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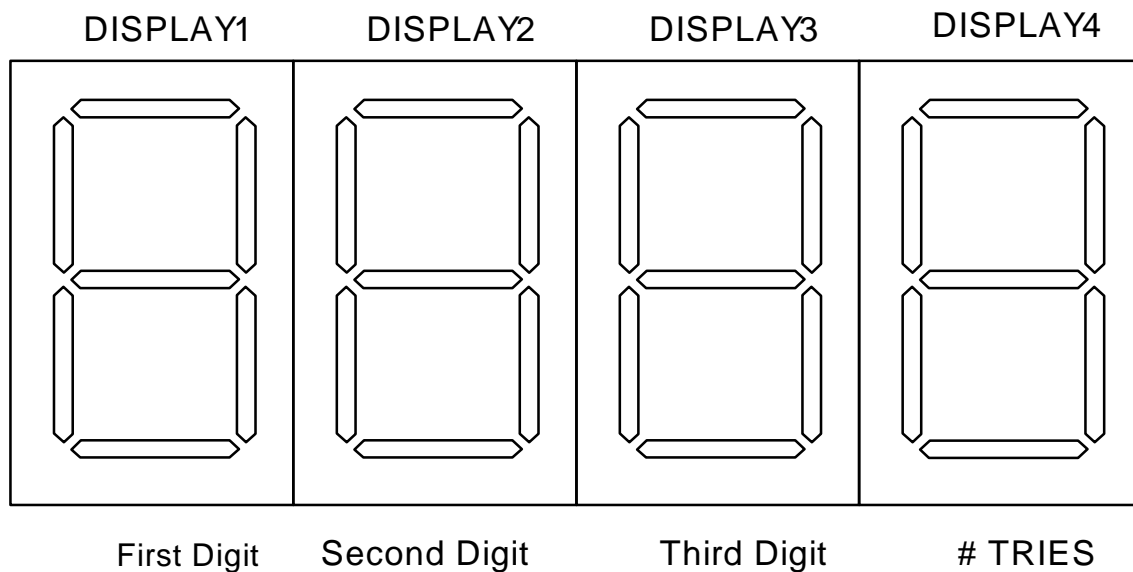
## ECE238: FINAL PROJECT

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### SEMI RANDOM PASSWORD GENERATOR

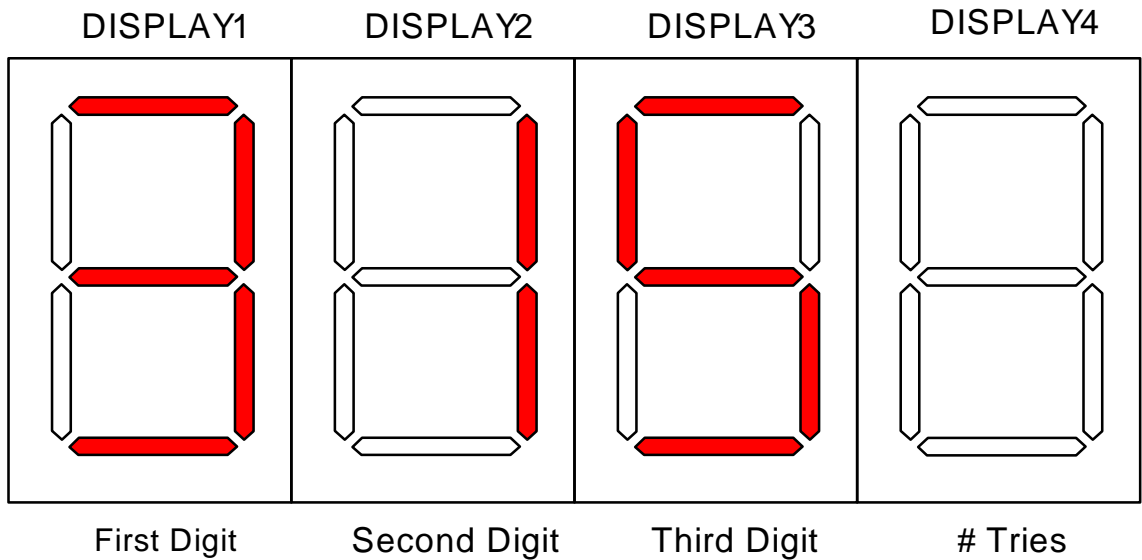
*Objective:*

Design and implement a semi random password generator using the FPGA BOARD. The objective is to generate a numerical password where the first two digits are introduced by the user and the third one is generated randomly by the system. The system will allow only three attempts to introduce the correct code.



