Checking-Machine Manual

Description

This program simulates the "Checking Machine" used in addition to Bombe to find the Enigma messages key.

A Checking Machine is a simplified Enigma: There is no steckers and rotors (here called drums) are forward or backward by hand. On the other hand, as on a normal Enigma, if you press on a key of the keyboard a lamp lights up.

Simulator using

Walzenlage setting

The first thing to do is to place the drums in their place (Walzenlage setting).

The location of the drums:
- X The leftmost drum. Normally, we put the drum "straight" in this position to work in Enigma M3 emulation mode.
- S (Slow) is the second drum from the left. We put in this place the drum corresponding to the left rotor of an Enigma M3.
- I (Intermediate), it's the third drum from the left. We put in this place the drum corresponding to the middle rotor of an Enigma M3.
- F (Fast) is the fourth drum from the left, so it's the right drum. We put in this place the drum corresponds to the right rotor of an Enigma M3.

WARNING! Encryption is only possible if all positions (X, S, I, F) are occupied by a drum.

WARNING! The simulator works in two modes: modification drums (adding/removing) or modifying the Grundstellung (forward/backward a drum). A checkbox allows you to choose the mode.

WARNING! If you want to change a drum, you must first remove the old one. To do this, we choose the pseudo drum "Empty".

Concretely, we click on the drum you want to use in the bottom area. A frame indicates the selected drum. Then you click on the zone (X,S,I,F) to house the drum. If successful, the zone now houses the selected drum.

If you want to remove a drum, you must choose the "Empty" pseudo-drum in the bottom area. Then, we click on the top area (X,S,I,F) that we want to empty.

Grundstellung setting

To configure the Grundstellung, you must first uncheck the "Add/Remove a Drum" checkbox. You will be in the "Step a Drum" mode.

Changing the Grundstellung of a drum is done by clicking on a drum.

M3 or M4

The simulator can emulate an Enigma M3 or M4.

To emulate an M4, you have to configure a reflector (Uncle Walter or UKW) using the menus. Choose Thin-B or Thin-C. Then, you have to choose the beta or gamma drum in position X (the leftmost drum).

To emulate an Enigma M3, you have to put the drum "straight" in position X (the leftmost drum). Drum straight wiring is simple: A->A, B->B, C->C, ..., Z->Z. Its presence (and its grundstellung) does not change the cipher in any way. The drum straight is completely transparent. By default, the reflector used is B. Via the menus, you can change it (A, B, C, D1).

Note: the simulator working in text mode (check_mach_tui.py) allows to choose any drum at any position. It is therefore more powerful than the graphic simulator.

Encryption

To encrypt a letter, you have to be in "Step a Drum" mode.

The encryption of a letter is done either by a click or by pressing on a key on the keyboard.

On the screen there are two alphabets: the upper one corresponds to the lamps, the lower one corresponds to the keys of the keyboard.

Examples of encryption:

Walzenlage: UKW:B, X: staight, Slow: IV, Intermediate: I, Fast: III

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Grund., clear -> encrypted letter
AONO        H -> B
AONK        H -> A
AONR        A -> J
AOOG        H -> Z
AOOH        Z -> S
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