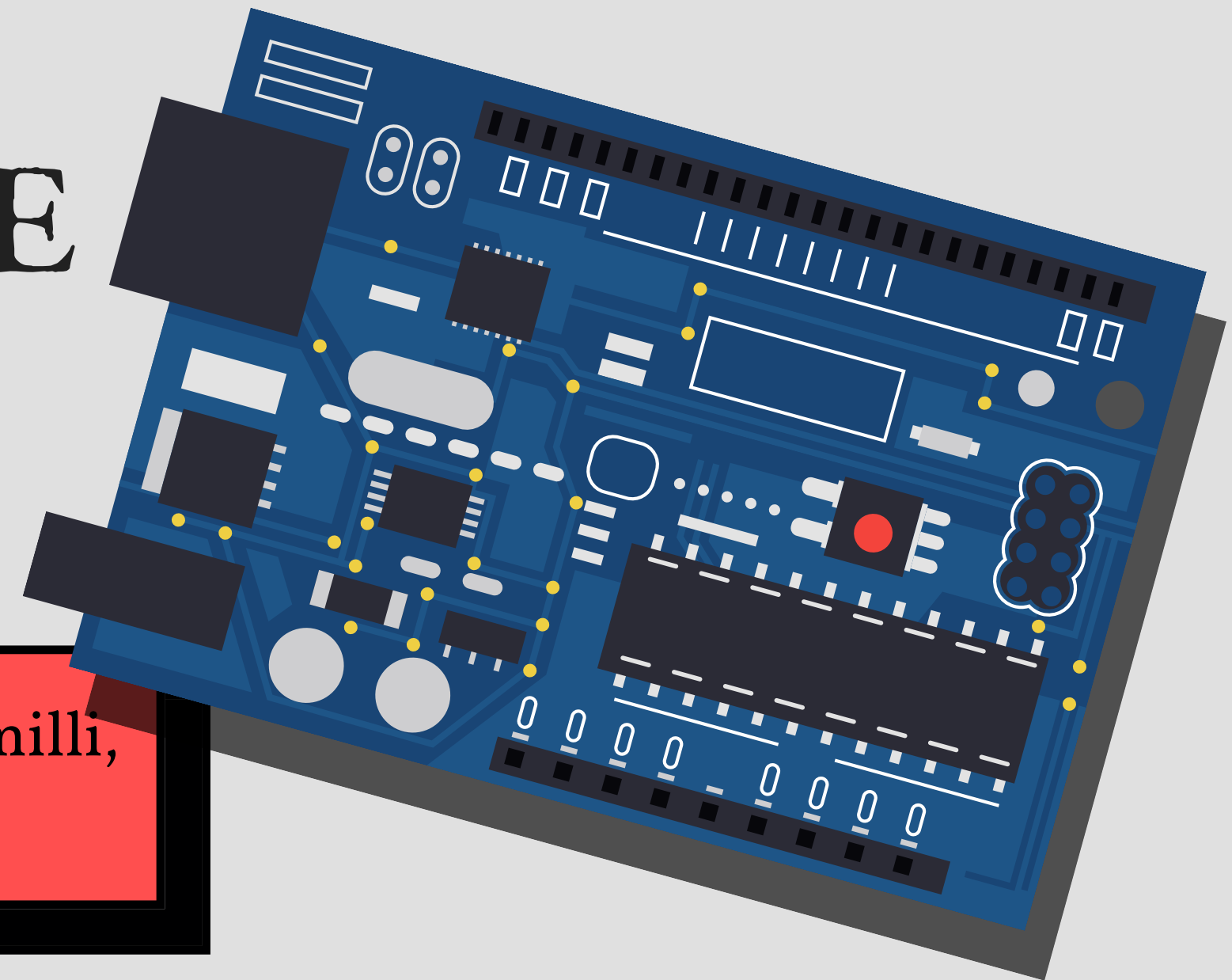
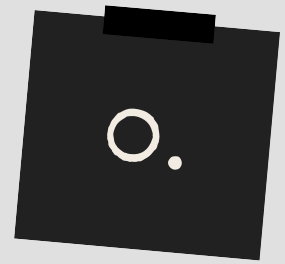


