

# Centipede Game on DE1-SOC Board CSEE E4840

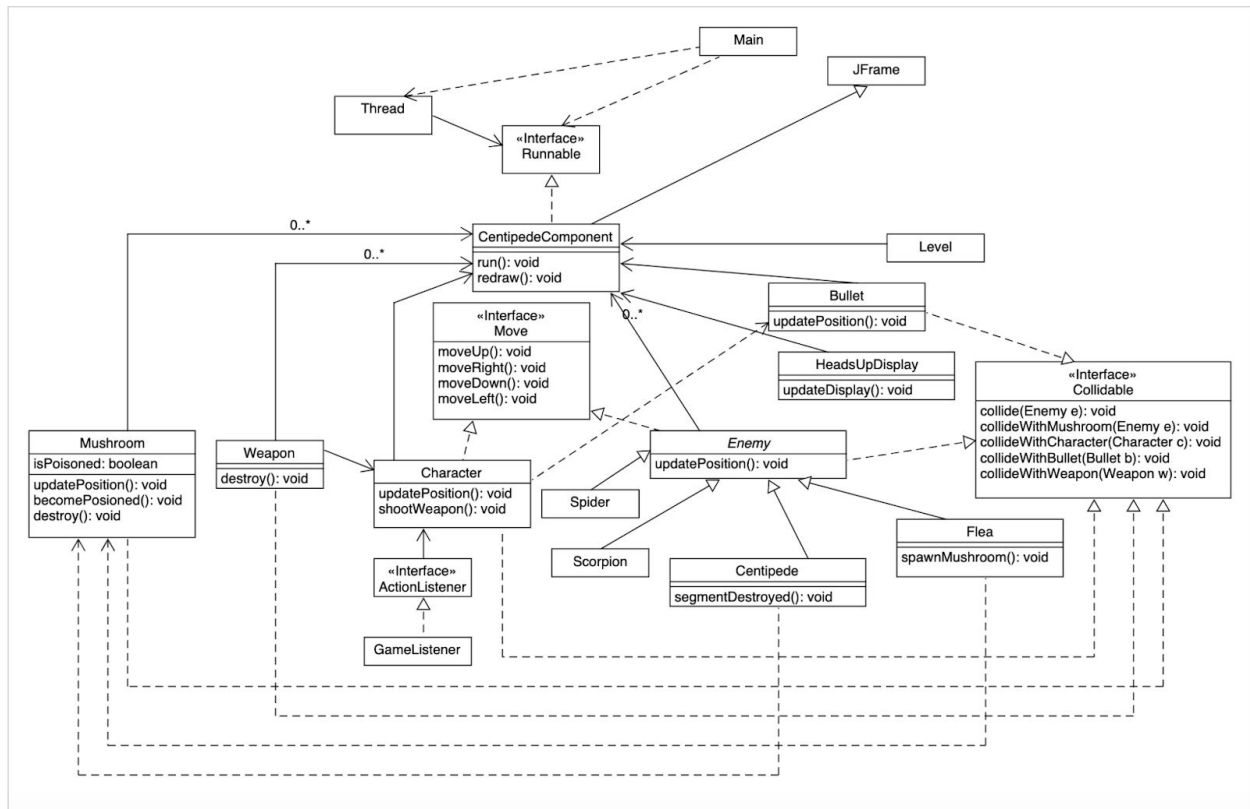
Embedded System – Spring 2019

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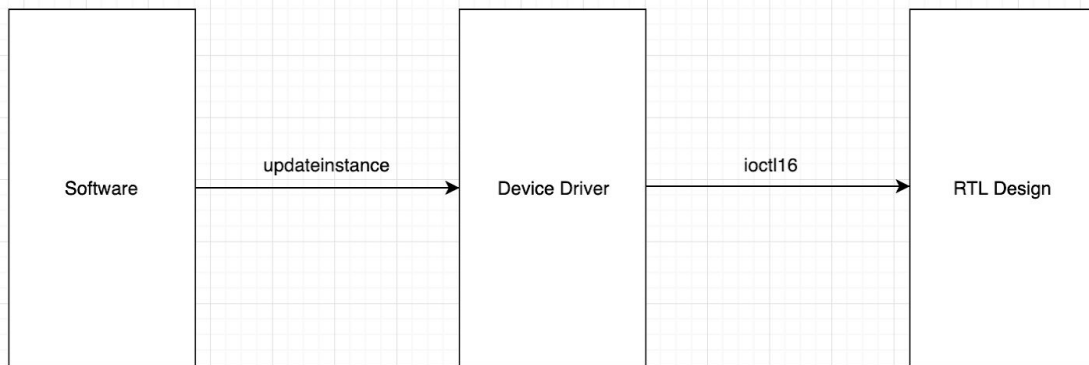
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Software UML Diagram:



The software part contains control logic for the game, including how each object moves, collides and interact with others.

Software/Hardware Interaction Diagram:



In this part, the software will pass a bunch of parameters required for vga displays to the device driver and the device driver will then give them to the hardware via ioctl16. Below is a table of registers required by each object.

Hardware Register Maps:

Objects	Hardware Registers
Mushroom	Mushroom position X and Y, poisoned.
Flea	Flea position X and Y
Centipede	Position X and Y, moving direction, linked length, speed..
Character/Player	Position X and Y
Scorpion	Position X and Y
Weapon	Position X and Y
Spider	Moving Zigzag, position X and Y

We also need sprite for each objects and we plan to find .png files online convert them into hex presentation and store them as sprite memory on FPGA (stored as 2D register values in .sv files). After that, as their registers are filled in with values from software, we can directly use them to display on the screen.