libsfmt86243 Reference

PlayStation®Vita Programmer Tool Runtime Library Release 3.50

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Constants

SCE_SFMT86243_ARRAY_SIZE

Array size for SFMT86243 pseudo random number calculation

Definition

```
#include <libsfmt86243.h>
#define SCE_SFMT86243_ARRAY_SIZE    674    /* (86243 / 128) + 1 */
```

Description

This constant defines the array size for pseudo random numbers in conformance with SFMT86243.

In addition to indicating the array size that is maintained as state in the `SceSfmt86243Context` structure, this constant is also used by the `sceSfmt86243FillArray32()` and `sceSfmt86243FillArray64()` functions to indicate the minimum size for generating random numbers.

See Also

`SceSfmt86243Context`, `sceSfmt86243FillArray32()`, `sceSfmt86243FillArray64()`

Datatypes

SceSfmt86243Context

Context information for SFMT86243 pseudo random number calculation

Definition

```
#include <libsfmt86243.h>
typedef struct SceSfmt86243Context {
        unsigned int idx;
        unsigned int sfmt[SCE_SFMT86243_ARRAY_SIZE][4];
} SceSfmt86243Context;
```

Description

This structure is a work area for calculating pseudo random numbers in conformance with SFMT86243.

One instance of this work area must be prepared for each random number sequence.

See Also

SCE_SFMT86243_ARRAY_SIZE, sceSfmt86243InitGenRand(), sceSfmt86243InitByArray()

Functions

sceSfmt86243InitGenRand

Initialize SFMT86243 pseudo random number work area

Definition

```
#include <libsfmt86243.h>
SceInt32 sceSfmt86243InitGenRand (
        SceSfmt86243Context *pCtx,
        SceUInt32 seed
);
```

Calling Conditions

Multithread safe

Arguments

pCtx Pointer to an `SceSfmt86243Context` 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 SFMT86243 random number sequence, which is represented by the `SceSfmt86243Context` structure. This function must be executed before the `sceSfmt86243GenRand32()`, `sceSfmt86243GenRand64()`, `sceSfmt86243FillArray32()`, and `sceSfmt86243FillArray64()` functions.

Since only the `SceSfmt86243Context` structure indicated by *pCtx* is initialized, multiple random number sequences can be handled simultaneously by having multiple `SceSfmt86243Context` structures.

See Also

`SceSfmt86243Context`, `sceSfmt86243InitByArray()`

sceSfmt86243InitByArray

Initialize SFMT86243 pseudo random number work area

Definition

```
#include <libsfmt86243.h>
SceInt32 sceSfmt86243InitByArray (
        SceSfmt86243Context *pCtx,
        const SceUInt32 initkey[],
        SceUInt32 keylength
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an SceSfmt86243Context 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 SFMT86243 random number sequence, which is represented by the SceSfmt86243Context structure. This function must be executed before the sceSfmt86243GenRand32(), sceSfmt86243GenRand64(), sceSfmt86243FillArray32(), and sceSfmt86243FillArray64() functions.

Since only the SceSfmt86243Context structure indicated by *pCtx* is initialized, multiple random number sequences can be handled simultaneously by having multiple SceSfmt86243Context structures.

See Also

SceSfmt86243Context, sceSfmt86243InitGenRand()

sceSfmt86243GenRand32

Generate an SFMT86243 32-bit pseudo random number

Definition

```
#include <libmt86243.h>
SceUInt32 sceSfmt86243GenRand32 (
        SceSfmt86243Context *pCtx
);
```

Calling Conditions

Multithread safe

Arguments

pCtx Pointer to an `SceSfmt86243Context` 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 SFMT86243.

Before using this function, the `SceSfmt86243Context` structure must be initialized by calling the `sceSfmt86243InitGenRand()` or `sceSfmt86243InitByArray()` functions.

See Also

`SceSfmt86243Context`, `sceSfmt86243InitGenRand()`, `sceSfmt86243InitByArray()`

sceSfmt86243GenRand64

Generate an SFMT86243 64-bit pseudo random number

Definition

```
#include <libmt86243.h>
SceUInt64 sceSfmt86243GenRand64 (
        SceSfmt86243Context *pCtx
);
```

Calling Conditions

Multithread safe

Arguments

pCtx Pointer to an `SceSfmt86243Context` 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 SFMT86243.

Before using this function, the `SceSfmt86243Context` structure must be initialized by calling the `sceSfmt86243InitGenRand()` or `sceSfmt86243InitByArray()` functions.

Note that if the `sceSfmt86243GenRand32()` and `sceSfmt86243GenRand64()` functions are used together and the `sceSfmt86243GenRand64()` function is called after the `sceSfmt86243GenRand32()` 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

`SceSfmt86243Context`, `sceSfmt86243InitGenRand()`, `sceSfmt86243InitByArray()`

sceSfmt86243FillArray32

Generate an array of SFMT86243 32-bit pseudo random numbers

Definition

```
#include <libmt86243.h>
SceInt32 sceSfmt86243FillArray32 (
        SceSfmt86243Context *pCtx,
        SceUInt32 array[],
        SceUInt32 size
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an SceSfmt86243Context 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_SFMT86243_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 SFMT86243. *size* specifies the number of elements in *array* and must be a multiple of 4 that is larger than (SCE_SFMT86243_ARRAY_SIZE * 4).

Before using this function, the SceSfmt86243Context structure must be initialized by calling the sceSfmt86243InitGenRand() or sceSfmt86243InitByArray() functions.

When the sceSfmt86243FillArray32() function is used together with the sceSfmt86243GenRand32() function, the sceSfmt86243FillArray32() function can be called only after the sceSfmt86243GenRand32() function has been called (SCE_SFMT86243_ARRAY_SIZE * 4) times.

When the sceSfmt86243FillArray32() function is used together with the sceSfmt86243GenRand64() function, the sceSfmt86243FillArray32() function can be called only after the sceSfmt86243GenRand64() function has been called (SCE_SFMT86243_ARRAY_SIZE * 2) times.

See Also

SceSfmt86243Context, sceSfmt86243InitGenRand(), sceSfmt86243InitByArray()

sceSfmt86243FillArray64

Generate an array of SFMT86243 64-bit pseudo random numbers

Definition

```
#include <libmt86243.h>
SceInt32 sceSfmt86243FillArray64 (
        SceSfmt86243Context *pCtx,
        SceUInt64 array[],
        SceUInt32 size
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an SceSfmt86243Context 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_SFMT86243_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 SFMT86243. *size* specifies the number of elements in *array* and must be a multiple of 2 that is larger than (SCE_SFMT86243_ARRAY_SIZE * 2).

Before using this function, the SceSfmt86243Context structure must be initialized by calling the sceSfmt86243InitGenRand() or sceSfmt86243InitByArray() functions.

When the sceSfmt86243FillArray64() function is used together with the sceSfmt86243GenRand32() function, the sceSfmt86243FillArray64() function can be called only after the sceSfmt86243GenRand32() function has been called (SCE_SFMT86243_ARRAY_SIZE * 4) times.

When the sceSfmt86243FillArray64() function is used together with the sceSfmt86243GenRand64() function, the sceSfmt86243FillArray64() function can be called only after the sceSfmt86243GenRand64() function has been called (SCE_SFMT86243_ARRAY_SIZE * 2) times.

See Also

SceSfmt86243Context, sceSfmt86243InitGenRand(), sceSfmt86243InitByArray()