AMD **Accelerated** Parallel Processing TECHNOLOGY

SAMPLE

FFT AMP

1 Overview

1.1 Location

`$<APPSDKSamplesInstallPath>\samples\C++Amp\`

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 `$<APPSDKSamplesInstallPath>\samples\C++Amp\bin\x86\` for 32-bit builds, and `$<APPSDKSamplesInstallPath>\samples\C++Amp\bin\x86_64\` for 64-bit builds.

Type the following command(s).

1. `FFTAMP`

   This computes the FFT with the default options `-s 12`

2. `FFTAMP -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`	Show all command options and their respective meaning.
`-q`	`--quiet`	Quiet mode. Suppresses text output.
`-e`	`--verify`	Verify results against reference implementation.
`-t`	`--timing`	Print timing.
`-v`	`--version`	Shows the AMD APP SDK version string.
`-d`	`--deviceId`	Select the device ID to be used (0 to N-1, where N is the number of available devices).
`-s`	`--size`	Data size in millions with range [1,20].
`-i`	`--iterations`	Number of times to repeat each algorithm.
`-V`	`--arrayview`	Use arrayv_view instead of array.

2 Introduction

This sample implements the Fast Fourier Transform by using C++ Amp. The Cooley-Tukey algorithm is chosen in this implementation. See [1].

3 Implementation Details

The current version supports 512 point, 1D batched transforms. The function FFT_Amp (using array) and the function FFT_Amp_View (using array_view) compute a 512-point FFT across a wide complex vector within a 512x1 grid, each 64x1 tile is responsible for a 512x1 output.

The current versiopn supports:

- both single precision and double precision transforms.
- both forward and inverse transforms.
- only out-of-place transforms.
- only interleaved data format.
- only complex-to-complex transforms.

4 References

1. The Cooley Tukey FFT Algorithm, http://en.wikipedia.org/wiki/Cooley%E2%80%93Tukey_FFT_algorithm

Contact

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