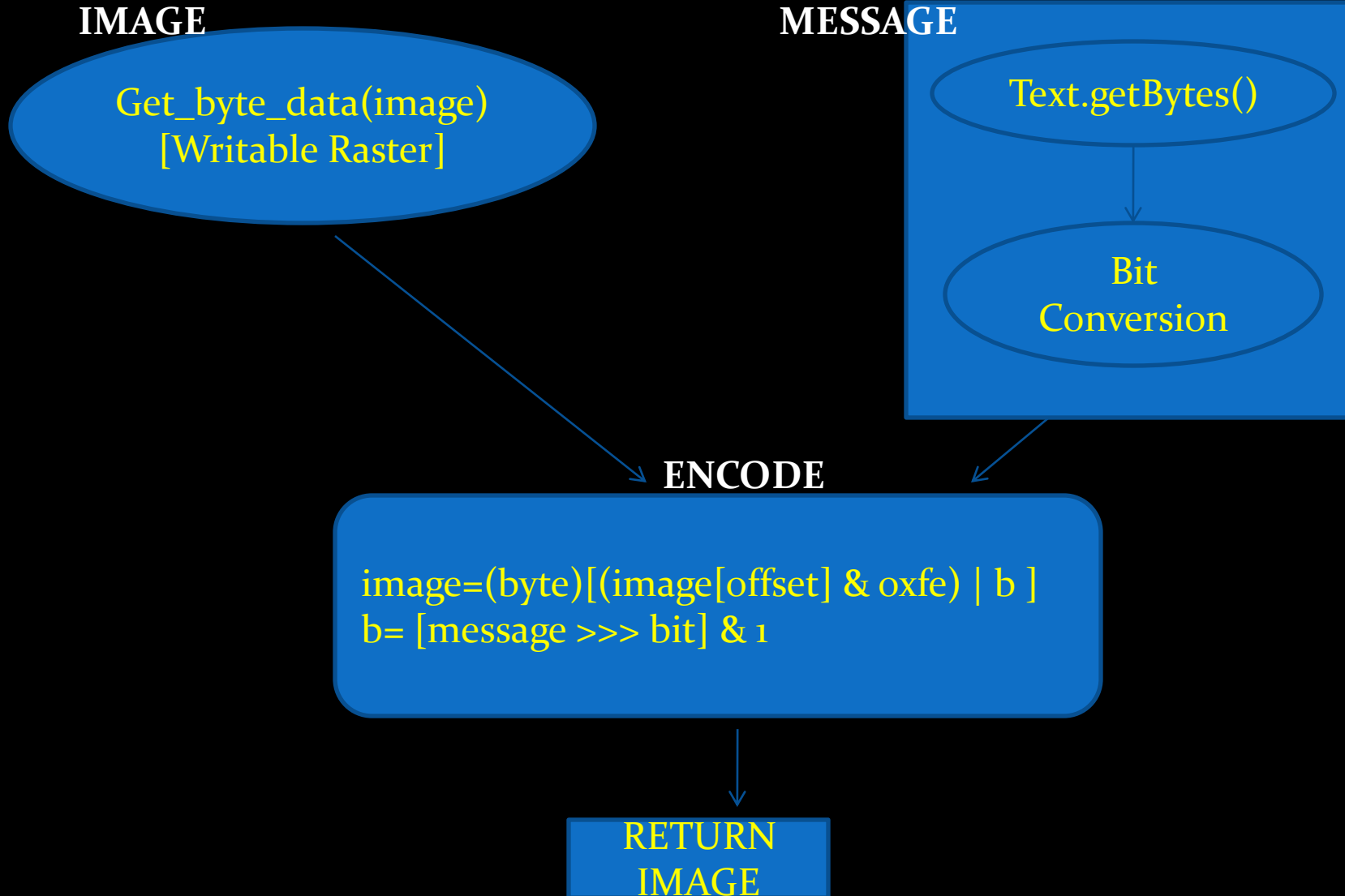
Text.getBytes()

Bit
Conversion

ENCODE

```
image=(byte)[(image[offset] & 0xfe) | b ]  
b= [message >>> bit] & 1
```

**RETURN
IMAGE**



Internal Mechanism

Input Text	'g' 'a' 'u' 'r' 'a' 'v'
------------	-------------------------

0 1 1 0 0 1 1 1

Image	1 0 1 0 1 0 1 1 (Original Pixel)
-------	----------------------------------

