libsfmt216091 Reference

PlayStation®Vita Programmer Tool Runtime Library Release 3.50

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Constants

SCE_SFMT216091_ARRAY_SIZE

Array size for SFMT216091 pseudo random number calculation

Definition

```
#include <libsfmt216091.h>
#define SCE_SFMT216091_ARRAY_SIZE   1689    /* (216091 / 128) + 1 */
```

Description

This constant defines the array size for pseudo random numbers in conformance with SFMT216091.

In addition to indicating the array size that is maintained as state in the `SceSfmt216091Context` structure, this constant is also used by the `sceSfmt216091FillArray32()` and `sceSfmt216091FillArray64()` functions to indicate the minimum size for generating random numbers.

See Also

`SceSfmt216091Context`, `sceSfmt216091FillArray32()`, `sceSfmt216091FillArray64()`

Datatypes

SceSfmt216091Context

Context information for SFMT216091 pseudo random number calculation

Definition

```
#include <libsfmt216091.h>
typedef struct SceSfmt216091Context {
        unsigned int idx;
        unsigned int sfmt[SCE_SFMT216091_ARRAY_SIZE][4];
} SceSfmt216091Context;
```

Description

This structure is a work area for calculating pseudo random numbers in conformance with SFMT216091.

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

See Also

SCE_SFMT216091_ARRAY_SIZE, sceSfmt216091InitGenRand(), sceSfmt216091InitByArray()

Functions

sceSfmt216091InitGenRand

Initialize SFMT216091 pseudo random number work area

Definition

```
#include <libsfmt216091.h>
SceInt32 sceSfmt216091InitGenRand (
        SceSfmt216091Context *pCtx,
        SceUInt32 seed
);
```

Calling Conditions

Multithread safe

Arguments

pCtx Pointer to an `SceSfmt216091Context` 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 SFMT216091 random number sequence, which is represented by the `SceSfmt216091Context` structure. This function must be executed before the `sceSfmt216091GenRand32()`, `sceSfmt216091GenRand64()`, `sceSfmt216091FillArray32()`, and `sceSfmt216091FillArray64()` functions.

Since only the `SceSfmt216091Context` structure indicated by *pCtx* is initialized, multiple random number sequences can be handled simultaneously by having multiple `SceSfmt216091Context` structures.

See Also

`SceSfmt216091Context`, `sceSfmt216091InitByArray()`

sceSfmt216091InitByArray

Initialize SFMT216091 pseudo random number work area

Definition

```
#include <libsfmt216091.h>
SceInt32 sceSfmt216091InitByArray (
        SceSfmt216091Context *pCtx,
        const SceUInt32 initkey[],
        SceUInt32 keylength
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an `SceSfmt216091Context` 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 SFMT216091 random number sequence, which is represented by the `SceSfmt216091Context` structure. This function must be executed before the `sceSfmt216091GenRand32()`, `sceSfmt216091GenRand64()`, `sceSfmt216091FillArray32()`, and `sceSfmt216091FillArray64()` functions.

Since only the `SceSfmt216091Context` structure indicated by *pCtx* is initialized, multiple random number sequences can be handled simultaneously by having multiple `SceSfmt216091Context` structures.

See Also

`SceSfmt216091Context`, `sceSfmt216091InitGenRand()`

sceSfmt216091GenRand32

Generate an SFMT216091 32-bit pseudo random number

Definition

```
#include <libmt216091.h>
SceUInt32 sceSfmt216091GenRand32 (
        SceSfmt216091Context *pCtx
);
```

Calling Conditions

Multithread safe

Arguments

pCtx Pointer to an `SceSfmt216091Context` 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 SFMT216091.

Before using this function, the `SceSfmt216091Context` structure must be initialized by calling the `sceSfmt216091InitGenRand()` or `sceSfmt216091InitByArray()` functions.

See Also

`SceSfmt216091Context`, `sceSfmt216091InitGenRand()`, `sceSfmt216091InitByArray()`

sceSfmt216091GenRand64

Generate an SFMT216091 64-bit pseudo random number

Definition