*Indications:*

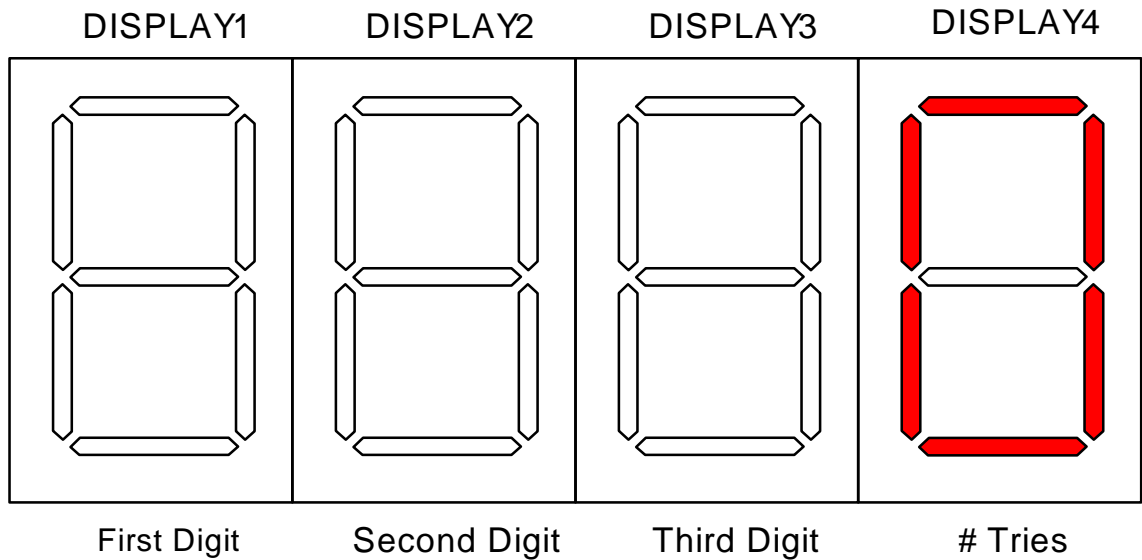
1. The player has to press the 'ENTER' button each time he introduces a digit using the switches of the FPGA BOARD. The digits will appear in the displays until the three digit code is generated.



- After the user introduces the first two digits, the system will generate the third one randomly and will show it when the 'ENTER' button is pressed.