An ECE 5440/6370 Presentation on

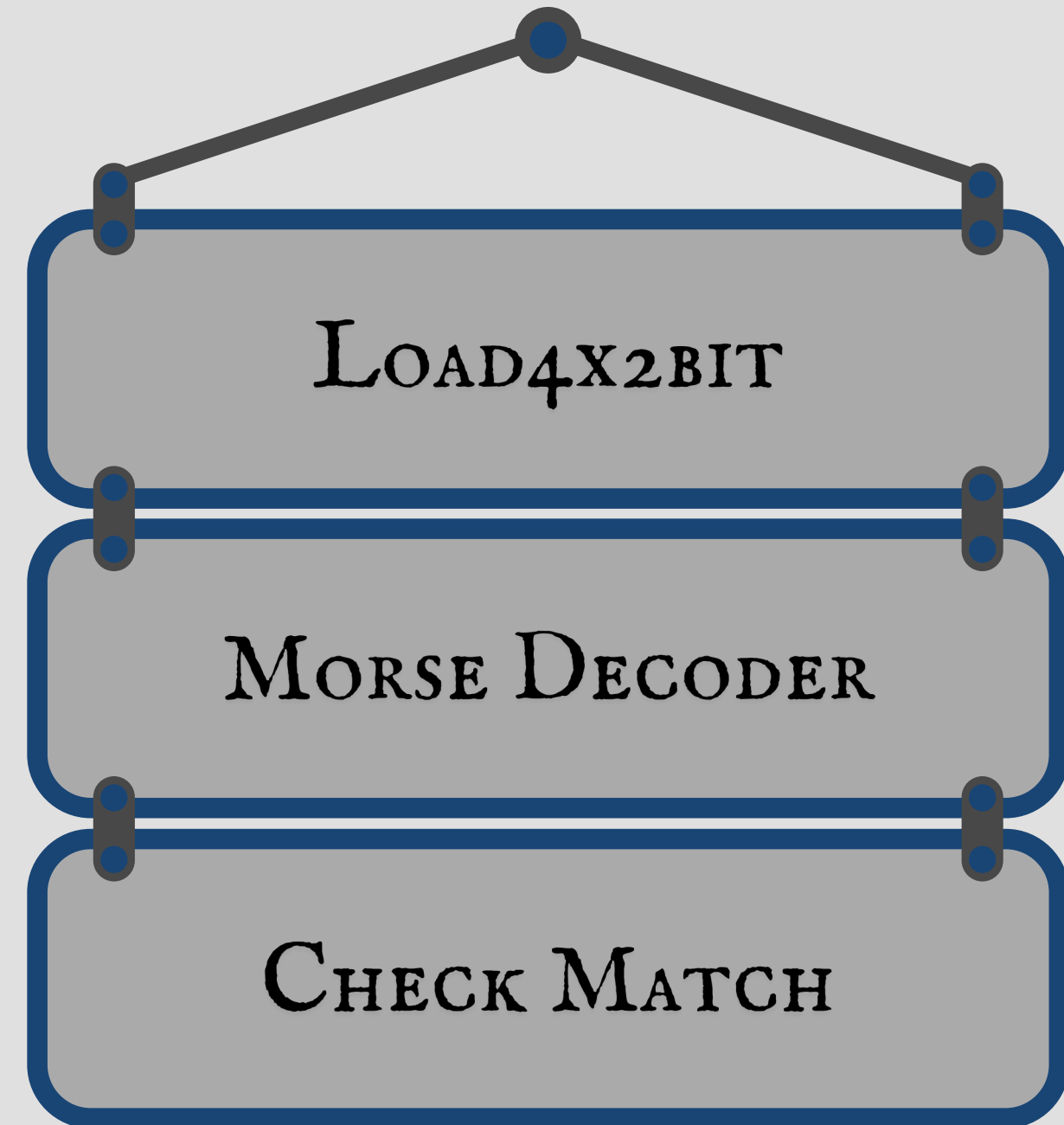
