

ONE MANAGER : ***SECRETS*** ***MANAGEMENT*** ***SYSTEM***

Introduction:

Secrets management refers to the tool for managing digital authentication credentials (secrets), including passwords, keys, APIs, and tokens for use in applications, services, privileged accounts and other sensitive parts of the IT ecosystem.

Secrets include:

1. User or auto-generated passwords
2. API and other application keys/credentials (including within containers)
3. SSH Keys
4. Database and other system-to-system passwords.
5. Private encryption keys for systems like PGP

The objective of this project is to implement an application to manage the secrets securely. It stores your secrets securely by ciphering it using one of the most used and advanced cryptographic algorithms.

Present System:

People use methods like storing secrets in a file or hard code it in some application or writing it somewhere etc which are not the best way of storing the secrets because it can be accessed by anyone easily, thus getting access to your personal information.

Major Limitations of Present System :

- ☐ *It stores secrets in plain text format*
- ☐ *It allows anyone to access the data*

Proposed System:

This system will store the secrets by ciphering the secrets in the best possible way, it also imposes access rules, thus allowing only the creators to access the secret.

Advantages of Proposed System:

- ☐ *Secured Secrets*
- ☐ *Authorised Access*

Hardware Requirements:

- CPU with clock speed 2.0GHz & above
- 2 Gigabyte RAM and above

Software Requirements:

- Windows 10 & above
- Python 3.9 & above
- PostgreSQL 14.0 & above

Packages Used:

- ⇒ Rich (<https://github.com/Textualize/rich>):
Rich is a Python library for rich text and beautiful formatting in the terminal.
- ⇒ Psycopg (<https://www.psycopg.org/psycopg3/>):
New generation PostgreSQL database adapter for the Python programming language
- ⇒ Pycryptodomex (<https://www.pycryptodome.org/>):
A self-contained cryptographic library for Python
- ⇒ Winreg (<https://docs.python.org/3/library/winreg>):
Windows registry access
- ⇒ Proto-plus
(<https://github.com/googleapis/proto-plus-python>):
Beautiful, idiomatic protocol buffers in Python
- ⇒ Pyperclip(<https://github.com/asweigart/pyperclip>):
Python module for cross-platform clipboard functions.

CryptoGraphical Overview:

In One Manager we have used XChaCha Poly1305 (https://en.wikipedia.org/wiki/ChaCha20-Poly1305#XChaCha20-Poly1305_-_Extended_Nonce_Variant) which is faster and could be more secure than the industry standard AES (<https://nordpass.com/blog/xchacha20-encryption-vs-aes-256/>). Major companies nowadays preferred XChaCha over AES like Google , Nordpass, In TLS v1.3 .

For cryptographic keys used for ciphering the plain text is derived by Scrypt (<https://en.wikipedia.org/wiki/Scrypt>) which is a Key Derivation Function. It derives a cryptographic key based on a passphrase .The main advantage of scrypt is it generates a unique key every time for the same passphrase .Thus if a keys get leaked only a single secrets get leaked but other secrets remain safe

Setting Up the Application:

1. Get the source code from Github
(<https://github.com/Shahprogrammer/OneManager>)
2. Install the dependencies
3. Set the environment variables:
 - a. `OneManager_DB_HOST` ⇒ Host address of database
 - b. `OneManager_DB_PORT` ⇒ Port of database
 - c. `OneManager_DB_NAME` ⇒ Name of database
 - d. `OneManager_DB_USERNAME` ⇒ Username of database
 - e. `OneManager_DB_PASSWORD` ⇒ Password of database
4. Open terminal in source code directory
5. Run command `'python3 -m one_manager.app --setup'`

Running the Application

1. Set up the environment variable as above shown
2. Open terminal in source code directory
3. Run command `'python3 -m one_manager.app'`

OUTPUT

➤ Login:-

```
ONE MANAGER

1) Login
2) Register
Please select a choice [1/2]: 1
Enter your Username: Dhvani1@2005
Enter your Password:
Succesfully logged in 🍷
```

➤ Login(Error):-

```
ONE MANAGER

1) Login
2) Register
Please select a choice [1/2]: 1
Enter your Username: qass
Enter your Password:
No user with name qass exists.
```

