

Fireworks (Atari 2600)

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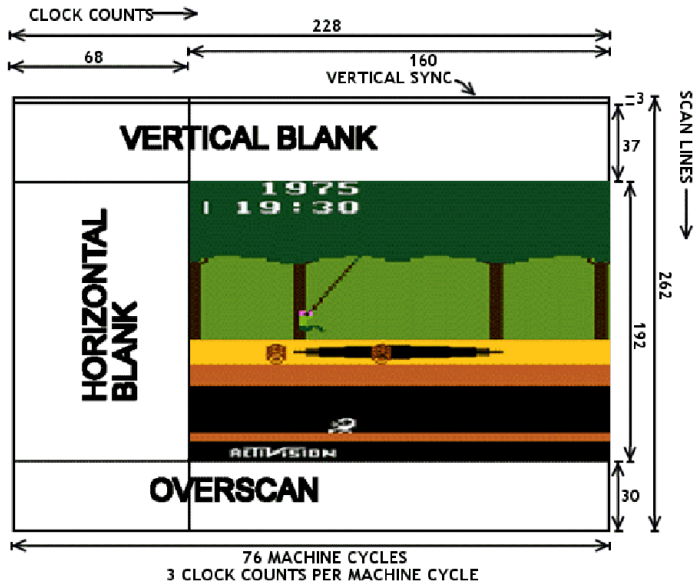
Figure: Atari 2600 Console. 160 x 192 pixels.
4KB ROM. 64KB RAM. 1.16MH.

- Book: Digital Design and Computer Architecture by Sarah Harris
- Online Course: Learn Assembly Language by Making Games for Atari 2600 by Gustavo Pezzi
- Compiler Explorer: C++ to Assembly to see behavior

Cathode Ray Tube Televisions



Figure: CRT Television



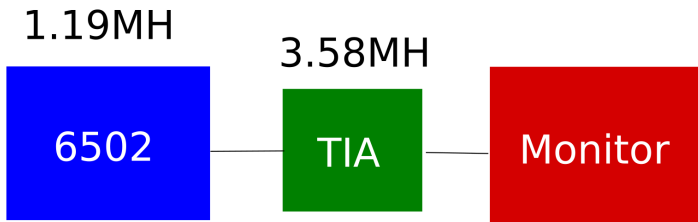


Figure: Television Interface Adaptor Diagram

Code Example

```
;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
;; Check for object collision
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CheckCollisionP0P1:
    lda #%10000000          ; CXPPMM bit 7 detects P0 and P1 collision
    bit CXPPMM              ; check CXPPMM bit 7 with the above pattern
    bne .P0P1Collided       ; if collision P0 and P1 happened, then game over
    jsr SetTerrain          ; else, set river and terrain to green and blue
    jmp CheckCollisionM0P1   ; check next possible collision

.P0P1Collided:
    jsr GameOver            ; call GameOver subroutine

CheckCollisionM0P1:
    lda #%10000000          ; CXM0P bit 7 detects M0 and P1 collision
    bit CXM0P               ; check CXM0P bit 7 with the above pattern
    bne .M0P1Collided       ; collision missile 0 and player 1 happened
    jmp EndCollisionCheck

.M0P1Collided:
    sed
    lda Score
    clc
    sbc #1
    sta Score                ; adds 1 to the Score using decimal mode
    cld
    lda #0
    sta MissileYPos          ; reset the missile position
    lda #1                   ; resetting so that firework can be shot again
```



Fireworks



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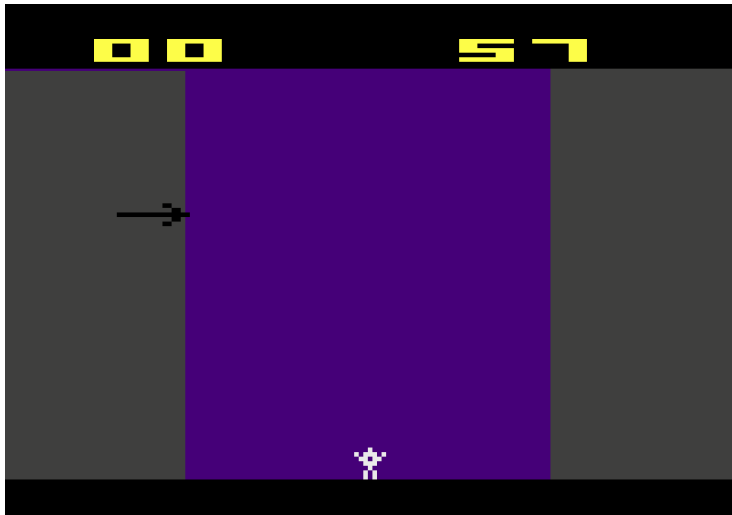


Figure: Use an emulator to run the cart.bin file from itch.
For example Stella Emulator.

Conclusion

- We learned how to manage memory and clock cycles in a constraint environment.
- We learned Assembly and how instruction sets work.
- We learned how CRT Televisions and TIA works.