Msg>>>bit	_ _ _ _ _ _ _ 0 + 1
-----------	---------------------

New Image	1 0 1 0 1 0 1 0 (New Pixel)
-----------	-----------------------------

COMPRESSION

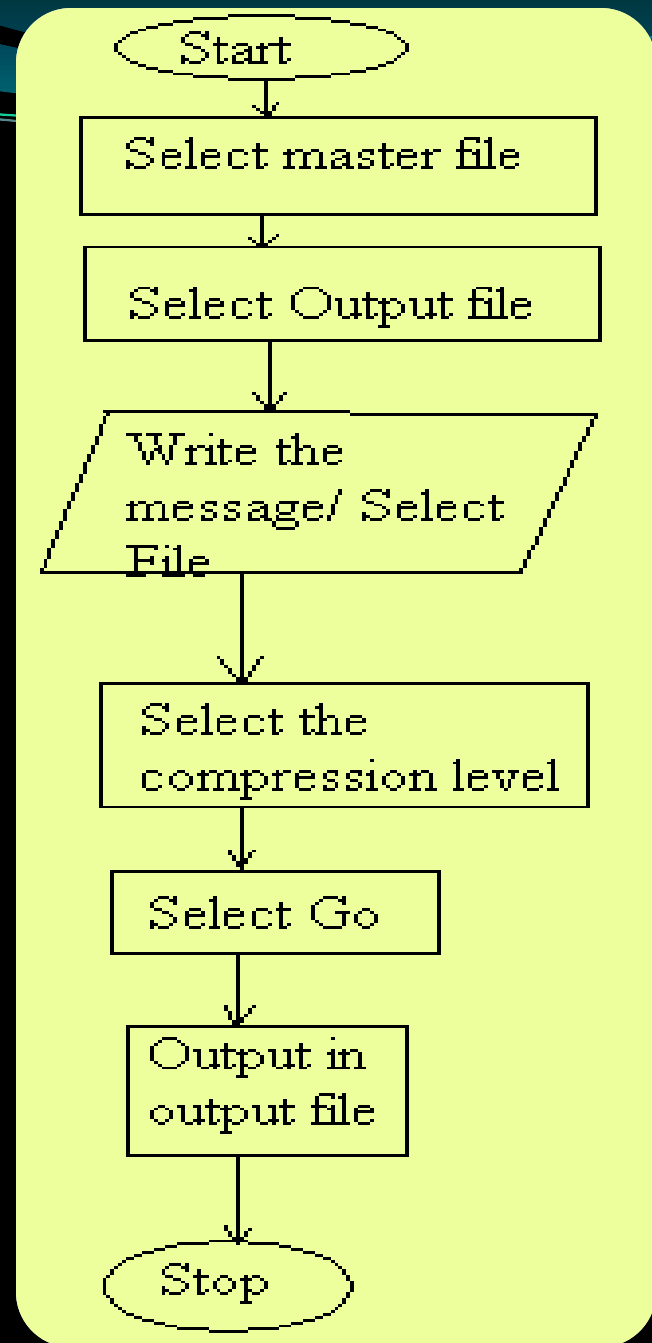
First we initialize the `ByteArrayOutputStream` class and then we pass the object to `ZipOutputStream` class. This is how we achieve the main object (for instance `zOut`).

```
ByteArrayOutputStream arrayOutputStream= new ByteArrayOutputStream();  
ZipOutputStream zOut= new ZipOutputStream(arrayOutputStream);
```

