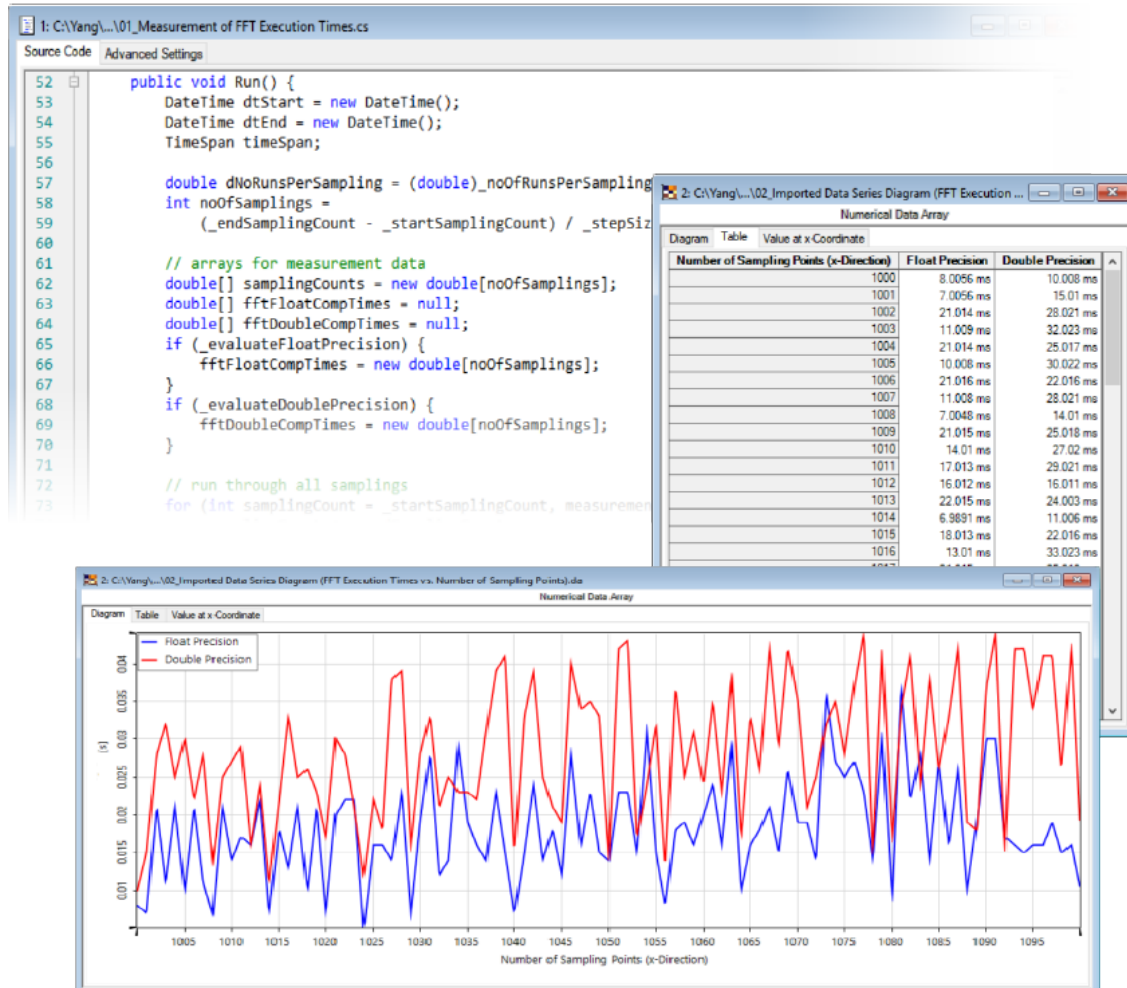


Module for the Measurement of FFT Execution Time

Abstract



The computation time of the fast Fourier transform (FFT) can be sensitively varied with respect to the number of sampling points. By means of this module the FFT execution time for a quadratic field with different numbers of sampling points, in float and/or double precision, can be measured and plotted. The measured FFT execution time can be used as a general measurement of the numerical performance.

Programming a Module that Computes the FFT Execution Time

Task:
Programme a C# module that computes the FFT execution time, regarding to different numbers of sampling points, in float and/or double precision.

```
3: C:\Yang\...\01_Measurement of FFT Execution Times.cs
Source Code  Advanced Settings
52 public void Run() {
53     DateTime dtStart = new DateTime();
54     DateTime dtEnd = new DateTime();
55     TimeSpan timeSpan;
56
57     double dNoRunsPerSampling = (double)_noOfRunsPerSampling;
58     int noOfSamplings =
59         (_endSamplingCount - _startSamplingCount) / _stepSize + 1;
60
61     // arrays for measurement data
62     double[] samplingCounts = new double[noOfSamplings];
63
64
65
66
67
68
69
70
71
```

2: C:\Yang\...\02_Imported Data Series Diagram (FFT Execution Times vs. Number of Sampling Points).da

Numerical Data Array

Diagram Table Value at x-Coordinate

Number of Sampling Points	Float Precision (ms)	Double Precision (ms)
1001	7.0056	15.01
1002	21.014	28.021
1003	11.009	32.023
1004	21.014	25.017
1005	10.008	30.022
1006	21.016	22.016
1007	11.008	28.021
1008	7.0048	14.01
1009	21.015	25.018
1010	14.01	27.02
1011	17.013	29.021
1012	16.012	16.011
1013	22.015	24.003
1014	6.9891	11.006
1015	18.013	22.016
1016	13.01	33.023
1017	21.015	25.018
1018	10.008	26.019
1019	21.015	23.017
1020	7.0057	17.012
1021	20.013	30.021
1022	22.016	28.02
1023	22.016	21.015
1024	5.0033	12.009
1025	16.011	22.016

1001	7.0056 ms	15.01 ms
1002	21.014 ms	28.021 ms
1003	11.009 ms	32.023 ms
1004	21.014 ms	25.017 ms
1005	10.008 ms	30.022 ms
1006	21.016 ms	22.016 ms
1007	11.008 ms	28.021 ms
1008	7.0048 ms	14.01 ms
1009	21.015 ms	25.018 ms
1010	14.01 ms	27.02 ms
1011	17.013 ms	29.021 ms
1012	16.012 ms	16.011 ms
1013	22.015 ms	24.003 ms
1014	6.9891 ms	11.006 ms
1015	18.013 ms	22.016 ms
1016	13.01 ms	33.023 ms
1017	21.015 ms	25.018 ms
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Document Information

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further reading	<ul style="list-style-type: none">- How to Work with the C# Module and Example (Computing the Deviation Between Two Fields)- Programming a Module That Smooths the Edges of a Structure