

COMP 8505

Assignment 1

Testing

Harman Dhillon
A00994245
Jan 26th, 2026

Tests	3
Test 1	3
Test 2	4
Test 3	4
Test 4	5
Test 5	6
Test 6	7
Test 7	10
Test 8	13
Test 9	15
Test 10	17
Test 11	18
Test 12	21
Test 13	24
Test 14	27
Test 15	30
Test 16	33
Test 17	36
Test 18	38
Test 19	39

Test	Expected	Actual	Screenshot
No arguments	fail	fail	Test 1
Only -p in encryption mode	fail	fail	Test 2
Only -p and -f in encryption mode	fail	fail	Test 3
PNG passed in is not a PNG	fail	fail	Test 4
Not enough space in PNG to embed file	fail	fail	Test 5
Embed small text file in white PNG	pass	pass	Test 6
Embed large text file in white PNG	pass	pass	Test 7
Embed binary file in white PNG	pass	pass	Test 8
Embed small text file in black PNG	pass	pass	Test 9
Embed large text file in black PNG	pass	pass	Test 10
Embed binary file in black PNG	pass	pass	Test 11
Embed small text file in simple PNG	pass	pass	Test 12
Embed large text file in simple PNG	pass	pass	Test 13
Embed binary file in simple PNG	pass	pass	Test 14
Embed small text file in complex PNG	pass	pass	Test 15
Embed large text file in complex PNG	pass	pass	Test 16
Embed binary file in complex PNG	pass	pass	Test 17
PNG doesn't have a secret message embedded	fail	fail	Test 18
Wrong key when decrypting	fail	fail	Test 19

Tests

Test 1

```
.../source/build main • ➤ ./stego
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

Usage: ./stego [OPTIONS]

Steganography tool for embedding or extracting encrypted data in PNG images.

Required options:
  -p, --png <file>           Input PNG image (cover image or stego image)
  -k, --key <password>        Password used for encryption/decryption

Mode options (choose one):
  -e, --encrypt               Encrypt and embed data into the PNG (default)
  -d, --decrypt                Extract and decrypt data from the PNG

Encryption mode options:
  -f, --file <file>           File to encrypt and embed into the PNG

Other options:
  -h, --help                   Display this help message and exit

Examples:
  Embed a file into a PNG:
    ./stego -p cover.png -f secret.txt -k mypassword -e

  Extract a file from a stego PNG:
    ./stego -p image_steg.png -k mypassword -d

ERROR User has to pass in a valid PNG.
In file command_line.c in function handle_arguments on line 196
TRACE: STATE_CLEANUP
Entered state at line 225.
```

Test 2

```
.../source/build main • ➤ ./stego -p white.png
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

Usage: ./stego [OPTIONS]

Steganography tool for embedding or extracting encrypted data in PNG images.

Required options:
  -p, --png <file>           Input PNG image (cover image or stego image)
  -k, --key <password>        Password used for encryption/decryption

Mode options (choose one):
  -e, --encrypt               Encrypt and embed data into the PNG (default)
  -d, --decrypt                Extract and decrypt data from the PNG

Encryption mode options:
  -f, --file <file>           File to encrypt and embed into the PNG

Other options:
  -h, --help                   Display this help message and exit

Examples:
  Embed a file into a PNG:
    ./stego -p cover.png -f secret.txt -k mypassword -e

  Extract a file from a stego PNG:
    ./stego -p image_steg.png -k mypassword -d

ERROR Have to pass in a readable file for the message.
In file command_line.c in function handle_arguments on line 206
TRACE: STATE_CLEANUP
Entered state at line 225.
```

Test 3

```
.../source/build main • ➤ ./stego -p white.png -f secret_short.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

Usage: ./stego [OPTIONS]

Steganography tool for embedding or extracting encrypted data in PNG images.

Required options:
  -p, --png <file>           Input PNG image (cover image or stego image)
  -k, --key <password>        Password used for encryption/decryption

Mode options (choose one):
  -e, --encrypt               Encrypt and embed data into the PNG (default)
  -d, --decrypt                Extract and decrypt data from the PNG

Encryption mode options:
  -f, --file <file>           File to encrypt and embed into the PNG

Other options:
  -h, --help                   Display this help message and exit

Examples:
  Embed a file into a PNG:
    ./stego -p cover.png -f secret.txt -k mypassword -e

  Extract a file from a stego PNG:
    ./stego -p image_steg.png -k mypassword -d

ERROR Have to pass in the key to encrypt or decrypt the message
```