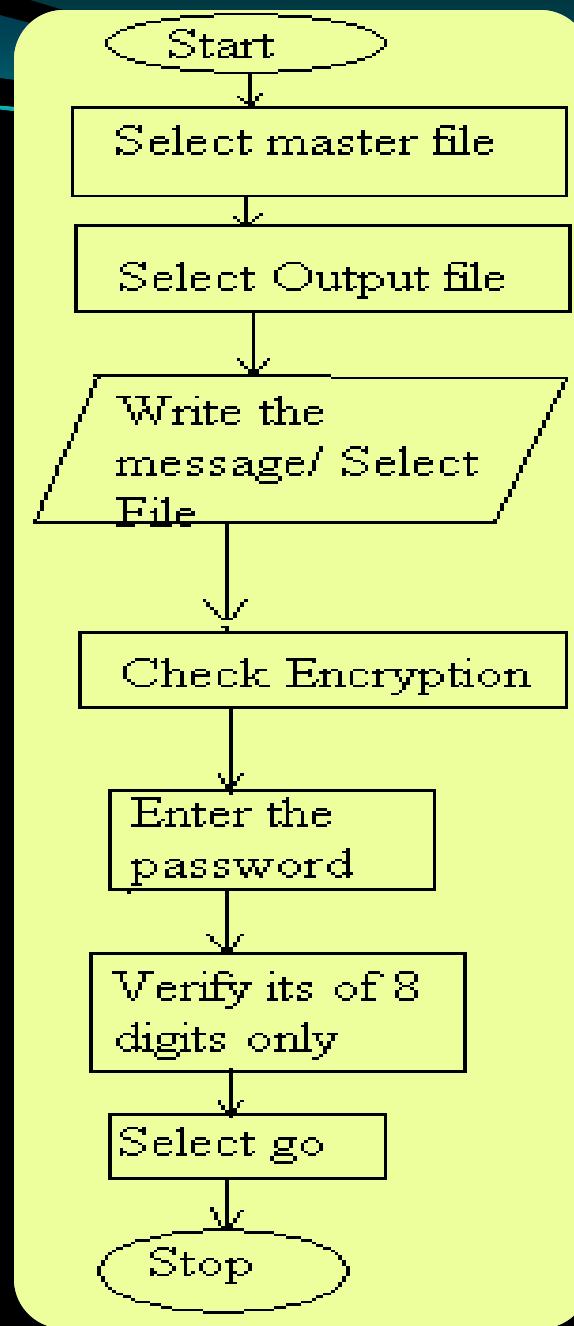
Passing the file in the `ZipEntry` constructor and setting the compression level

```
ZipEntry entry= new ZipEntry(dataFile.getName());  
zOut.setLevel(compression);  
zOut.putNextEntry(entry);  
zOut.write(fileArray, o, messageSize);
```