➤ Register :-

```
ONE MANAGER

1) Login
2) Register
Please select a choice [1/2]: 2
Enter your Username: WASD
Enter your Password:
Retype your Password:
Succesfully created user 🍷
Press any key to continue to login ...
```


➤ Register(Error):

```
ONE MANAGER

1) Login
2) Register
Please select a choice [1/2]: 2
Enter your Username: Dhwanil@2005
Enter your Password:
Retype your Password:
Password does not match Please retype of your password
```

➤ Register (Error):

```
ONE MANAGER

1) Login
2) Register
Please select a choice [1/2]: 2
Enter your Username: Dhwanil@2005
Enter your Password:
Retype your Password:
Already user with name Dhwanil@2005 exists. Please use a different username
```

➤ Main Menu:

```
ONE MANAGER

MENU

1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]:
```

➡ Store a secret

```
ONE MANAGER

MENU

1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 1
Enter name of secret: Secret
Enter the secret:
Successfully stored secret 🍌
```

➡ Store a secret(Error):

```
ONE MANAGER

MENU

1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 1
Enter name of secret: Secret
Enter the secret:
Already secret with name Secret exists. Please use a different name
```

➔ View a Secret (Copy to Clipboard):

```
ONE MANAGER

MENU
1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 2
Enter name of secret: Secret
1) Copy Secret
2) Display Secret
Please select a option [1/2]: 1
Secret has been copied to clipboard. 🍌
```

➔ View a Secret:

```
ONE MANAGER

MENU
1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 2
Enter name of secret: Secret
1) Copy Secret
2) Display Secret
Please select a option [1/2]: 2
The secret is :- API_KEY=KEY
```

➡ View a Secret(Error):

```
ONE MANAGER

MENU

1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 2
Enter name of secret: NOTEXISTS
No secret found with name NOTEXISTS. Please enter a valid name
```

➡ Update a Secret

```
ONE MANAGER

MENU

1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 3
Enter name of secret: Secret
Enter the secret:
Successfully updated secret 🍷
```

➡ Update a Secret(Error):

```
ONE MANAGER

MENU
1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 3
Enter name of secret: NOTEXISTS
Enter the secret:
No secret found with name NOTEXISTS. Please enter a vaild name
```

➡ Delete a Secret:

```
ONE MANAGER

MENU
1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 4
Enter name of secret: Secret
Succesfully deleted secret 🍌
```

➡ Delete a Secret(Error):

```
ONE MANAGER

MENU

1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 4
Enter name of secret: NOTEXITS
No secret found with name NOTEXITS. Please enter a vaild name
```

➡ Generate Random Password & Auto Save:

```
ONE MANAGER

MENU

1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 5
Do you want to store secret [y/n]: y
Enter name of secret: AUTO_GEN_PASSWORD
Succesfully stored secret 🍌
```

➔ Generate Password:

```
ONE MANAGER

MENU
1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 5
Do you want to store secret [y/n]: n
1) Copy Secret
2) Display Secret
Please select a option [1/2]: 2
The secret is :- iJmJdBpV01aZiJpKDKHRYLn8uHjoAwJw
```

➔ Generate Password (Copy to Clipboard):

```
ONE MANAGER

MENU
1) Store a secret
2) View a secret
3) Update a secret
4) Delete a secret
5) Generate random password
6) Exit

Please select a choice [1/2/3/4/5/6]: 5
Do you want to store secret [y/n]: n
1) Copy Secret
2) Display Secret
Please select a option [1/2]: 1
Secret has been copied to clipboard. 🍷
```

➡ Exit

ONE MANAGER

MENU

- 1) Store a secret
- 2) View a secret
- 3) Update a secret
- 4) Delete a secret
- 5) Generate random password
- 6) Exit

Please select a choice [1/2/3/4/5/6]: 6

Good bye 🍌

Press any key to exit ... █

Bibliography:

- ♀ <https://github.com/Textualize/rich>
- ♀ <https://www.psycopg.org/psycopg3/>
- ♀ <https://www.pycryptodome.org/>
- ♀ <https://docs.python.org/3/library/winreg>
- ♀ <https://docs.python.org/3/library/uuid>
- ♀ <https://github.com/googleapis/proto-plus-python>
- ♀ <https://github.com/asweigart/pyperclip>