Test 4

```
.../source/build main • ➤ ./stego -p secret_short.txt -f secret_short.txt -k key
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

ERROR PNG file is not a PNG.
In file stego_png.c in function is_png on line 15
```

Test 5

```
.../source/build main • ➤ ./stego -p white.png -k "secret key" -f scenery.png
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

ERROR embed_data: payload too large for this image capacity
In file stego_png.c in function embed_data on line 354
TRACE: STATE_CLEANUP
Entered state at line 225.
```

Test 6

```
.../source/build main • ➤ ./stego -p white.png -k "secret key" -f secret_short.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p white.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

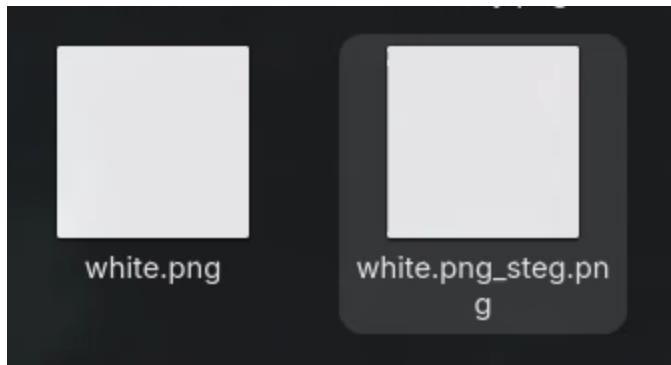
TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



```
.../source/build main • ➤ cat secret_short.txt  
this is a short message that will be hidden KLFDJfkljdfklsj  
  
.../source/build main • ➤ cat Decoded\ Message  
this is a short message that will be hidden KLFDJfkljdfklsj  
  
.../source/build main • ➤ diff sec  
...long.txt ...short.txt  
  
.../source/build main • ➤ diff secret_short.txt Decoded\ Message  
.../source/build main • ➤ █
```

Test 7

```
.../source/build main • ➤ ./stego -p white.png -k "secret key" -f secret_long.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p white.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



```
.../source/build main • ➤ diff secret_long.txt Decoded\ Message  
.../source/build main • ➤ █
```

Test 8

```
.../source/build main • ➜ ./stego -p white.png -k "secret key" -f white.png
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➜ ./stego -p white.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

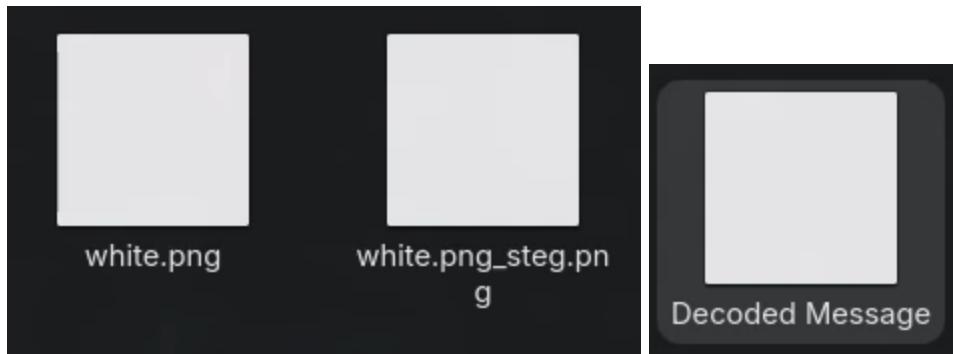
TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



```
.../source/build main • ➜ diff white.png Decoded\ Message  
.../source/build main • ➜ clea█
```

Test 9