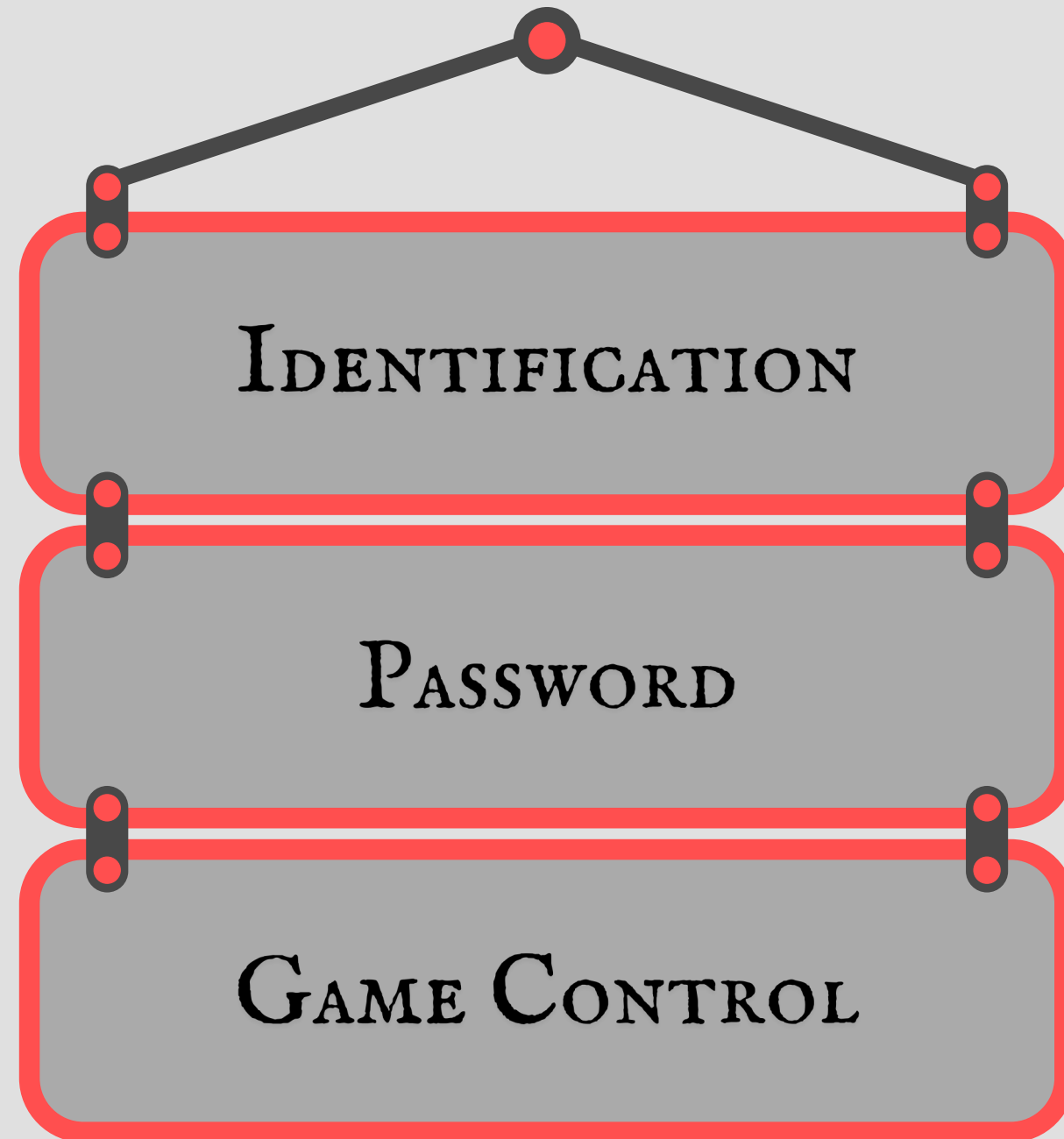
CODEBREAKER: A MORSE CHALLENGE ON FPGA