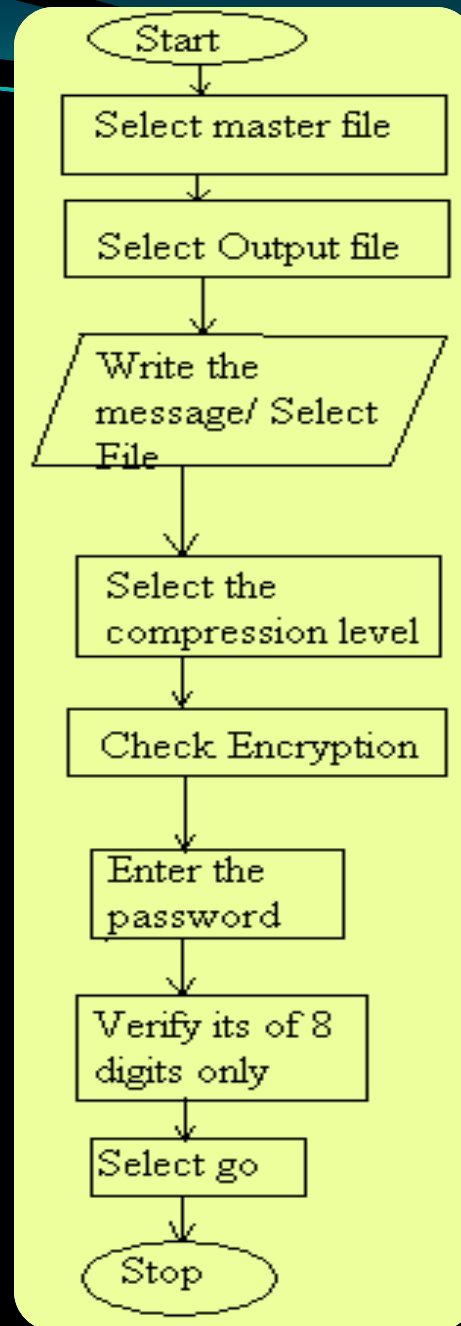

COMPRESSION ONLY



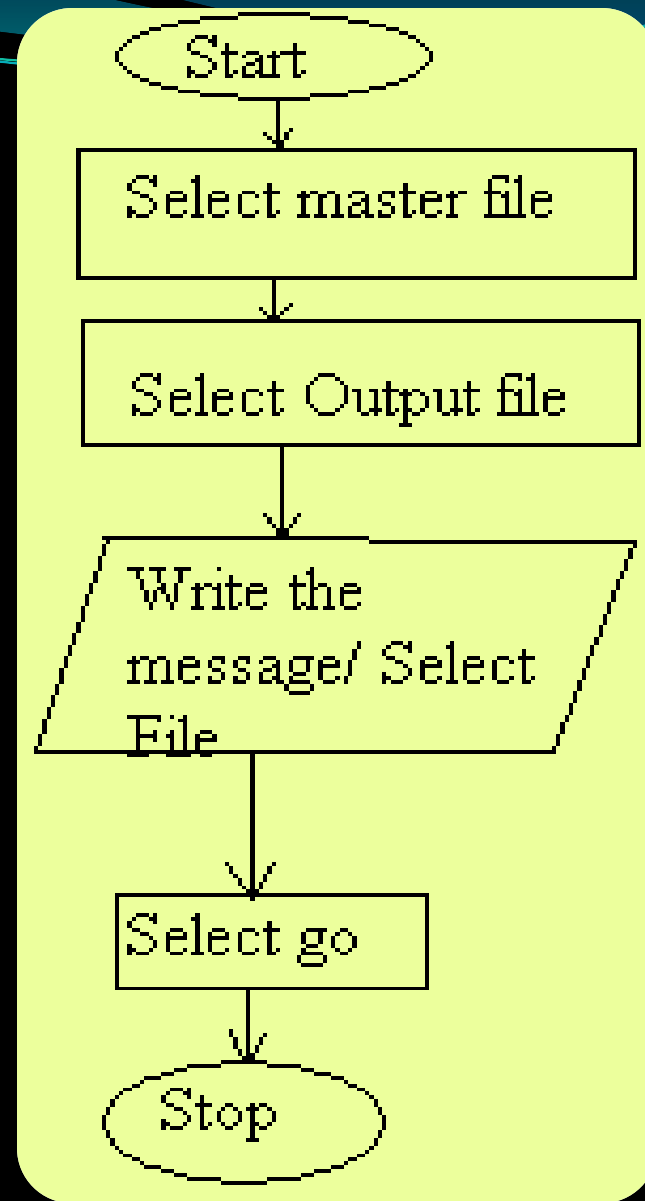
ENCRYPTION ONLY



COMPRESSION WITH ENCRYPTION



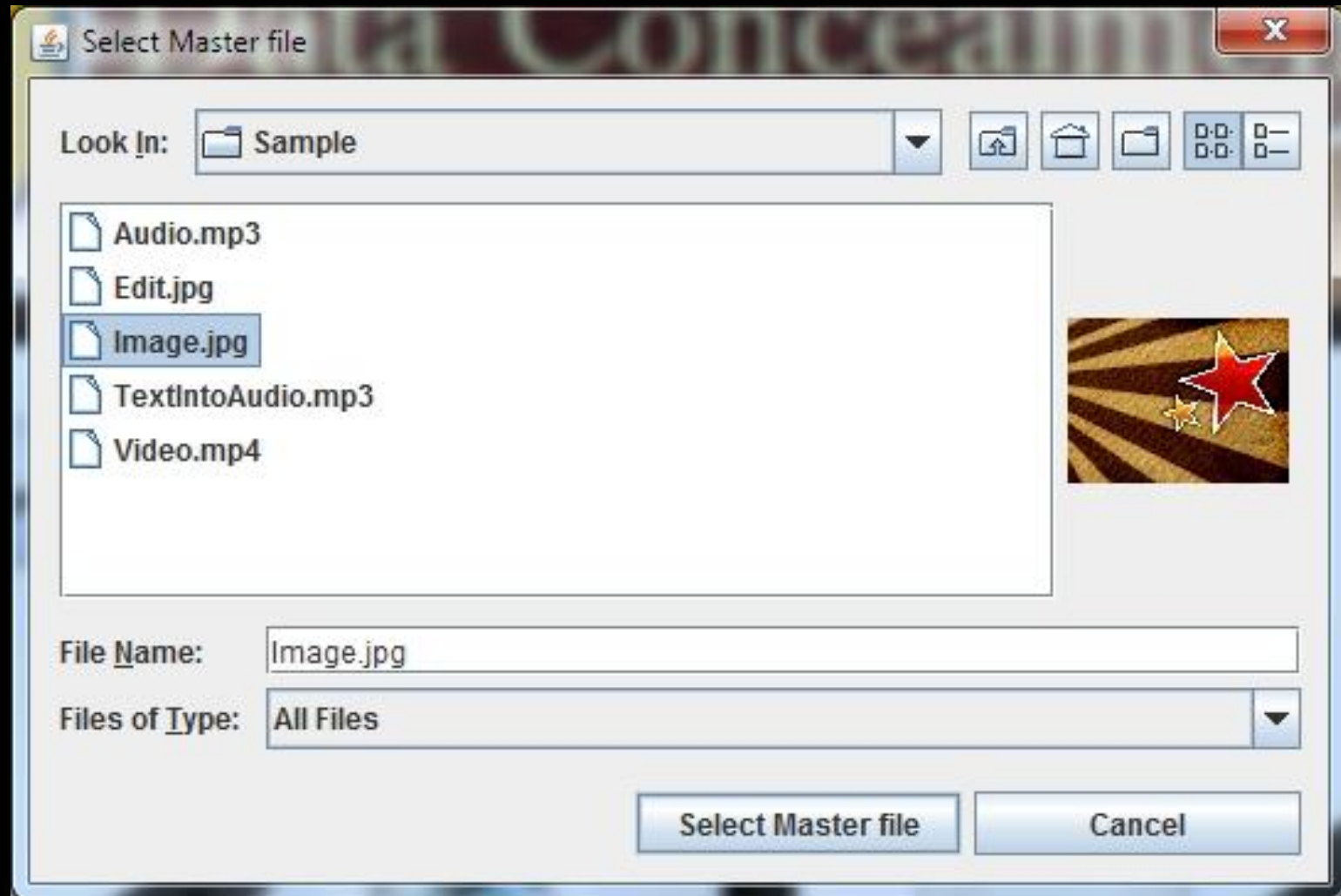
W/O COMPRESSION
& W/O ENCRYPTION



SNAPSHOT : Main Menu



