

## W03 Jan 29 (D3) Cheating e-dice controlled via RS232

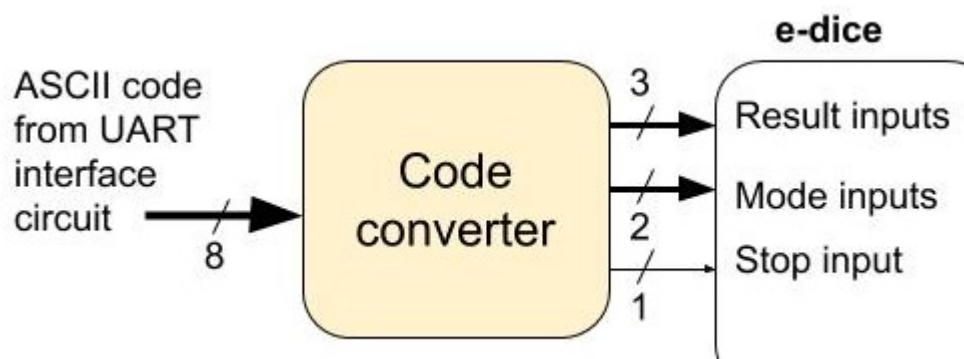
[Jose Ferreira](#)

[All Sections](#)

These questions are presented under the following assumptions:

- They may be selected to be part of the final exam
- Responses must be posted by the students (not me)
- I will call your attention to any mistakes or wrong content posted in response

Assume that we want to replace all switches and buttons in the cheating e-dice by control signals generated from ASCII codes received via RS232, according to the following specs:



- An ASCII code representing a digit  $\geq 1$  and  $\leq 6$  shall drive the equivalent binary pattern to the result inputs (e.g. ASCII code 35H for digit “5” will generate “101” at the result inputs)
- The ASCII codes of the remaining digits (“0”, “7”, “8” and “9”) shall drive the following binary patterns to the mode inputs: “00” for ASCII 30H (no-cheating), “01” for ASCII 37H (forbidden result), “10” for ASCII 38H (predefined result), and “11” for ASCII 39H (triple probability)
- ASCII codes 53H (“S”) and 73H (“s”) should set the stop input to ‘1’ (to stop the e-dice), and ASCII code 20H (space bar) should set it to ‘0’ (running mode)
- Any other ASCII codes must be ignored, and shall not change the previous values driven to the result, mode and stop inputs

Consider the following questions:

1. Represent a block diagram for the entire circuit. Is it an appropriate application for a small FSMD?
2. Create a Vivado project to implement this architecture and check the correctness of your solution by simulation.
3. Program the Basys-3 board and demonstrate the operation of your solution.

Unread



✓ **Subscribe**

← **Reply**