

1 Overview

1.1 Location `$<AMDAPPSDKSamplesInstallPath>\samples\opencl\cl\1.x`

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

`$<AMDAPPSDKSamplesInstallPath>\samples\opencl\bin\x86\` for 32-bit builds, and
`$<AMDAPPSDKSamplesInstallPath>\samples\opencl\bin\x86_64\` for 64-bit builds.

Type the following command(s).

1. `Histogram`
Runs with default options; $x = 1024$, $y = 1024$.
2. `Histogram -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 meaning.
	--device	Devices on which the program is to be run. Acceptable values are <code>cpu</code> or <code>gpu</code> .
-q	--quiet	Quiet mode. Suppresses all text output.
-e	--verify	Verify results against reference implementation.
-t	--timing	Print timing.
	--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.
-x	--width	Width of the input array.
-y	--height	Height of the input array.

Short Form	Long Form	Description
<code>-i</code>	<code>--iterations</code>	Number of iterations for kernel execution.
	<code>--scalar</code>	Run the scalar version of the kernel (Note that the <code>--scalar</code> and <code>-vector</code> options are mutually exclusive.)
	<code>--vector</code>	Run the vector version of the kernel (Note that the <code>--scalar</code> and <code>-vector</code> options are mutually exclusive.)

2 Implementation Details

Each work-item calculates the histogram bin from BIN_SIZE elements. The block histogram bin are calculated from the histogram bins of the work-items of each block. The final histogram bin is calculated from the block histogram bins on the host (CPU) side.

The implementation contains two kernels: a scalar kernel and a vector kernel. The scalar kernel works better on current generation GCN cards. The vector kernel works better on VLIW and previous generation cards. The user can select the kernel using the `--scalar` or `--vector` options; otherwise, preferred vector-width for the device is queried and used. If both `--scalar` and `--vector` are specified, both the options are ignored and the default vector-width will be used.

Contact

Advanced Micro Devices, Inc.
One AMD Place
P.O. Box 3453
Sunnyvale, CA, 94088-3453
Phone: +1.408.749.4000

For AMD Accelerated Parallel Processing:
URL: developer.amd.com/appsdk
Developing: developer.amd.com/
Support: developer.amd.com/appsdksupport



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