Mohammad Alkildar, Joshua Onuegbu, Rishabh Nallamilli,
Abdur Aziz & Tri Tin Tran.





SYSTEM ARCHITECTURE



I.

AUTHENTICATION & ACCESS ONTROL

4-DIGIT
IDENTIFICATION
USING 4-BIT
SWITCHES

6-DIGIT
PASSWORD
VERIFICATION
USING 4-BIT
SWITCHES

REAL TIME
LED
FEEDBACK

LOG IN
TRIGGERS GAME
SESSION



II.

GAME LOGIC & TIMING



GAME
CONTROLLER
FSM

99-SECOND
TIMER

BLOCK INPUTS
DURING
INACTIVE
TIMER

SESSION
RESET
&
LOG OUT

III.

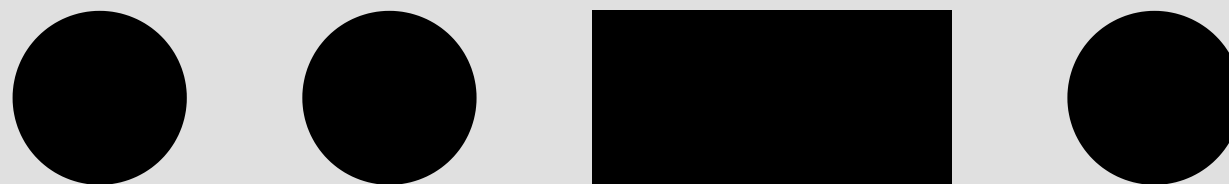
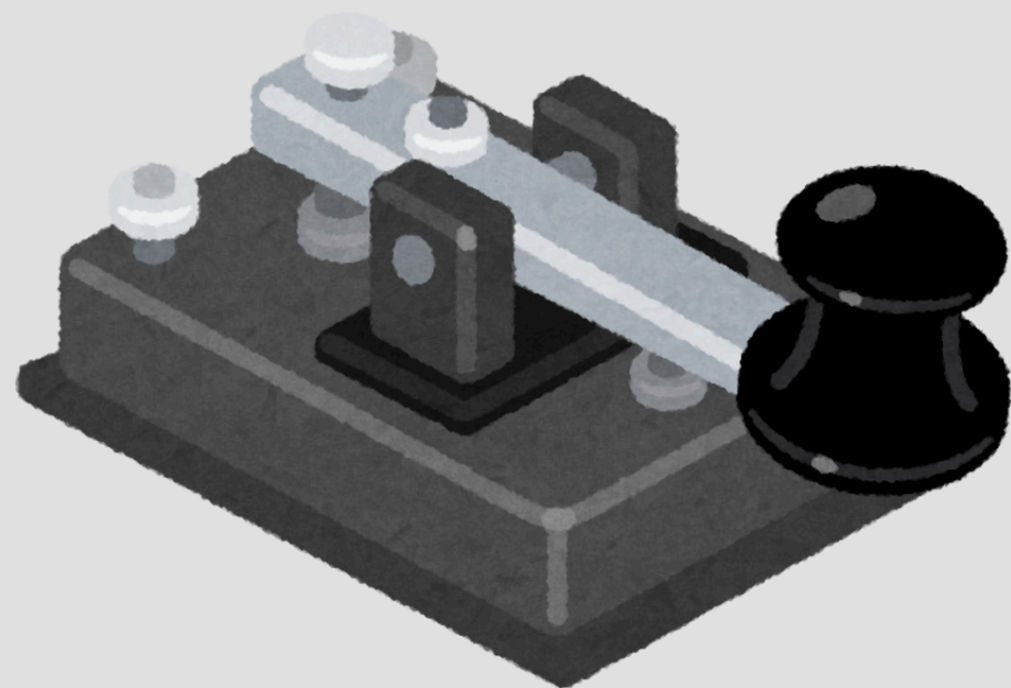
MORSE CODE INPUT & DECODING

