libsfmt4253 Reference

PlayStation®Vita Programmer Tool Runtime Library Release 3.50

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Constants

SCE_SFMT4253_ARRAY_SIZE

Array size for SFMT4253 pseudo random number calculation

Definition

```
#include <libsfmt4253.h>
#define SCE_SFMT4253_ARRAY_SIZE     34      /* (4253 / 128) + 1 */
```

Description

This constant defines the array size for pseudo random numbers in conformance with SFMT4253.

In addition to indicating the array size that is maintained as state in the SceSfmt4253Context structure, this constant is also used by the sceSfmt4253FillArray32() and sceSfmt4253FillArray64() functions to indicate the minimum size for generating random numbers.

See Also

SceSfmt4253Context, sceSfmt4253FillArray32(), sceSfmt4253FillArray64()

Datatypes

SceSfmt4253Context

Context information for SFMT4253 pseudo random number calculation

Definition

```
#include <libsfmt4253.h>
typedef struct SceSfmt4253Context {
        unsigned int idx;
        unsigned int sfmt[SCE_SFMT4253_ARRAY_SIZE][4];
} SceSfmt4253Context;
```

Description

This structure is a work area for calculating pseudo random numbers in conformance with SFMT4253. One instance of this work area must be prepared for each random number sequence.

See Also

`SCE_SFMT4253_ARRAY_SIZE`, `sceSfmt4253InitGenRand()`, `sceSfmt4253InitByArray()`

Functions

sceSfmt4253InitGenRand

Initialize SFMT4253 pseudo random number work area

Definition

```
#include <libsfmt4253.h>
SceInt32 sceSfmt4253InitGenRand (
        SceSfmt4253Context *pCtx,
        SceUInt32 seed
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an SceSfmt4253Context structure, which represents a random number sequence as a context.
seed	Specifies a random number sequence.

Return Values

If an error occurs, a negative value is returned.

Value	Result
SCE_OK	Normal completion

Description

This function uses a 32-bit seed to initialize an SFMT4253 random number sequence, which is represented by the SceSfmt4253Context structure. This function must be executed before the sceSfmt4253GenRand32(), sceSfmt4253GenRand64(), sceSfmt4253FillArray32(), and sceSfmt4253FillArray64() functions.

Since only the SceSfmt4253Context structure indicated by *pCtx* is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt4253Context structures.

See Also

SceSfmt4253Context, sceSfmt4253InitByArray()

sceSfmt4253InitByArray

Initialize SFMT4253 pseudo random number work area

Definition

```
#include <libsfmt4253.h>
SceInt32 sceSfmt4253InitByArray (
        SceSfmt4253Context *pCtx,
        const SceUInt32 initkey[],
        SceUInt32 keylength
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an `SceSfmt4253Context` structure, which represents a random number sequence as a context.
initkey	Specifies the array to be used for initializing.
keylength	Number of elements in *initkey*.

Return Values

If an error occurs, a negative value is returned.

Value	Result
`SCE_OK`	Normal completion

Description

This function uses an array of 32-bit seeds to initialize an SFMT4253 random number sequence, which is represented by the `SceSfmt4253Context` structure. This function must be executed before the `sceSfmt4253GenRand32()`, `sceSfmt4253GenRand64()`, `sceSfmt4253FillArray32()`, and `sceSfmt4253FillArray64()` functions.

Since only the `SceSfmt4253Context` structure indicated by *pCtx* is initialized, multiple random number sequences can be handled simultaneously by having multiple `SceSfmt4253Context` structures.

See Also

`SceSfmt4253Context`, `sceSfmt4253InitGenRand()`

sceSfmt4253GenRand32

Generate an SFMT4253 32-bit pseudo random number

Definition

```
#include <libmt4253.h>
SceUInt32 sceSfmt4253GenRand32 (
        SceSfmt4253Context *pCtx
);
```

Calling Conditions

Multithread safe

Arguments

pCtx Pointer to an `SceSfmt4253Context` structure, which represents a random number sequence as a context.

Return Values

32-bit pseudo random number

Description

This function generates a 32-bit pseudo random number that conforms to SFMT4253.

Before using this function, the `SceSfmt4253Context` structure must be initialized by calling the `sceSfmt4253InitGenRand()` or `sceSfmt4253InitByArray()` functions.

