



## Keychain Virtual Pet - Digimon 1999version

Prepared for: ECE241 Final Project  
Tutorial #: 0106  
Station #: 25  
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6 November 2017

## EXECUTIVE SUMMARY

### Objective

The final project for ECE241 of Station#25 is to designed a Keychain Virtual Pet program, using FPGA to develop in Verilog.

### Goal

- Redesign the cultivating-mode game program and implement it all in the FPGA hardware
- Use the video graphics adapter(VGA) as the output
- Use the controller of Playstation4 Game Console, using IP core, as the input
- Design a Finite State Machine to control the front-end interface
- Design a Finite State Machine to store the back-end database
- Design a Finite State Machine to implement an animation effect of object's movement
- Other techniques including random access memory(RAM), register, shifter, counter, arithmetic logical unit(ALU), multiplexer, and etc, all the key concepts had been taught in ECE241.

### Function

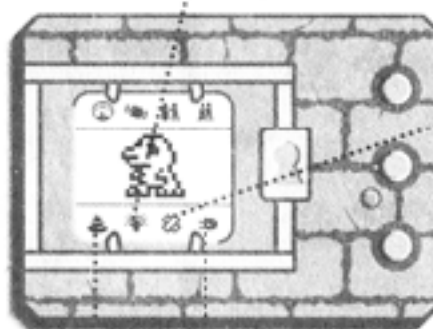
The game starts at hatching an egg. After the hatch, the baby monster will be cultivated by user, in evolution from phase to phase. User can feed the monster and check the status of growing value and age, or some other informations.

#### MONSTER MATCH NOTES

- You can separate the DigiMon after "OK" appears on the screens
- Each DigiMon needs to be set for monster match mode for the battle connect feature to work.
- Your DigiMon will engage in the monster match using his own individual techniques, which you trained him to master.
- When the "HIT" icon blinks onto screen, the champion and defeated DigiMon will appear.
- A skull image blinks on the screen if your DigiMon is injured during the monster match. Press Button "A" to toggle to the Medical icon, then press Button "B"
- How your DigiMon does in battle is based on how well you train him. The better the training, the better the battler!

#### FLUSH:

- 1) Press Button "A" repeatedly until you have highlighted the Flush icon.
- 2) Press Button "B" to Flush .
- 3) Press Button "C" to return to the Main Screen.



#### LIGHTS:

- 1) Press Button "A" repeatedly until you have highlighted the Lights icon.
- 2) Press Button "B" to access the Light On/Lights Off screen.
- 3) Press Button "A" to toggle between Lights On and Lights Off.
- 4) Press Button "B" to apply the selected Lights setting.
- 5) Press Button "C" to return to the Main Screen.



#### MEDICAL:

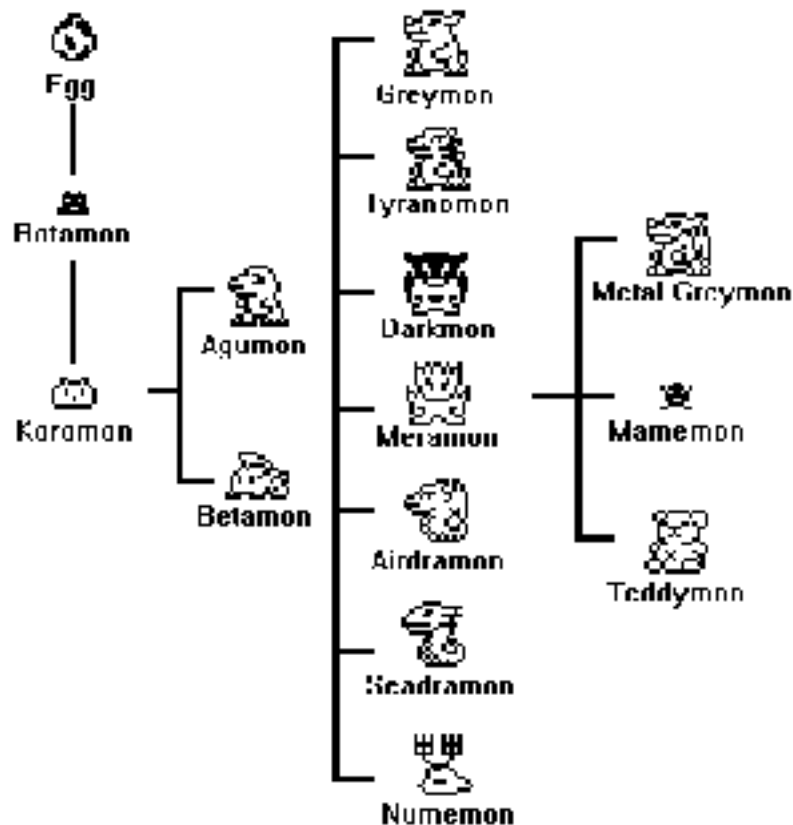
- If your DigiMon sustains injuries during a monster match, be sure to give him Medical attention.
- 1) Press Button "A" repeatedly until you have highlighted the Medical icon.
  - 2) Press Button "B" several times until the skull image disappears.



- 3) Press Button "C" to return to the Main Screen.

**ALERT:** The Alert icon highlights and beeps when DigiMon is hungry or requires training.





## TIMELINE

Work	Object	Week
<ul style="list-style-type: none"> <li>· Kick-off meeting with mentoring TA</li> <li>· Design the flow chart of functions</li> <li>· Work assignment and plan</li> </ul>	1. Product Document 2. Verilog Skeleton 3. Block Diagram	Nov 6 - 7
<ul style="list-style-type: none"> <li>· Implement the basic function without animation effect</li> </ul>	1. Front-end Interface 2. Back-end Database	Nov 8 - 13
<ul style="list-style-type: none"> <li>· Refine the program logic</li> <li>· Add audio and visual effect to the program</li> </ul>	1. Object's movement algorithm 2. Animation of evolution 3. Sync the sound track	Nov 14 - 20
<ul style="list-style-type: none"> <li>· Debug</li> <li>· Add extra controller</li> <li>· Consolidate all footage for final report</li> </ul>	1. Design the fully functions 2. Extra input console	Nov 21 - 27
<ul style="list-style-type: none"> <li>· Write the Final Report</li> </ul>	1. Paper statement handed-in 2. PDF by email	Nov 27 - Dec 4