```
#include <libmt216091.h>
SceUInt64 sceSfmt216091GenRand64 (
        SceSfmt216091Context *pCtx
);
```

Calling Conditions

Multithread safe

Arguments

pCtx Pointer to an `SceSfmt216091Context` 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 SFMT216091.

Before using this function, the `SceSfmt216091Context` structure must be initialized by calling the `sceSfmt216091InitGenRand()` or `sceSfmt216091InitByArray()` functions.

Note that if the `sceSfmt216091GenRand32()` and `sceSfmt216091GenRand64()` functions are used together and the `sceSfmt216091GenRand64()` function is called after the `sceSfmt216091GenRand32()` 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

`SceSfmt216091Context`, `sceSfmt216091InitGenRand()`, `sceSfmt216091InitByArray()`

sceSfmt216091FillArray32

Generate an array of SFMT216091 32-bit pseudo random numbers

Definition

```
#include <libmt216091.h>
SceInt32 sceSfmt216091FillArray32 (
        SceSfmt216091Context *pCtx,
        SceUInt32 array[],
        SceUInt32 size
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an `SceSfmt216091Context` 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_SFMT216091_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 SFMT216091. *size* specifies the number of elements in *array* and must be a multiple of 4 that is larger than (`SCE_SFMT216091_ARRAY_SIZE * 4`).

Before using this function, the `SceSfmt216091Context` structure must be initialized by calling the `sceSfmt216091InitGenRand()` or `sceSfmt216091InitByArray()` functions.

When the `sceSfmt216091FillArray32()` function is used together with the `sceSfmt216091GenRand32()` function, the `sceSfmt216091FillArray32()` function can be called only after the `sceSfmt216091GenRand32()` function has been called (`SCE_SFMT216091_ARRAY_SIZE * 4`) times.

When the `sceSfmt216091FillArray32()` function is used together with the `sceSfmt216091GenRand64()` function, the `sceSfmt216091FillArray32()` function can be called only after the `sceSfmt216091GenRand64()` function has been called (`SCE_SFMT216091_ARRAY_SIZE * 2`) times.

See Also

`SceSfmt216091Context`, `sceSfmt216091InitGenRand()`, `sceSfmt216091InitByArray()`

sceSfmt216091FillArray64

Generate an array of SFMT216091 64-bit pseudo random numbers

Definition

```
#include <libmt216091.h>
SceInt32 sceSfmt216091FillArray64 (
        SceSfmt216091Context *pCtx,
        SceUInt64 array[],
        SceUInt32 size
);
```

Calling Conditions

Multithread safe

Arguments

pCtx	Pointer to an `SceSfmt216091Context` 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_SFMT216091_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 SFMT216091. *size* specifies the number of elements in *array* and must be a multiple of 2 that is larger than (`SCE_SFMT216091_ARRAY_SIZE * 2`).

Before using this function, the `SceSfmt216091Context` structure must be initialized by calling the `sceSfmt216091InitGenRand()` or `sceSfmt216091InitByArray()` functions.

When the `sceSfmt216091FillArray64()` function is used together with the `sceSfmt216091GenRand32()` function, the `sceSfmt216091FillArray64()` function can be called only after the `sceSfmt216091GenRand32()` function has been called (`SCE_SFMT216091_ARRAY_SIZE * 4`) times.

When the `sceSfmt216091FillArray64()` function is used together with the `sceSfmt216091GenRand64()` function, the `sceSfmt216091FillArray64()` function can be called only after the `sceSfmt216091GenRand64()` function has been called (`SCE_SFMT216091_ARRAY_SIZE * 2`) times.

See Also

`SceSfmt216091Context`, `sceSfmt216091InitGenRand()`, `sceSfmt216091InitByArray()`