```
.../source/build main • ➤ ./stego -p black.png -k "secret key" -f secret_short.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```

```
.../source/build main • ➤ ./stego -p black.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

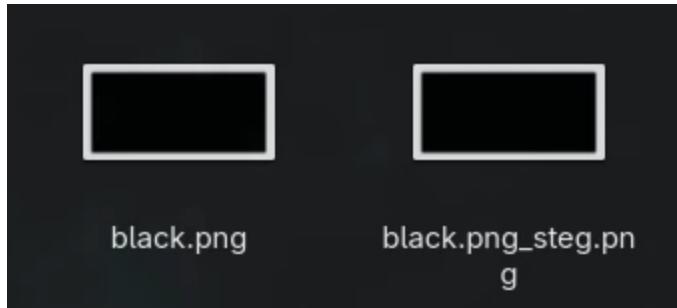
TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



```
.../source/build main • ➤ diff Decoded\ Message secret_short.txt
```

|

Test 10

```
.../source/build main • ➤ ./stego -p black.png -k "secret key" -f secret_long.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p black.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

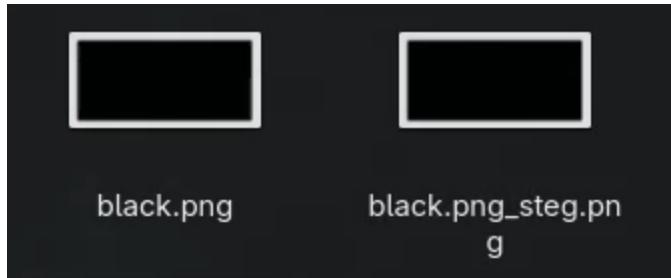
TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```

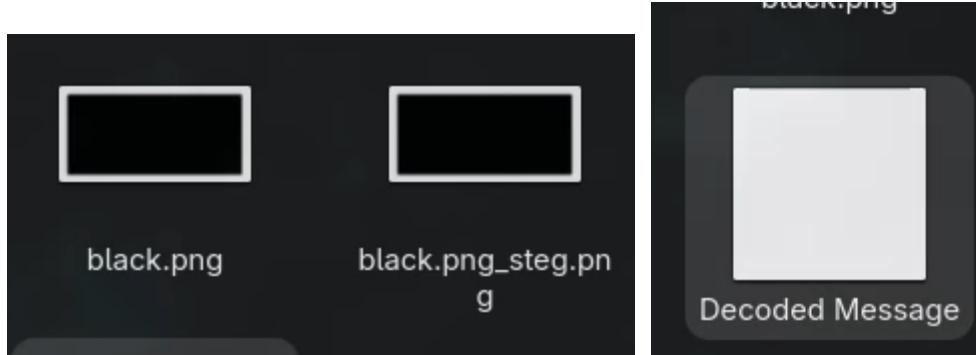


```
.../source/build main • X diff Decoded\ Message secret_long.txt
```

```
.../source/build main • ➜ clea█
```

Test 11

```
.../source/build main • ➤ ./stego -p black.png -k "secret key" -f white  
white.png      ..._steg.png  
  
.../source/build main • ➤ ./stego -p black.png -k "secret key" -f white.png  
TRACE: STATE_PARSE_ARGUMENTS  
Entered state at line 86.  
  
TRACE: STATE_HANDLE_ARGUMENTS  
Entered state at line 98.  
  
TRACE: STATE_LOAD_IMAGE  
Entered state at line 111.  
  
TRACE: STATE_ENCRYPT_DATA  
Entered state at line 125.  
  
TRACE: STATE_EMBED_DATA  
Entered state at line 150.  
  
TRACE: STATE_OUTPUT  
Entered state at line 176.  
  
TRACE: STATE_CLEANUP  
Entered state at line 225.  
  
.../source/build main • ➤ ./stego -p black.png_steg.png -k "secret key" -d  
TRACE: STATE_PARSE_ARGUMENTS  
Entered state at line 86.  
  
TRACE: STATE_HANDLE_ARGUMENTS  
Entered state at line 98.  
  
TRACE: STATE_LOAD_IMAGE  
Entered state at line 111.  
  
TRACE: STATE_EXTRACT_DATA  
Entered state at line 136.  
  
TRACE: STATE_DECRYPT_DATA  
Entered state at line 211. █  
  
TRACE: STATE_OUTPUT  
Entered state at line 176.  
  
TRACE: STATE_CLEANUP  
Entered state at line 225.
```



```
.../source/build main • > diff Decoded\ Message white.png  
.../source/build main • > clear
```

