

## 1 Overview

**1.1 Location** `$<APPSDKSamplesInstallPath>\samples\opencl\cl\`

**1.2 How to Run** See the *Getting Started* guide for how to build samples. You first must compile the sample.

Use the command line to change to the directory where the executable is located. The pre-compiled sample executable is at `$<APPSDKSamplesInstallPath>\samples\opencl\bin\x86\` for 32-bit builds, and at `$<APPSDKSamplesInstallPath>\samples\opencl\bin\x86_64\` for 64-bit builds.

Ensure that the OpenCL 2.0 environment is installed.

Type the following command(s).

1. `SimpleGenericAddressSpace`  
This runs the program with the default options.
2. `SimpleGenericAddressSpace -h`  
This prints the help file.

**1.3 Command Line Options** Table 1 lists, and briefly describes, the command line options.

**Table 1 Command Line Options**

Short Form	Long Form	Description
-h	--help	Shows all command options and their respective meanings.
	--device	Devices on which the program is to be run. Acceptable values are cpu or gpu.
-q	--quiet	Quiet mode. Suppresses most text output.
-e	--verify	Verify results against reference implementation.
-t	--timing	Print timing related statistics.
	--dump	Dump binary image for all devices.
	--load	Load binary image and execute on device.
	--flags	Specify compiler flags to build the kernel.
-p	platformId	Select platformId to be used (0 to N-1, where N is the number of available platforms).
-d	deviceId	Select deviceId to be used (0 to N-1, where N is the number of available devices).
-v	version	AMD APP SDK version string.
-i	iterations	Number of iterations for kernel execution.

## 2 Introduction

This sample demonstrates the **Generic Address Space** feature introduced in OpenCL 2.0. Generic address space lets the programmer write a single function which, at compile time, can take arguments from any of three named address spaces (*private*, *local* and *global*).

**Note:** A pointer that points to the **constant** address space cannot be cast or implicitly converted to the generic address space.

This sample must be run in the OpenCL 2.0 environment.

## 3 Implementation Details

The sample implements the convolution and sepiaToning filtering operations. This sample uses a *single convolution function*, which is called by the following two kernels with different address spaces:

**ConvolutionGlobalKernel:** This kernel implements convolution operation on global address space. This kernel calls basic convolution functions with image and filter data as parameters, where image data is resides in global address space.

**SepiaToningLocalKernel:** This kernel first implements convolution operation on local address space and then performs sepiaToning filtering operation on convoluted image. This kernel calls basic convolution functions with image and filter data as parameters, where image data is resides in local address space.

## 4 References

1. [The OpenCL Specification, version 2.0, rev 22 document.](#)
2. [The OpenCL C Programming Language \(ver 2.0, rev 22\) document.](#)
3. Convolution filter: [http://www.heterogeneouscompute.org/?page\\_id=7](http://www.heterogeneouscompute.org/?page_id=7).
4. Sepia tone filter: <http://xjaphx.wordpress.com/2011/06/21/image-processing-photographysepia-toning-effect/>.

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