First Phase:

W1:
File: xenomai/include/nucleus/thread.h
Which features occur in this file?

Solution W1:
`CONFIG_XENO_OPT_PERVASIVE`
`CONFIG_XENO_OPT_PRIOPCL`
`CONFIG_XENO_OPT_SCHED_SPORADIC`
`CONFIG_XENO_OPT_SCHED_TP`
`CONFIG_XENO_OPT_SELECT`
`CONFIG_XENO_OPT_TIMING_PERIODIC`
`CONFIG_XENO_OPT_WATCHDOG`

S1:
In which files does feature `CONFIG_XENO_OPT_STATS` occur?

Solution S1:
xenomai/include/nucleus/sched.h
xenomai/include/nucleus/stat.h
xenomai/include/nucleus/timebase.h
xenomai/include/nucleus/timer.h
xenomai/ksrc/nucleus/intr.c
xenomai/ksrc/nucleus/pod.c
xenomai/ksrc/nucleus/sched.c
xenomai/ksrc/nucleus/timebase.c
xenomai/ksrc/nucleus/timer.c

S2:
Do features `CONFIG_XENO_OPT_PRIOCPL` und `CONFIG_XENO_OPT_SCHED_SPORADIC` occur together (i.e., nested) somewhere? If yes, in which files? At which lines does the inner feature start and end?

Solution S2:
xenomai/ksrc/nucleus/sched-sporadic.c
Line 386-416
Line 620-626

S3:
File: xenomai/include/nucleus/sched.h
Which features occur in this file?

Solution S3:
`CONFIG_PROC_FS`
`CONFIG_SMP`
`CONFIG_XENO_HW_FPU`
`CONFIG_XENO_HW_UNLOCKED_SWITCH`

```
CONFIG_XENO_OPT_DEBUG_NUCLEUS
CONFIG_XENO_OPT_PERVASIVE
CONFIG_XENO_OPT_PRIOCPL
CONFIG_XENO_OPT_SCHED_CLASSES
CONFIG_XENO_OPT_SCHED_SPORADIC
CONFIG_XENO_OPT_SCHED_TP
CONFIG_XENO_OPT_STATS
CONFIG_XENO_OPT_WATCHDOG
```

M1:

- Bug Description: If the PEAK parallel port dongle driver (`XENO_DRIVERS_CAN_SJA1000_PEAK_DNG`) should be unloaded, a segmentation fault is thrown.
- The problem occurs, when features `CONFIG_XENO_DRIVERS_CAN` and `CONFIG_XENO_DRIVERS_CAN_SJA1000` and `CONFIG_XENO_DRIVERS_CAN_SJA1000_PEAK_DNG` are selected.

Solution M1:

- ksrc/drivers/can/sja1000/rtcan_peak_dng.c; Zeile 354; function `rtcan_peak_dng_exit`
- leads to an error in Line 356, because the pointer is dereferenced
    - correct: `i < RTCAN_PEAK_DNG_MAX_DEV && dev != NULL`
    - with bug: `i < RTCAN_PEAK_DNG_MAX_DEV`

Second Phase

W2:
File: xenomai/ksrc/nucleus/shadow.c
Which features occur in this file?

Solution W1:

```
CONFIG_MMU
CONFIG_PROC_FS
CONFIG_SMP
CONFIG_XENO_HW_FPU
CONFIG_XENO_OPT_DEBUG_NUCLEUS
CONFIG_XENO_OPT_NUCLEUS
CONFIG_XENO_OPT_PERVASIVE
CONFIG_XENO_OPT_PRIOCPL
```

S4:
In which files does feature `CONFIG_XENO_OPT_PRIOCPL` occur?

Solution S4:
xenomai/include/nucleus/sched-rt.h
xenomai/include/nucleus/sched.h
xenomai/include/nucleus/thread.h
xenomai/ksrc/nucleus/pod.c
xenomai/ksrc/nucleus/sched-rt.c

xenomai/ksrc/nucleus/sched-sporadic.c
xenomai/ksrc/nucleus/sched.c
xenomai/ksrc/nucleus/shadow.c
xenomai/ksrc/nucleus/thread.c

S5:
Do features `CONFIG_XENO_OPT_WATCHDOG` und `CONFIG_PROC_FS` occur together (i.e., nested) somewhere? If yes, in which files? At which lines does the inner feature start and end?

Solution S5:
xenomai/ksrc/nucleus/timer.c; Line 1126-1128

S6:
File: xenomai/ksrc/nucleus/pod.c
Which features occur in this file?

Lösung S6:
```
CONFIG_PROC_FS
CONFIG_SMP
CONFIG_XENO_HW_FPU
CONFIG_XENO_HW_UNLOCKED_SWITCH
CONFIG_XENO_OPT_DEBUG_NUCLEUS
CONFIG_XENO_OPT_NUCLEUS
CONFIG_XENO_OPT_PERVASIVE
CONFIG_XENO_OPT_PRIOCPL
CONFIG_XENO_OPT_SELECT
CONFIG_XENO_OPT_STATS
CONFIG_XENO_OPT_SYS_STACKPOOLSZ
CONFIG_XENO_OPT_WATCHDOG
```

M2:

- Bug Description: When requested memory is freed, a segmentation fault is thrown.
- The bug occurs, when features `CONFIG_XENO_OPT_NUCLEUS` und `CONFIG_XENO_OPT_PERVASIVE` are selected.

Lösung M2:

- ksrc/nucleus/heap.c; Zeile 669 and/or 720; function `xnheap_test_and_free`
- a Nullpointer is dereferenced
    - correct: `if (ckfn && (err = ckfn(block)) != 0)`
    - with bug: `if ((err = ckfn(block)) != 0)`