Zusammenfassung von der Klausurvorbereitungs- Vorlesung von Weronek Real time:

- what is a real time system?
  - What are the 2 most important requirements in a real time system?
--> correct results and have to meet deadlines
- which are the different kinds of realtime systems, give one example each
--> Hard, soft....
- classifications and Properties of realtime systems
- what are the main requirements for a real time operating system?
--> Timer with small ticks (ns). Synchronization to a time standard. Timers, watchdogs, Alarmclocks?
- How does a timer work?
--> Beispiel am Handy - What is a minor page fault?
--> is when your program memory .... empty, interrupt, exception blablabla
  - examples of realtime operating systems
- absolute vs relative timestamps, difference?
--> t0 changes absolute bad, relative still ok.
- EDD EDF RMS RMS+Ressource. 2 of those will be asked
- how to classify the scheduling strategies. (Fancy picture)
- priority inversion!
- what are the 3
  - schedulability test. Necessity (avg. load <= 1 & Sufficiency test)
- what is the difference between necessity tests and sufficiency tests
- difference process and thread?
- what is the process/thread controll block?
- pstree numbers of processes and threads ... what does it mean
- what issues do we have with concurrencies
--> Deadlock, livelock
- what is a race condition and how can i avoid it?
- Mutex?
- Semaphore?
- Dependency Graph
- Realtime system architectures
- Processor architectures (embedded systems)

--> ISP, ASIP, ASP ... Gate fabrics?

- How does a microcontroller work?
- Development process mircocontroller
--> code, Crosscompile, pack it, flash it onto microcontroller.
- what are the possible components of a microcontroller
--> Interrupt registers, memory, dag, adc, blablabla
- how does a sensor work?
--> transfers physical messure into bits & bytes. Analogue digital controller.
assemble rate. cradularity.
- Myquiest Theorem
  - Aliasing
  --> if you samle slowly... ghost nodes?
- how to set a bit?? on a 7 bit display
- where do you use microcontrollers?
- what is an embedded system?
- what are the requirements of embedded systems?
- distributed RTS? --> ??
- what is a petri net?
--> having places and transitions having directed arcs in between. Marks. Each
place represents a state.
- petri nets
- liveness. safeness of petri nets
- reachabliity graph
- different states of a task in a scheduler
- what is deltaT period and the rate and how do they belong together