

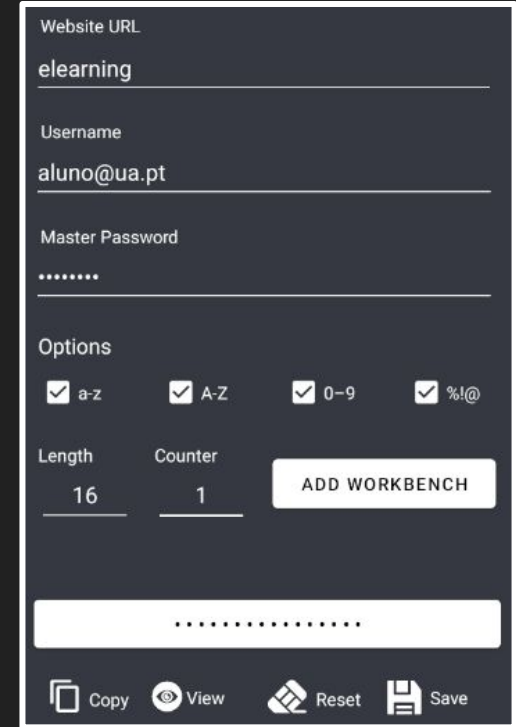
FreePass- A Random and Replicable Password Manager

Computer Science Project 20/21



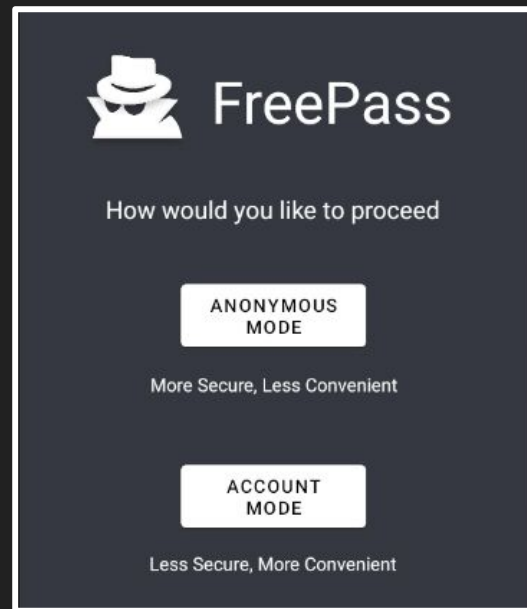
Project Description

- To use the app, the user must enter the URL of the website they're creating an account on; their username; a password they will have to remember and the characteristics of the password they want to generate.
- If the details the user inputs are the same, the generated password will always be the same.

A screenshot of a web application interface for generating a password. The form is dark-themed with white text and input fields. It includes fields for 'Website URL' (containing 'elearning'), 'Username' (containing 'aluno@ua.pt'), and 'Master Password' (masked with dots). Below these are 'Options' for character sets: 'a-z', 'A-Z', '0-9', and '%!@', each with a checked checkbox. There are also 'Length' and 'Counter' fields with values '16' and '1' respectively. An 'ADD WORKBENCH' button is to the right of the counter. At the bottom, a long white box displays the generated password (masked with dots). A footer bar contains four icons with labels: 'Copy', 'View', 'Reset', and 'Save'.

Anonymous or Logged In

- Both the android app and the browser extension allow the user to generate passwords as an anonymous entity or a logged in user.
- If the user is logged in they have the option to save details: i.e. the website URL; the username and additional options (character types; length and counter).



User Data

- We use FireBase to store all the user data.
- This allows the user to create an account with us without having to use a third-party account like google or facebook.
- To ensure the utmost privacy we do not track anything the user does on the app.
- If the user wishes to save their password generating details we make sure to encrypt the website URL and their username.



Password Generating Algorithm

- Developed using Java for the android app and Javascript for the browser extension.
- Uses a “Password Based Key Derivation Function” to generate the password.
- We also repurposed this algorithm to encrypt the previously mentioned user data.



Android Mobile Application

- The android app was developed using Android Studio.
- We made sure that the app is compatible with the most devices possible.
- Any device can be used as long as it's using at least API 16 (Android 4.1 Jelly Bean), that includes 99,8% of Android devices.




Android OS version	Market share ▼
10 (Android 10)	34.9 %
9.0 (Pie)	18.5 %
8.0-8.1 (Oreo)	14.3 %
11 (Android 11)	13.0 %
7.0-7.1 (Nougat)	7.6 %
6.0 (Marshmallow)	5.3 %
5.0-5.1 (Lollipop)	4.2 %
4.4 (KitKat)	1.5 %
4.1-4.3 (Jelly Bean)	0.6 %
4.0 (Ice Cream Sandwich)	0.1 %

Chromium Browser Extension

- Javascript, HTML and CSS.
- Chromium browsers are used by around 76% of the community.
- Has full synchrony with the Android app

FreePass

chrome://newtab/ 

Username

Password

Options

☐ a-z ☐ A-Z ☐ 0-9 ☐ %!@

Length

Count

1

1

Generate password

The Team

Developers:

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The End

Do you have any questions/suggestions?

If not, let's proceed to the
demonstrations...