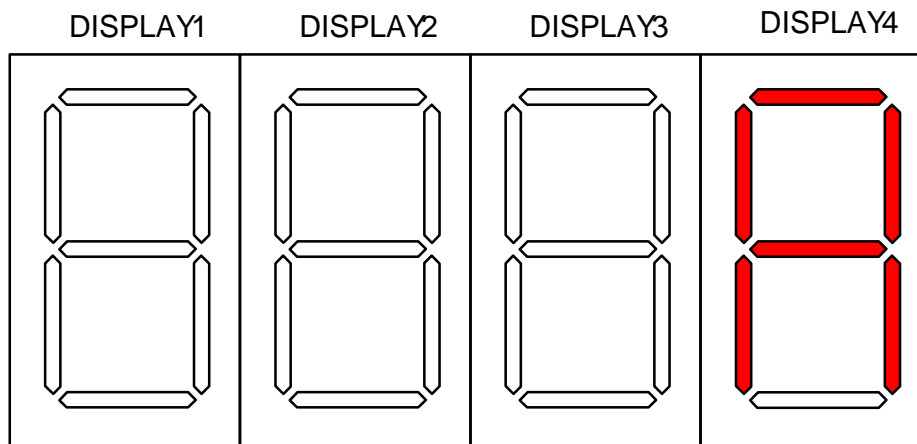
*Notes about the password:*

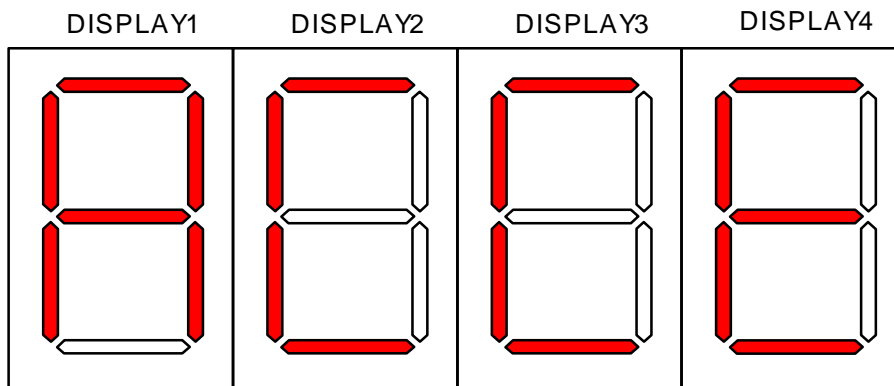
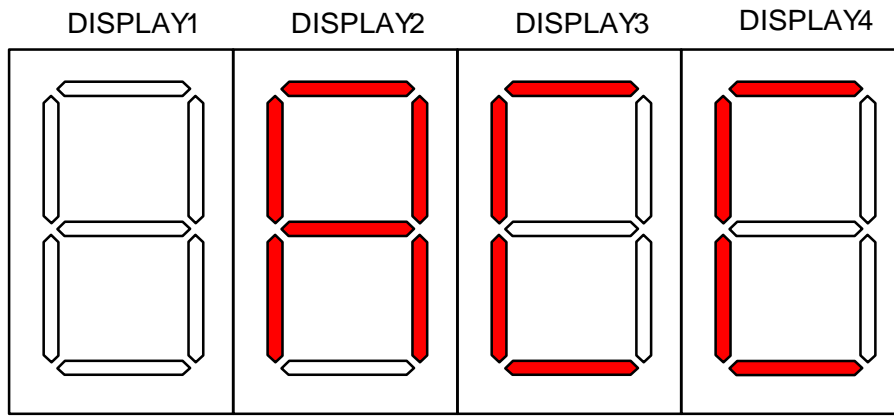
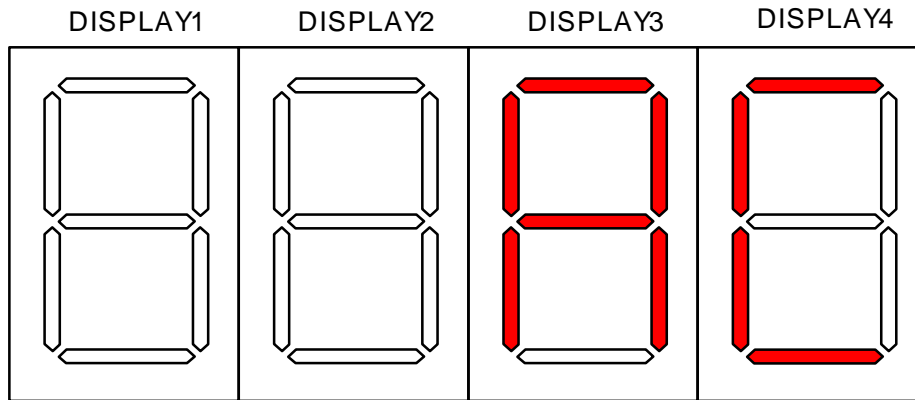
- It consists of three digits.
  - Each digit must be between 0 and 9.
  - All three digits must be different.
- The number of attempts will appear in the fourth display.
  - Once the password is generated, the user will press the 'START' button so that the system will know that it is time to wait for someone to introduce a password. At that moment only the fourth display will show the number of attempts starting at zero.



- Each time the user introduces a number, he will press the 'ENTER' button and the number will appear in the display. This will continue until the three digit password is introduced.
- If it is not the correct password, the system will display the following message 'ACCESS DENIED'. The phrase will appear each letter at a time in the displays. The letters will move from display to display so that it will give the impression that the phrase is moving and it will have to run twice over the four displays, after that the system will show again the number of attempts.

Example:





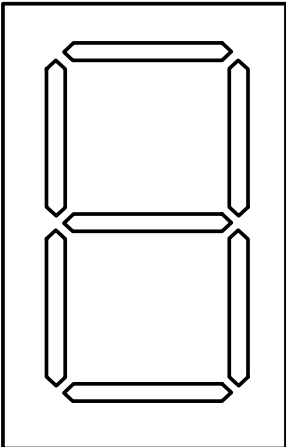
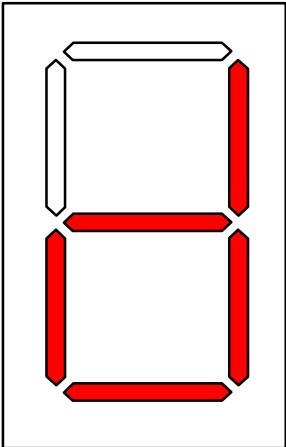
7. If the correct password is introduced, the system will show the following message: 'LOGGED IN' that will be displayed in the same fashion. After the right password is introduced and the message is shown, the system will wait until the 'START' button is pressed so that it will start again. The system will keep the current password

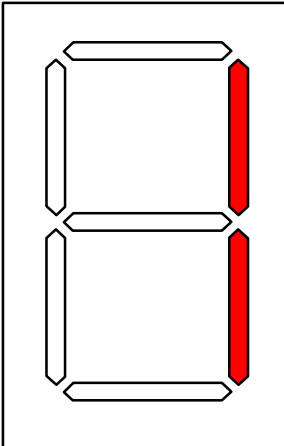
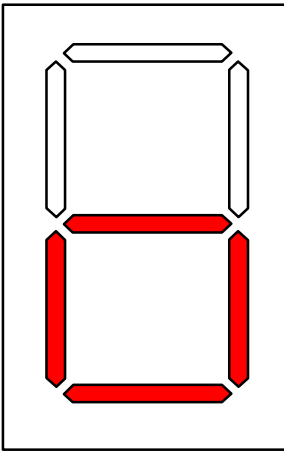
8. If an intruder fails in his attempt to introduce the right password, the system will remain displaying the 'ACCES DENIED' message until the 'RESET' button is pressed which means that the system will start over. It will ask for a new password.

**Bonus:**

9. In the case that the user would like to change the password, he will:
- a) Press the 'CHANGE' button.
  - b) Introduce the first old two digits.
  - c) Press the 'ENTER' button.
  - d) Introduce the new password.
  - e) Press the 'ENTER' button.

**Notes:**

	Display	Means
1		Letter 'N'
2		Letter 'D'

3		Letter 'I'
4		Letter 'O'

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