Test 12

```
.../source/build main • ➤ ./stego -p images.png -k "secret key" -f secret_short.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p images.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

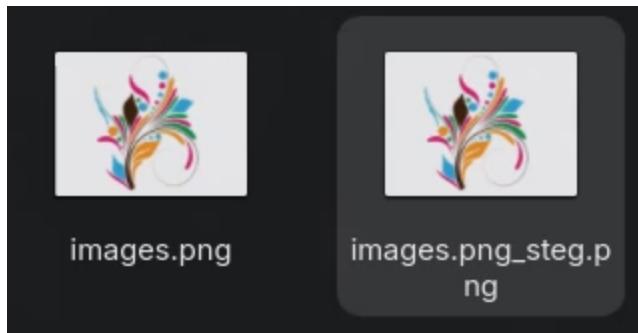
TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



```
.../source/build main • ➤ diff Decoded\ Message secret_short.txt  
.../source/build main • ➤ clear
```

Test 13

```
.../source/build main • ➤ ./stego -p images.png -k "secret key" -f secret_long.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p images.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

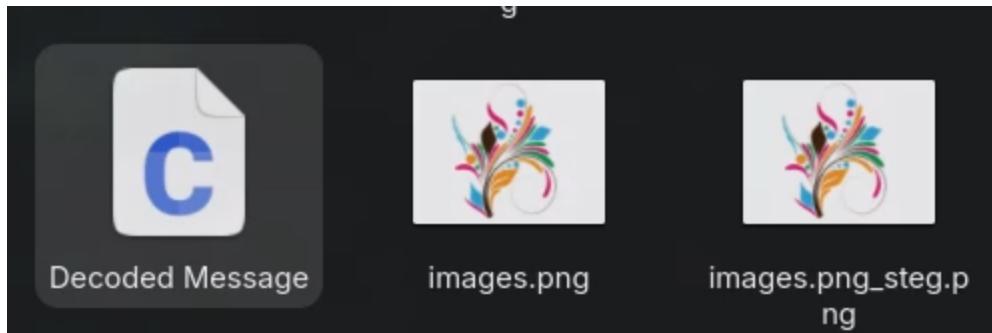
TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



```
.../source/build main • ➤ diff Decoded\ Message secret_long.txt
```

```
.../source/build main • ➤ []
```

Test 14

```
.../source/build main • ➤ ./stego -p images.png -k "secret key" -f white.png
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p images.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

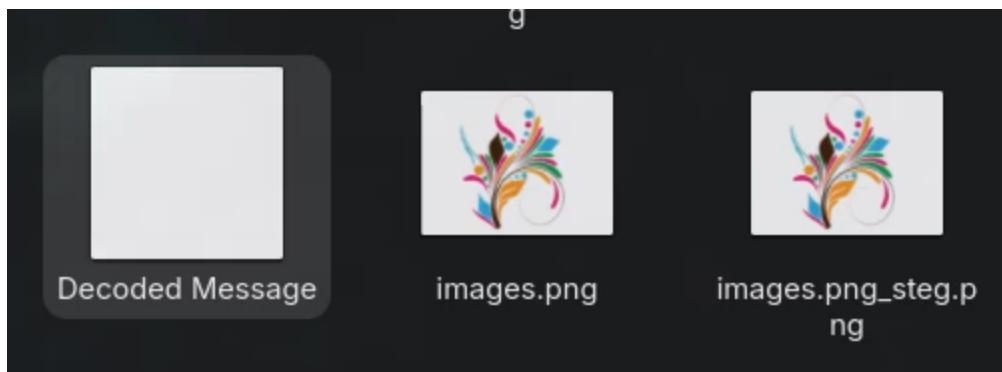
TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```

g



```
.../source/build main • > diff Decoded\ Message white.png
```

```
.../source/build main • > []
```

Test 15

```
.../source/build main • ➤ ./stego -p scenery.png -k "secret key" -f secret_short.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p scenery.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