2-BIT
REPRESENTATION
FOR SYMBOLS

LOAD4X2BIT
PACKS ENTRIES
INTO 8-BIT
VECTORS

MORSEDECODER
CONVERTS
SEQUENCES TO
ASCII

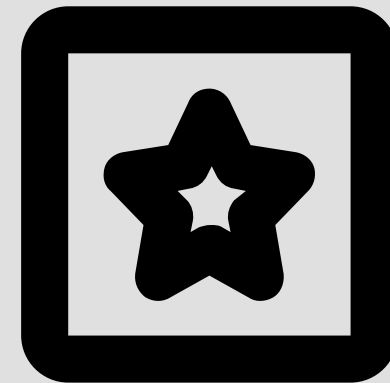
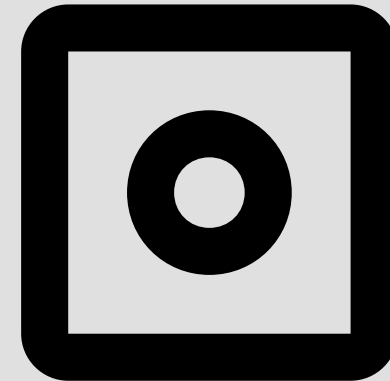
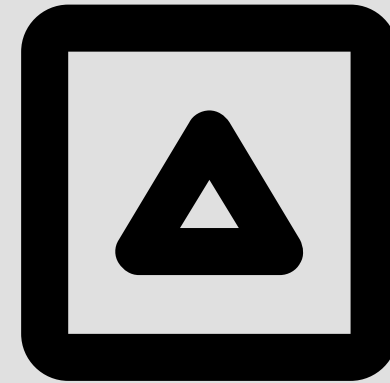
COMPLETE
LETTER
DETECTION
SYSTEM



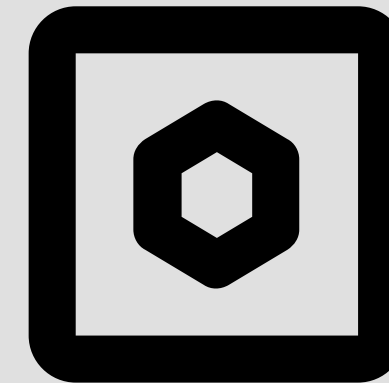
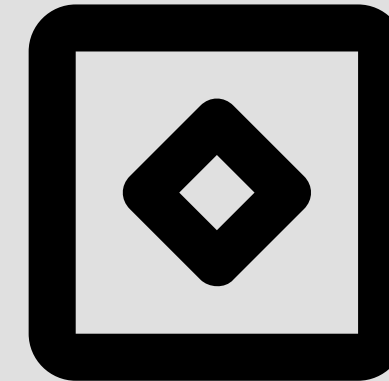
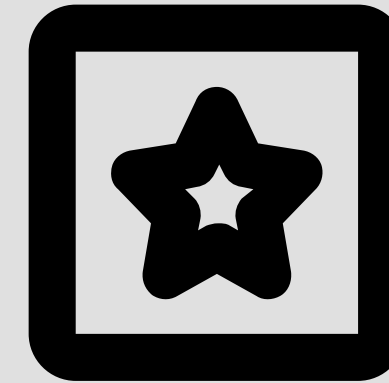
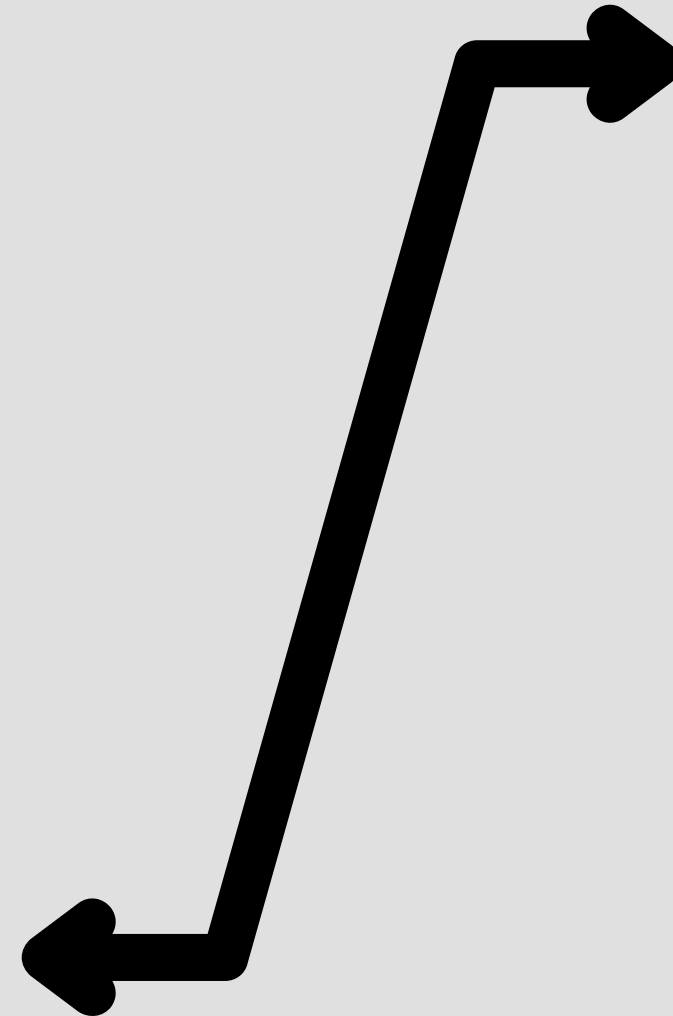
IV.

