Real-Time Operating Systems
Written Exam

1 Question

Consider the task set $\Gamma = \{\tau_i\}$, with $\tau_1 = (2, 20)$ $\tau_2 = (2, 15)$ $\tau_3 = (3, 10)$ $\tau_4 = (3, 15)$ $\tau_5 = (3, 30)$ (assume relative deadlines equal to periods: $D_i = T_i$). If tasks τ_5 and τ_2 share a resource (with τ_5 accessing the resource for 2 time units, and τ_2 accessing the resource for 1 time unit), is the task set schedulable? (chose a proper scheduling algorithm and resource access protocol)

2 Question

Describe the most important differences between a real-time OS kernel and a non real-time OS kernel.

3 Question

Explain the most important steps to build a filesystem image for an embedded device, using *dynamically linked* binaries.

4 Question

Describe how to analyse the sensitivity of a task set to variations in the WCETs of the various tasks. Provide an example of such a sensitivity analysis.