NAME

sched.h - execution scheduling

SYNOPSIS

```
#include <sched.h>
```

DESCRIPTION

[PS] ⌦ The *<sched.h>* header shall define the type as described in *<sys/types.h>*. ⌫

[SS|TSP] ⌦ The *<sched.h>* header shall define the type as described in *<sys/types.h>*. ⌫

The *<sched.h>* header shall define the **timespec** structure as described in *<time.h>*.

The *<sched.h>* header shall define the structure, which shall include the scheduling parameters required for implementation of each supported scheduling policy. This structure shall include at least the following member:

```
int       sched_priority        Process or thread execution scheduling priority.
```

[SS|TSP] ⌦ **sched_param** structure defined in *<sched.h>* shall include the following members in addition to those specified above:

```
int             sched_ss_low_priority Low scheduling priority for
                                      sporadic server.
struct timespec sched_ss_repl_period  Replenishment period for
                                      sporadic server.
struct timespec sched_ss_init_budget  Initial budget for sporadic server.
int             sched_ss_max_repl     Maximum pending replenishments for
                                      sporadic server.
```

⌫

Each process or thread is controlled by an associated scheduling policy and priority. Associated with each policy is a priority range. Each policy definition specifies the minimum priority range for that policy. The priority ranges for each policy may overlap the priority ranges of other policies.

Four scheduling policies are defined; others may be defined by the implementation. The four standard policies are indicated by the values of the following symbolic constants:

SCHED_FIFO
[PS|TPS] ⌦ First in-first out (FIFO) scheduling policy. ⌫

SCHED_RR
[PS|TPS] ⌦ Round robin scheduling policy. ⌫

SCHED_SPORADIC
[SS|TSP] ⌦ Sporadic server scheduling policy. ⌫

SCHED_OTHER
[PS|TPS] ⌦ Another scheduling policy. ⌫

The values of these constants are distinct.

The following shall be declared as functions and may also be defined as macros. Function prototypes shall be provided.

[PS|TPS]

```
int    sched_get_priority_max(int);
int    sched_get_priority_min(int);
```

[PS]

```
int    sched_getparam(pid_t, struct sched_param *);
int    sched_getscheduler(pid_t);
```

[PS|TPS]

```
int    sched_rr_get_interval(pid_t, struct timespec *);
```

[PS]

```
int    sched_setparam(pid_t, const struct sched_param *);
int    sched_setscheduler(pid_t, int, const struct sched_param *);
```

```
int    sched_yield(void);
```

Inclusion of the *<sched.h>* header may make visible all symbols from the *<time.h>* header.

The following sections are informative.

APPLICATION USAGE

None.

RATIONALE

None.

FUTURE DIRECTIONS

None.

SEE ALSO

<sys/types.h>, *<time.h>*

XSH *sched_get_priority_max*, *sched_getparam*, *sched_getscheduler*, *sched_rr_get_interval*, *sched_setparam*, *sched_setscheduler*, *sched_yield*

CHANGE HISTORY

First released in Issue 5. Included for alignment with the POSIX Realtime Extension.

Issue 6

The *<sched.h>* header is marked as part of the Process Scheduling option.

Sporadic server members are added to the **sched_param** structure, and the SCHED_SPORADIC scheduling policy is added for alignment with IEEE Std 1003.1d-1999.

IEEE PASC Interpretation 1003.1 #108 is applied, correcting the **sched_param** structure whose members *sched_ss_repl_period* and *sched_ss_init_budget* should be type **struct timespec** and not **timespec**.

Symbols from *<time.h>* may be made visible when *<sched.h>* is included.

IEEE Std 1003.1-2001/Cor 1-2002, items XSH/TC1/D6/52 and XSH/TC1/D6/53 are applied, aligning the function prototype shading and margin codes with the System Interfaces volume of IEEE Std 1003.1-2001.

IEEE Std 1003.1-2001/Cor 2-2004, item XBD/TC2/D6/23 is applied, updating the DESCRIPTION to differentiate between thread and process execution.

Issue 7

SD5-XBD-ERN-13 is applied.

Austin Group Interpretation 1003.1-2001 #064 is applied, correcting the options markings.

The *<sched.h>* headers is moved from the Threads option to the Base.

Declarations for the **pid_t** and **time_t** types and the **timespec** structure are added.

End of informative text.

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