WORD MATCHING & SCORING

TARGET
WORDS STORED
IN ROM



LFSRRNG
FOR RANDOM
WORD
GENERATION



CHECKMATCH
COMPARES
INPUT AGAINST
TARGETS

POINTS
AWARDED FOR
MATCHES

IV. DISPLAY & FEEDBACK

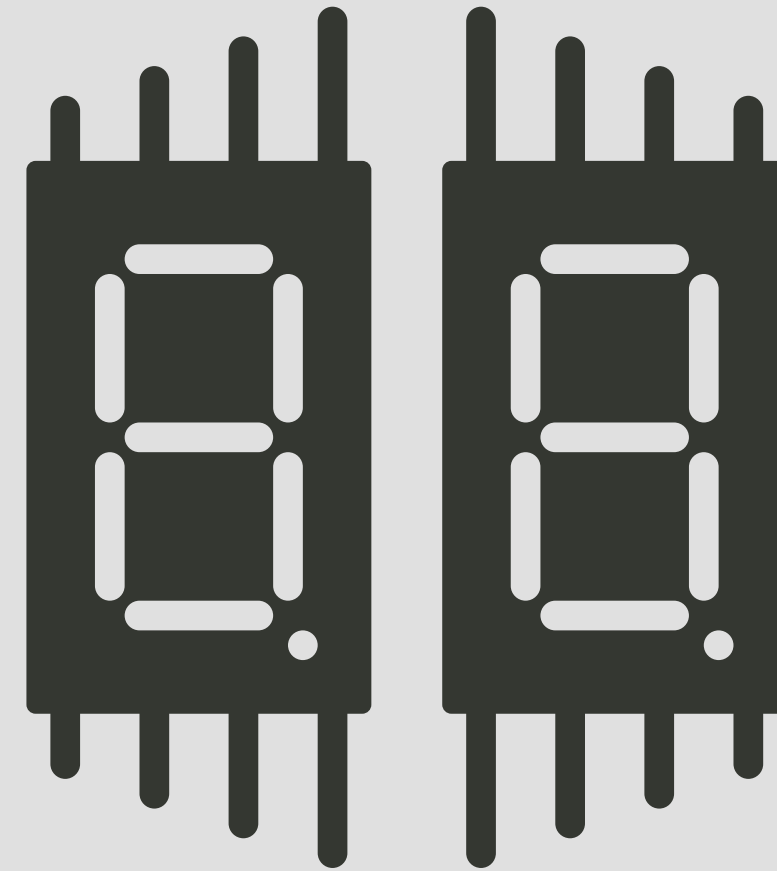


FontROM For
8x8 BITMAP
CHARACTER
RENDERING

640x480
VGA
OUTPUT
AT 60Hz

CONTEXT
DEPENDANT
SCREEN
MATCHES

7 SEGMENT
DISPLAY FOR
COUNTDOWN &
SCORE



THANK

YOU!