



LIBNVVM API

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API Reference Manual



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Chapter 1.

MODULES

Here is a list of all modules:

- ▶ Error Handling
- ▶ General Information Query
- ▶ Compilation

1.1. Error Handling

enum nvvmResult

NVVM API call result code.

Values

```
NVVM_SUCCESS = 0
NVVM_ERROR_OUT_OF_MEMORY = 1
NVVM_ERROR_PROGRAM_CREATION_FAILURE = 2
NVVM_ERROR_IR_VERSION_MISMATCH = 3
NVVM_ERROR_INVALID_INPUT = 4
NVVM_ERROR_INVALID_PROGRAM = 5
NVVM_ERROR_INVALID_IR = 6
NVVM_ERROR_INVALID_OPTION = 7
NVVM_ERROR_NO_MODULE_IN_PROGRAM = 8
NVVM_ERROR_COMPILATION = 9
```

`const char *nvvmGetErrorString (nvvmResult result)`

Get the message string for the given nvvmResult code.

Parameters

result

NVVM API result code.

Returns

Message string for the given `nvvmResult` code.

1.2. General Information Query

`nvvmResult nvvmVersion (int *major, int *minor)`

Get the NVVM version.

Parameters

major

NVVM major version number.

minor

NVVM minor version number.

Returns

- ▶ `NVVM_SUCCESS`

1.3. Compilation

`typedef _nvvmProgram *nvvmProgram`

NVVM Program.

An opaque handle for a program

nvvmResult nvvmAddModuleToProgram (nvvmProgram prog, const char *buffer, size_t size, const char *name)

Add a module level NVVM IR to a program.

Parameters

prog

NVVM program.

buffer

NVVM IR module in the bitcode or text representation.

size

Size of the NVVM IR module.

name

Name of the NVVM IR module. If NULL, "<unnamed>" is used as the name.

Returns

- ▶ NVVM_SUCCESS
- ▶ NVVM_ERROR_OUT_OF_MEMORY
- ▶ NVVM_ERROR_INVALID_INPUT
- ▶ NVVM_ERROR_INVALID_PROGRAM

Description

The buffer should contain an NVVM IR module either in the bitcode representation or in the text representation.

nvvmResult nvvmCompileProgram (nvvmProgram prog, int numOptions, const char **options)

Compile the NVVM program.

Parameters

prog

NVVM program.

numOptions

Number of compiler options passed.

options

Compiler options in the form of C string array.

Returns

- ▶ NVVM_SUCCESS

- ▶ NVVM_ERROR_OUT_OF_MEMORY
- ▶ NVVM_ERROR_IR_VERSION_MISMATCH
- ▶ NVVM_ERROR_INVALID_PROGRAM
- ▶ NVVM_ERROR_INVALID_IR
- ▶ NVVM_ERROR_INVALID_OPTION
- ▶ NVVM_ERROR_NO_MODULE_IN_PROGRAM
- ▶ NVVM_ERROR_COMPILATION

Description

The valid compiler options are:

- ▶ -g (enable generation of debugging information)
- ▶ -opt=
 - ▶ 0 (disable optimizations)
 - ▶ 3 (default, enable optimizations)
- ▶ -arch=
 - ▶ compute_20 (default)
 - ▶ compute_30
 - ▶ compute_35
- ▶ -ftz=
 - ▶ 0 (default, preserve denormal values, when performing single-precision floating-point operations)
 - ▶ 1 (flush denormal values to zero, when performing single-precision floating-point operations)
- ▶ -prec-sqrt=
 - ▶ 0 (use a faster approximation for single-precision floating-point square root)
 - ▶ 1 (default, use IEEE round-to-nearest mode for single-precision floating-point square root)
- ▶ -prec-div=
 - ▶ 0 (use a faster approximation for single-precision floating-point division and reciprocals)
 - ▶ 1 (default, use IEEE round-to-nearest mode for single-precision floating-point division and reciprocals)
- ▶ -fma=
 - ▶ 0 (disable FMA contraction)
 - ▶ 1 (default, enable FMA contraction)

nvvmResult nvvmCreateProgram (nvvmProgram *prog)

Create a program, and set the value of its handle to *prog.

Parameters

prog

NVVM program.

Returns

- ▶ NVVM_SUCCESS
- ▶ NVVM_ERROR_OUT_OF_MEMORY
- ▶ NVVM_ERROR_INVALID_PROGRAM

Description

See also:

[nvvmDestroyProgram\(\)](#)

nvvmResult nvvmDestroyProgram (nvvmProgram *prog)

Destroy a program.

Parameters

prog

NVVM program.

Returns

- ▶ NVVM_SUCCESS
- ▶ NVVM_ERROR_INVALID_PROGRAM

Description

See also:

[nvvmCreateProgram\(\)](#)

nvvmResult nvvmGetCompiledResult (nvvmProgram prog, char *buffer)

Get the compiled result.

Parameters

prog

NVVM program.

buffer

Compiled result.

Returns

- ▶ NVVM_SUCCESS
- ▶ NVVM_ERROR_INVALID_PROGRAM

Description

The result is stored in the memory pointed by 'buffer'.

nvvmResult nvvmGetCompiledResultSize (nvvmProgram prog, size_t *bufferSizeRet)

Get the size of the compiled result.

Parameters

prog

NVVM program.

bufferSizeRet

Size of the compiled result (including the trailing NULL).

Returns

- ▶ NVVM_SUCCESS
- ▶ NVVM_ERROR_INVALID_PROGRAM

nvvmResult nvvmGetProgramLog (nvvmProgram prog, char *buffer)

Get the Compiler/Verifier Message.

Parameters

prog

NVVM program program.

buffer

Compilation/Verification log.

Returns

- ▶ NVVM_SUCCESS
- ▶ NVVM_ERROR_INVALID_PROGRAM

Description

The NULL terminated message string is stored in the memory pointed by 'buffer' when the return value is NVVM_SUCCESS.

nvvmResult nvvmGetProgramLogSize (nvvmProgram prog, size_t *bufferSizeRet)

Get the Size of Compiler/Verifier Message.

Parameters

prog

NVVM program.

bufferSizeRet

Size of the compilation/verification log (including the trailing NULL).

Returns

- ▶ NVVM_SUCCESS
- ▶ NVVM_ERROR_INVALID_PROGRAM

Description

The size of the message string (including the trailing NULL) is stored into 'buffer_size_ret' when the return value is NVVM_SUCCESS.

`nvvmResult nvvmVerifyProgram (nvvmProgram prog, int numOptions, const char **options)`

Verify the NVVM program.

Parameters

prog

NVVM program.

numOptions

Number of compiler options passed.

options

Compiler options in the form of C string array.

Returns

- ▶ NVVM_SUCCESS
- ▶ NVVM_ERROR_OUT_OF_MEMORY
- ▶ NVVM_ERROR_IR_VERSION_MISMATCH
- ▶ NVVM_ERROR_INVALID_PROGRAM
- ▶ NVVM_ERROR_INVALID_IR
- ▶ NVVM_ERROR_INVALID_OPTION
- ▶ NVVM_ERROR_NO_MODULE_IN_PROGRAM

Description

The valid compiler options are:

NONE. The `numOptions` and `options` parameters are ignored, and are for future use.

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