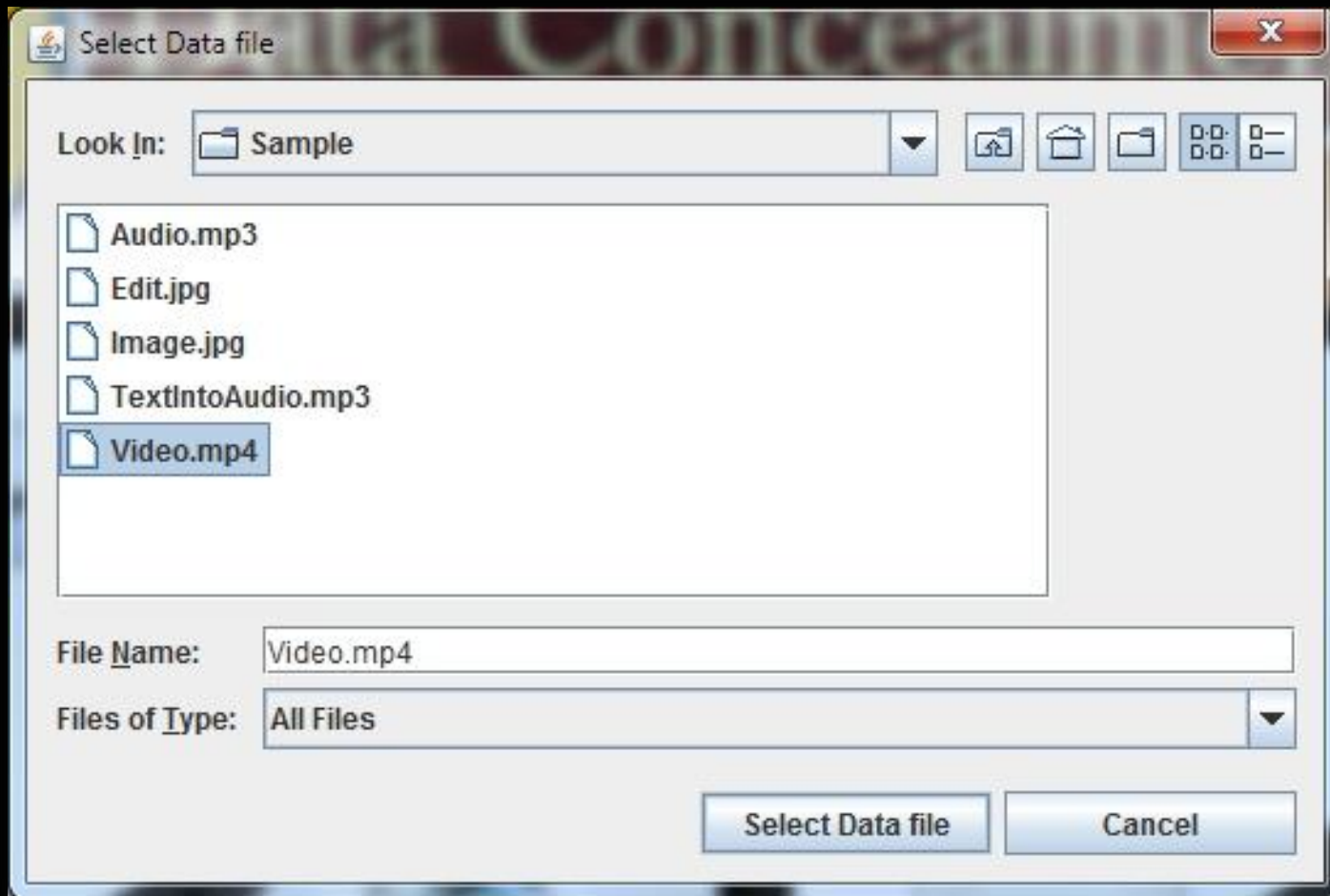
SNAPSHOT: Master File Selection



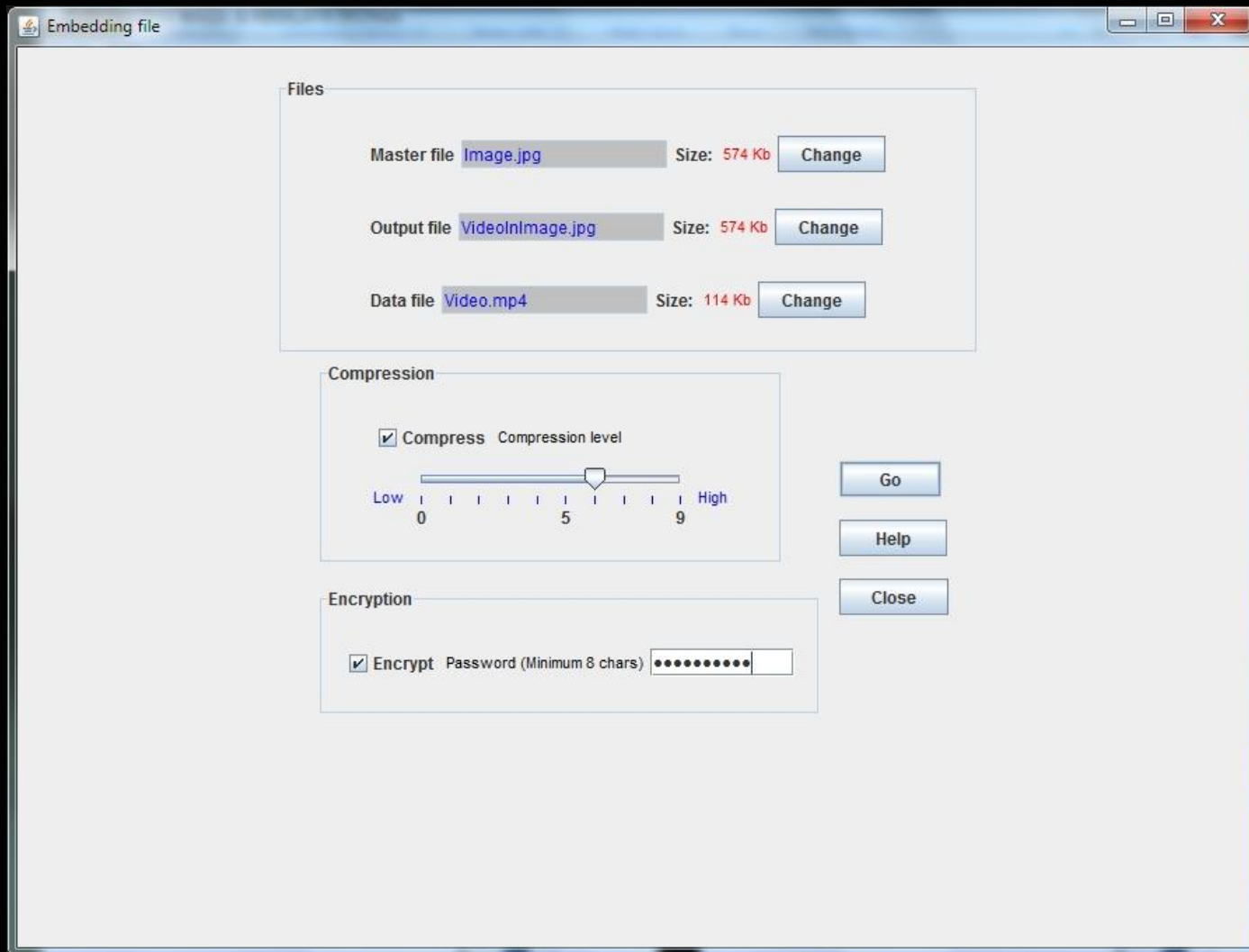
SNAPSHOT: Selecting the new output file



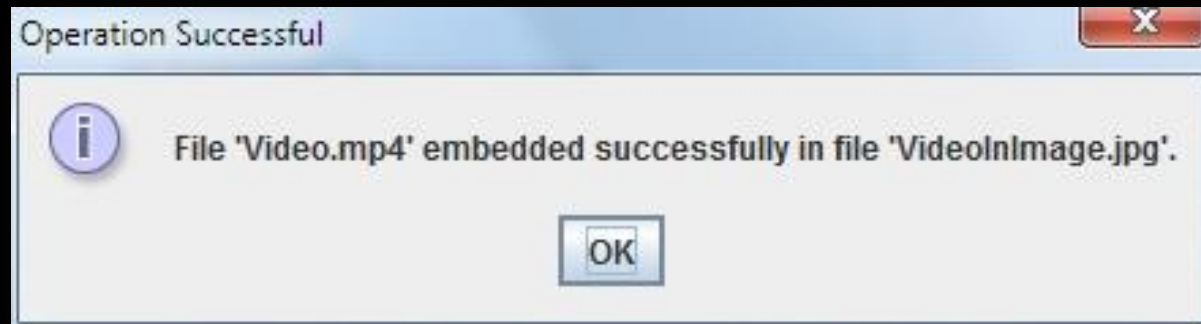
SNAPSHOT: Input File Selection



SNAPSHOT: Compression level selection and Encryption choice