See Also

`SceSfmt4253Context`, `sceSfmt4253InitGenRand()`, `sceSfmt4253InitByArray()`

sceSfmt4253GenRand64

Generate an SFMT4253 64-bit pseudo random number

Definition

```
#include <libmt4253.h>
SceUInt64 sceSfmt4253GenRand64 (
        SceSfmt4253Context *pCtx
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an `SceSfmt4253Context` structure, which represents a random number sequence as a context.

Return Values

64-bit pseudo random number

Description

This function generates a 64-bit pseudo random number that conforms to SFMT4253.

Before using this function, the `SceSfmt4253Context` structure must be initialized by calling the `sceSfmt4253InitGenRand()` or `sceSfmt4253InitByArray()` functions.

Note that if the `sceSfmt4253GenRand32()` and `sceSfmt4253GenRand64()` functions are used together and the `sceSfmt4253GenRand64()` function is called after the `sceSfmt4253GenRand32()` function has been called an odd number of times, a full 64-bit random number will not be obtained. Instead, this function will return a 64-bit value in which the upper 32 bits are zero.

See Also

`SceSfmt4253Context`, `sceSfmt4253InitGenRand()`, `sceSfmt4253InitByArray()`

sceSfmt4253FillArray32

Generate an array of SFMT4253 32-bit pseudo random numbers

Definition

```
#include <libmt4253.h>
SceInt32 sceSfmt4253FillArray32 (
        SceSfmt4253Context *pCtx,
        SceUInt32 array[],
        SceUInt32 size
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an `SceSfmt4253Context` structure, which represents a random number sequence as a context.
array	Buffer for receiving the generated random numbers
size	Number of elements in *array* (multiple of 4 that is larger than `SCE_SFMT4253_ARRAY_SIZE*4`)

Return Values

If an error occurs, a negative value is returned.

Value	Result
`SCE_OK`	Normal completion

Description

This function generates an arbitrary number of 32-bit pseudo random numbers that conform to SFMT4253. *size* specifies the number of elements in *array* and must be a multiple of 4 that is larger than (`SCE_SFMT4253_ARRAY_SIZE * 4`).

Before using this function, the `SceSfmt4253Context` structure must be initialized by calling the `sceSfmt4253InitGenRand()` or `sceSfmt4253InitByArray()` functions.

When the `sceSfmt4253FillArray32()` function is used together with the `sceSfmt4253GenRand32()` function, the `sceSfmt4253FillArray32()` function can be called only after the `sceSfmt4253GenRand32()` function has been called (`SCE_SFMT4253_ARRAY_SIZE * 4`) times.

When the `sceSfmt4253FillArray32()` function is used together with the `sceSfmt4253GenRand64()` function, the `sceSfmt4253FillArray32()` function can be called only after the `sceSfmt4253GenRand64()` function has been called (`SCE_SFMT4253_ARRAY_SIZE * 2`) times.

See Also

`SceSfmt4253Context`, `sceSfmt4253InitGenRand()`, `sceSfmt4253InitByArray()`

sceSfmt4253FillArray64

Generate an array of SFMT4253 64-bit pseudo random numbers

Definition

```
#include <libmt4253.h>
SceInt32 sceSfmt4253FillArray64 (
        SceSfmt4253Context *pCtx,
        SceUInt64 array[],
        SceUInt32 size
);
```

Calling Conditions

Multithread safe

Arguments

pCtx Pointer to an SceSfmt4253Context structure, which represents a random number sequence as a context.

array Buffer for receiving the generated random numbers

size Number of elements in *array* (multiple of 2 that is larger than SCE_SFMT4253_ARRAY_SIZE*2)

Return Values

If an error occurs, a negative value is returned.

Value	Result
SCE_OK	Normal completion

Description

This function generates an arbitrary number of 64-bit pseudo random numbers that conform to SFMT4253. *size* specifies the number of elements in *array* and must be a multiple of 2 that is larger than (SCE_SFMT4253_ARRAY_SIZE * 2).

Before using this function, the SceSfmt4253Context structure must be initialized by calling the sceSfmt4253InitGenRand() or sceSfmt4253InitByArray() functions.

When the sceSfmt4253FillArray64() function is used together with the sceSfmt4253GenRand32() function, the sceSfmt4253FillArray64() function can be called only after the sceSfmt4253GenRand32() function has been called (SCE_SFMT4253_ARRAY_SIZE * 4) times.

When the sceSfmt4253FillArray64() function is used together with the sceSfmt4253GenRand64() function, the sceSfmt4253FillArray64() function can be called only after the sceSfmt4253GenRand64() function has been called (SCE_SFMT4253_ARRAY_SIZE * 2) times.

See Also

SceSfmt4253Context, sceSfmt4253InitGenRand(), sceSfmt4253InitByArray()