

## 1 Task

Develop and implement a password manager as a command line application. In today's Internet environment, users need a large number of different passwords in their everyday lives. To ensure that they are sufficiently secure, they should be as long and complex, and they should also not be used more than once. These conditions make it difficult to keep track of one's passwords. A password manager can help here. In principle, a password manager works like a safe. When creating a new password, the application saves it. Alternatively, the password manager can also generate a secure password.

## 2 Requirements

- Users should be able to save entries with a title, username, and password.
- Users should also be able to delete entries with the application itself. The user should be asked interactively for confirmation before deleting.
- The saved data should be stored securely and persistently in the file system.
- Passwords should be generated automatically. Users should be able to specify various options (length, upper/lower case, special characters/symbols, etc.).
- The password manager should be secured with a master password. This is initially chosen by the user and can be changed with the help of the application.
- When entering the master password, it should not appear in plain text.
- The master password is not requested with every query. Once it is typed in by the user currently, it is not requested for a period of time. Set a reasonable time period (5min - 24h) for this yourself.
- Passwords should not be displayed in plain text. When retrieving a password, they should automatically be saved to the clipboard so that it can be directly accessed on so that it can be pasted directly on e. g. a web page. A password may be stored in the clipboard for a maximum of 30 seconds.
- There should be the possibility to output all entries as table in the shell.
- Think of at least two more (useful) functions and implement them.

- Implement the solution in such a way that a script does not have to be started first, but a separate command line command exists (see section 3: Sample Commands).
- Develop and implement your solution as a Bash script, as a C program or as a Python script as free software (open source) and use a code repository for this, e.g. at GitHub.
- The source code should be understandable through comments.

### 3 Sample Commands

Generating new password for Instagram:

```
$ passman add -title instagram -username user123456 -generatepassword
```

*--> OK password created and copied to clipboard*

Retrieve password for Instagram:

```
$ passman copy -title instagram
```

*--> Master-Password:*

*--> Master ok*

*--> Username: uas123456 | password copied to clipboard*