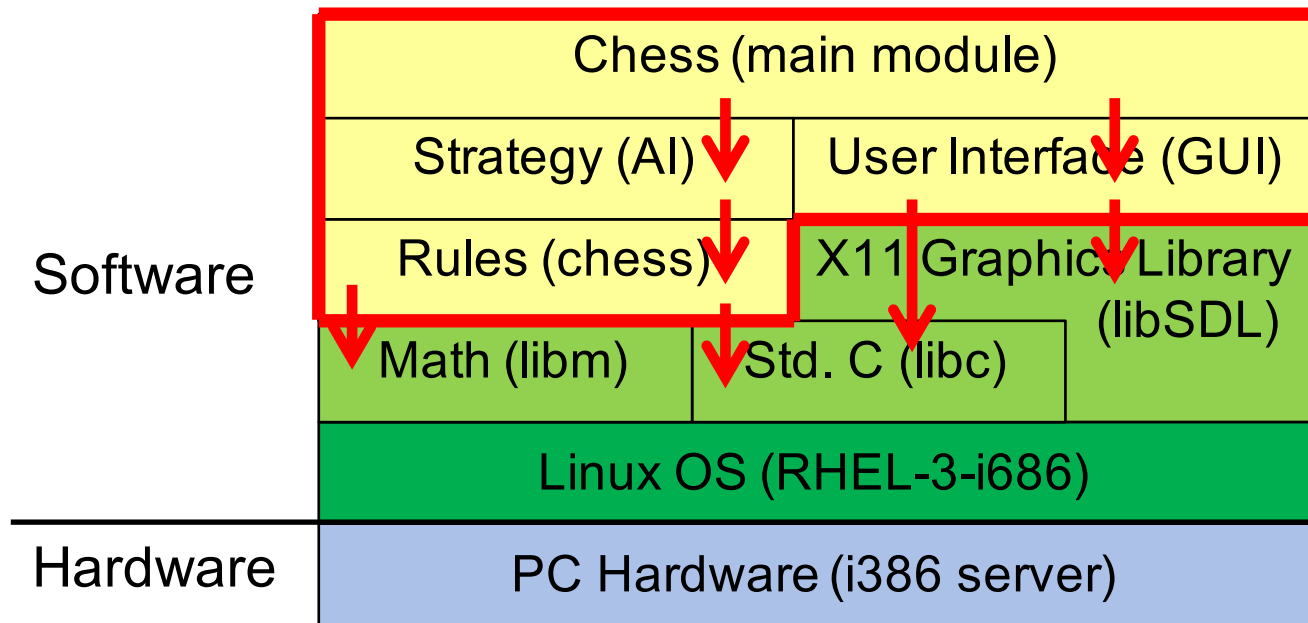




EECS22L LAB DISCUSSION
WEEK 2

PROJECT – CHESS GAME

- Example: Software Layers and Modules
 - Stack of all components in the software architecture
 - Hardware infrastructure
 - Operating system (OS) infrastructure
 - OS and third-party libraries
 - Application modules



PROJECT – CHESS GAME (COND.)

- Required Features in Chess Game
 - Following the official rules of Chess
 - Game Interface (load/save game, game mode selection)
 - Board Display (with ASCII or GUI)
 - Keep the log of all moves in the game
 - Board Setup (in normal or specific way)
 - Different levels of Auto-player (easy to hard)
 - Smart Auto-player (smart AI)
- Desirable Features in Chess Game
 - Timer
 - Hints
 - Audio



PROJECT – CHESS GAME (COND.)

- Design the software architecture specification
 - Modules (in header files)
 - How many modules will you need?
 - What are the APIs for each modules ?
 - Data structures (in header files)
 - How to represent the chess board?
 - How to represent the chess pieces?
 - How to represent moves?
 - Algorithms (on paper first, maybe?)
 - How to keep track of the moves?
 - How to make a random move?
 - How to make the smartest move within one step?
 - How to make the smartest move within two steps?
 - ...



PROJECT – CHESS GAME (COND.)

- Let's use hw5 (Movielab) in EECS22 as an example
 - Modules (in header files)
 - How many modules will you need?
 - module which reads the video into frames
 - module which creates video stream out of those frames
 - module which manipulates the frames to create v-flip, h-flip, or black & white video
 -
 - What are the APIs for each modules ?
 - CreateMoive:
 - Input: number of frames, height and width of image
 - Output: pointer to the data structure storing video
 - Description: allocate memory for the movie and the memory space for the frame lists
 - YUV2RGBImage:
 - Input: pointer to YUV image and RGB image
 - Output:
 - Description: convert pixels in YUV to value in RGB



PROJECT – CHESS GAME (COND.)

- Data structures (in header files)
 - How to represent the video stream?
 - Double-Linked List
 - How to represent the image in the video stream?
 - three 1-d arrays for R/Y, G/U, B/V pixels.
- Algorithms
 - How to convert image to image in Black&White?
 - How to create video playing in reversed order?
 - How to generate Mandelbrot images?



PROJECT – CHESS GAME (COND.)

