Design Name : Sequence of pre-recorded outputs.

Objective :
   Learn how to design a circuit in order to generate the required output sequence.

Assignment :
   Assume that we have an array of `STD_LOGIC_VECTOR(7 downto 0)` elements.
   Each vector indicate which LEDs are on and/or off. The vectors are output one by one
   with one second intervals. For example, if the array is
   `("01010101", "11111111", "00000000", …)`
   then at first second 01010101 pattern will be seen on the LEDs, and at the 2nd second all
   LEDs will be lit, at third all will be off and so on. The sequence will start over again when
   finished.

   1. Design the circuit that does that. This may just be a counter. Output is the array
      element indexed by the counter. Array size should be used automatically.
   2. Make the vector size 12 bits, where first 4 bits indicate the number of seconds it will
      wait before moving to the next 12-bit word.

Follow Up Work :

   Modify your design so that it will accept a reset input.
   Modify the design so that it accepts an additional input and jumps to M^{th} word when this
   input is given. Determine constant M as you wish (it should be less than the size of the
   array of course)

Homework :

   Modify the design so that it will accept 4 additional inputs. Also, make the vector sizes 12
   bits, 8 of which still controls the LEDS, but high 4 bits work in conjunction with these
   inputs. If the inputs and these 4 bits are same then the jump occurs.