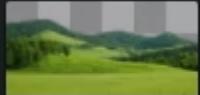
TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



scenery.png



scenery.png_steg.
png

```
.../source/build main • ➤ diff Decoded\ Message secret_short.txt  
.../source/build main • ➤ █
```

Test 16

```
.../source/build main • ➤ ./stego -p scenery.png -k "secret key" -f secret_long.txt
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p scenery.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

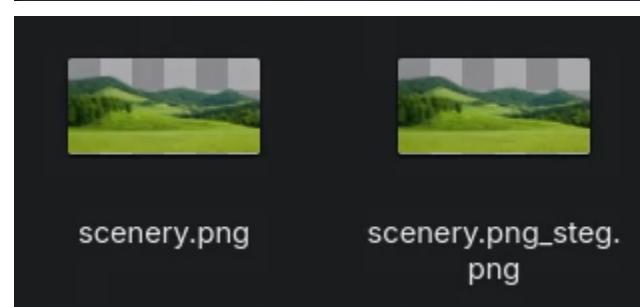
TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



```
.../source/build main • ➤ diff Decoded\ Message secret_long.txt  
.../source/build main • ➤ []
```

Test 17

```
.../source/build main • ➤ ./stego -p scenery.png -k "secret key" -f white.png
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_ENCRYPT_DATA
Entered state at line 125.

TRACE: STATE_EMBED_DATA
Entered state at line 150.

TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.

.../source/build main • ➤ ./stego -p scenery.png_steg.png -k "secret key" -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

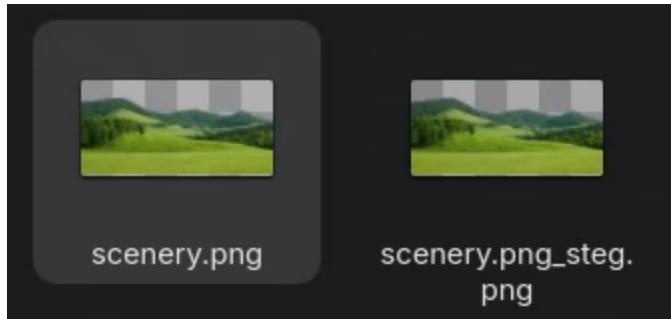
TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

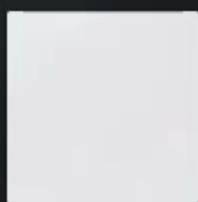
TRACE: STATE_OUTPUT
Entered state at line 176.

TRACE: STATE_CLEANUP
Entered state at line 225.
```



```
.../source/build main • ➤ diff Decoded\ Message white.png
```

```
.../source/build main • ➤ clear
```



Decoded Message

Test 18

```
.../source/build main • ➤ ./stego -p black.png -k "secret key" -d  
TRACE: STATE_PARSE_ARGUMENTS  
Entered state at line 86.
```

```
TRACE: STATE_HANDLE_ARGUMENTS  
Entered state at line 98.
```

```
TRACE: STATE_LOAD_IMAGE  
Entered state at line 111.
```

```
TRACE: STATE_EXTRACT_DATA  
Entered state at line 136.
```

```
ERROR extract_data: missing STEG magic (no hidden payload found)  
In file stego_png.c in function extract_data on line 467  
TRACE: STATE_CLEANUP  
Entered state at line 225.
```

Test 19

```
.../source/build main ? > ./stego -p images.png_steg.png -k kex -d
TRACE: STATE_PARSE_ARGUMENTS
Entered state at line 86.

TRACE: STATE_HANDLE_ARGUMENTS
Entered state at line 98.

TRACE: STATE_LOAD_IMAGE
Entered state at line 111.

TRACE: STATE_EXTRACT_DATA
Entered state at line 136.

TRACE: STATE_DECRYPT_DATA
Entered state at line 211.

ERROR decrypt_data: decryption failed (wrong key or corrupted data)
In file stego_png.c in function decrypt_data on line 640
TRACE: STATE_CLEANUP
Entered state at line 225.
```