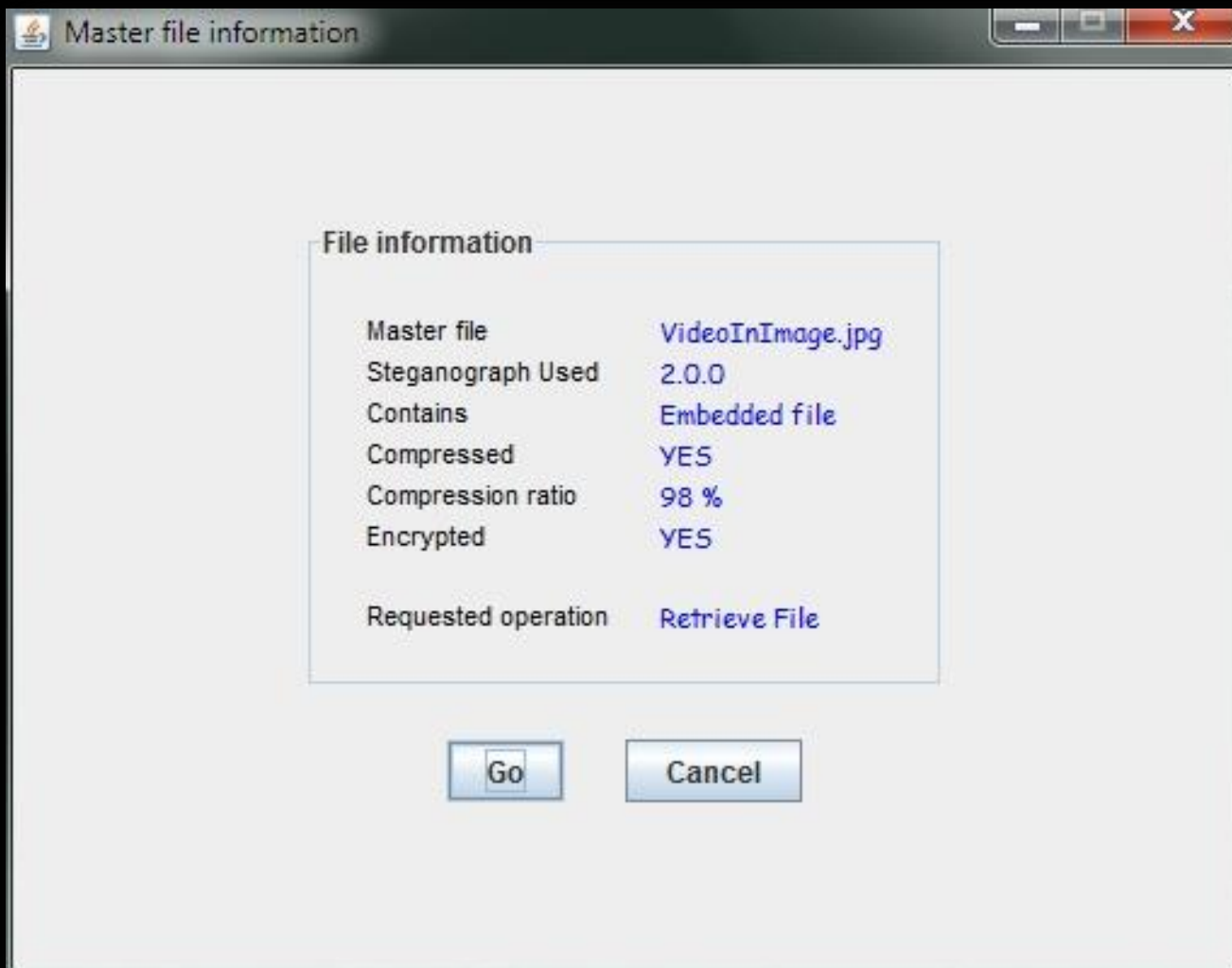
SNAPSHOT: Success Pop up!



SNAPSHOT: Image still working
even after a video hidden!



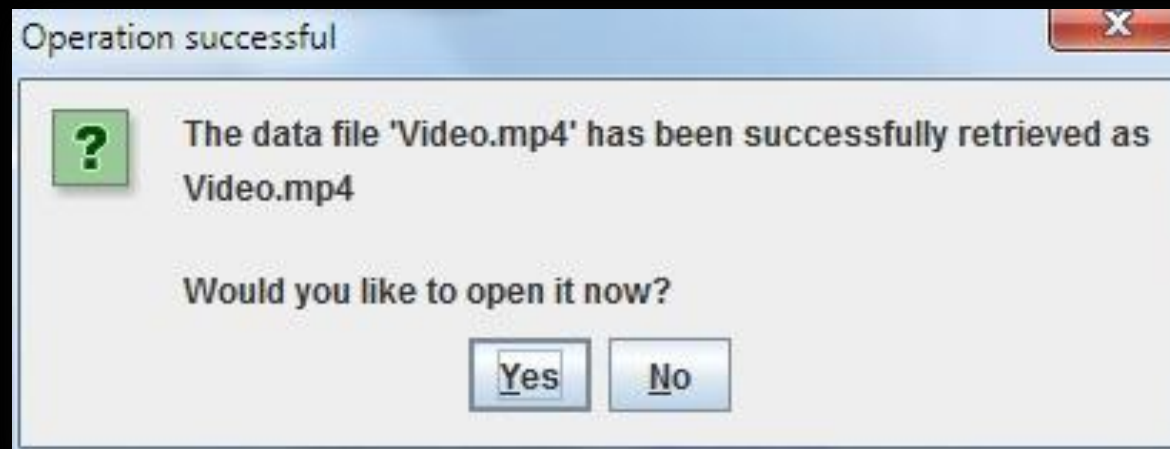
SNAPSHOT: Retrieval – Shows file info



SNAPSHOT: Prompts for password authentication



SNAPSHOT: Requests permission for opening of the hidden file!



SNAPSHOT: Smooth working of the video, after subsequent embed and retrieval



FUTURE RESEARCH

- Other Encryption techniques can also be implemented.
- A combination of text and file can also be implemented.
- Authentication of user using this software can also be done using passwords for security in the organization.
- A more user friendly environment can also be created but that will hamper the system memory requirements.



Thank you.