AMD **Accelerated**
Parallel Processing
TECHNOLOGY

1 Overview

1.1 Location

`$(AMDAPPSDKSAMPLESROOT)\samples\opencl\cl\app`

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 default executables are placed in `$(AMDAPPSDKSAMPLESROOT)\samples\opencl\bin\x86` for 32-bit builds and `$(AMDAPPSDKSAMPLESROOT)\samples\opencl\bin\x86_64\` for 64-bit builds.

Type the following command(s).

1. `ScanLargeArrays`
   This performs a scan on default array size: 64.

2. `ScanLargeArrays -h`
   This prints the help message.

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 `cpu` or `gpu`.
-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).
-x	--length	Length of the input array.
-i	--iterations	Number of iterations for kernel execution.

2 Implementation Details

The scan is based on a prefix sum; however, the scan is done block-wise, then all blocks are combined into a single result array.

The large array (`size > 2 * MAX_BLOCK_SIZE`), is divided into blocks. Each block is scanned by a thread block. The sum of each block is written to an auxiliary array. The auxiliary array of the block sums is also scanned, which generates an array of block increments. This array is added to all elements of their respective blocks.

3 Recommended Input Option Settings

For best performance, enter the following on the command line: `-x 16777216 -i 10 -q -t`

4 References

Guy E. Blelloch, "Prefix Sums and Their Applications" in: J. H. Reif, *Synthesis of Parallel Algorithms* (Morgan Kaufmann: San Francisco, CA, 1993)

http://www.cs.cmu.edu/afs/cs.cmu.edu/project/scandal/public/papers/CMU-CS-90-190.html