BenchPress Release 1.0 v21 for NEXT and Intel Processors Running NEXTSTEP.

BenchPress is a tool for benchmarking selected aspects of the NEXTSTEP operating environment. With the migration of NEXTSTEP to the "White World", a wide range of prices and performance may be achieved with NEXTSTEP. The search for the perfect NEXTSTEP machine has begun.

Tensor Information Systems, Inc. has written a set of benchmarks which judge relative performance (not mythical MIPS) on machines running NEXTSTEP. Except for the Dhrystone benchmark, all of the tests are designed to be particularly hard on the NEXTSTEP feature that is the subject of the test. Each of the five test groups is described briefly below.

The times given in the summary for each test were taken from a NeXTstation Color 25 MHZ 68040 box with 32 MB of Ram and 400 MB disk. This configuration has been chosen as the baseline for all relative measurements and is defined to be exactly 100.00 Tensors. The baseline numbers were calculated by running the Benchmark 100 times, selecting 10 random samples with the average time over the 10 samples being the baseline of 100.00 Tensors for each test.

All machines are graded in "Tensors" relative to the baseline machine.

While looking for a unit of measure for this test, we came across this definition in Digital Webster....

ten•sor \ˈten(t)-sər, ˈten-ˌsȯ(ə)r\ *n*
[NL, fr. L *tensus,* pp.]
(1704)
1: a muscle that stretches a part
2: a generalized vector with more than three components each of which is a function of the coordinates of an arbitrary point in space of an appropriate number of dimensions

Since a computer's performance is generally the sum of the integrated components, designed within a complex set of performance trade-offs, the unit "tensors" were chosen to best represent the benchmark unit of measure.

The entire test suite takes less than 7 minutes to complete on a baseline machine. As you will see, results can be quite surprising as each vendor uses different design techniques, and the quality of the key hardware support elements of NEXTSTEP varies. Since testing has began, we have found that many of the computers have extremely fast CPU's but are not equally well suited in the image compositing and large polygon manipulation.

A list is being compiled for a matrix of hardware. If you wish to be on regular email distribution of this list, please send your results or suggestions to the email address below. Be sure to include system configuration as well as all the results of the entire benchmark suite. If you are not on email, you can fax the results to (817) 249-5463.

Mail test results to:
bench@tensor.com

Directions

It is recommended that the test system be rebooted prior to the test, and all other applications(including Preferences) and servers stopped. While the tests are running it is not desirable not to launch any applications or cause any system load by using the mouse. Only the BenchPress main window should remain on the screen while being run. Also, it is advisable to move the mouse to one corner of the screen.

Once the test starts it will run to completion and can only be killed from WorkSpace or from a Terminal Shell. Tests may be run and rerun on an individual basis without erasing results of the others if you wish to repeat a particular test.

System Requirements

Minimum system requirements for this application:

Any computer running NEXTSTEP 3.0 or higher operating system including NEXTSTEP for Intel Processors.

System recommendations:

It is recommended this program be run on a system with 1024 x 768 or greater resolution with 16 MB of RAM.

System Benchmarks

Test Group 1 : Display PostScript Drawing

1. Animate Tensor Logo

   This test animates the Tensor Information Systems logo by mapping it into a window the exact size of the logo, and moving it around on the screen by performing repeated window moves and flushes. This test takes around 15 seconds.

2. Draw Color Ramps

   256 shades of gray are drawn for each of fourteen colors. Each gray shade is drawn in a square 45 pixels on a side. This test takes around 16 seconds.

3. Draw Polygons

   A large octagon is drawn for each of three colors. For each color, the octagon is rotated and redrawn around while the color ramps down to black. This test take around 24 seconds.

4. Draw Lines

   For each of twenty-eight colors a line is drawn at each 10 degree increment in a full circle. At each 10 degree step, the width of the line is increased, and the color is ramped up. This test takes around 24 seconds.

5. Text Manipulation

   For each of twenty-four colors a line of text is drawn at each 5 degree increment in a full circle. At each 5 degree step, the text is scaled, and the color is ramped up. This test takes around 32 seconds.

Test Group 2 : Display PostScript Imaging

1. Image Scaling

   A tiff image is drawn in rectangles of varying sizes. This test takes about 13 seconds.

2. Image Decompression

   This test details the amount of time to decompress the image. It is compressed using JPEG with a Q-factor of 10. This test takes about 4 seconds.

3. Image Composting

   This data test the amount of time necessary to composite a tiff image to 200 unique moving positions on the screen. This test takes about 16 seconds.

Test Group 3 : Threads

1. 50 Threads

   50 time wasting threads are created to compete for the CPU. This test takes about 11 seconds.

2. 100 Threads

   100 time wasting threads are created to compete for the CPU. This test takes about 20 seconds.

Test Group 4 : CPU Benchmarks

1. Dhrystone Benchmark

   A public domain dhrystone benchmark. The benchmark on the 25 MHZ 040 NeXT box was 30232 dhrystones per second. This test takes about 17 seconds

2. Floating Point

   This test performs several million floating point adds, subtracts, multiplies, and divides. This test takes about 14 seconds.

3. Integer

This test performs several million integer adds, subtracts, multiplies and divides. This test takes about 7 seconds.

4. Trignometric

This test exercises the trignometric functions used in many scientific and imaging applications. This test takes about 20 seconds.

Test Group 5 : Disk I/O

1. Seeking

Bunches of lseek operations are performed. This test takes about 26 seconds.

2. Writing

A 1 megabyte temp file is written to disk one word at a time (don't worry, the app deletes the file before it terminates). This test takes about 20 seconds.

3. Reading Sequentially

A 1 megabyte file is read from the disk in sequence, with varying block sizes. This test takes about 21 seconds.

4. Reading Randomly

A 1 megabyte file is read from the disk with varying block sizes, with the read not performed in sequence. This test takes about 65 seconds.

Compiler

This application was compiled using version cc-210.obj~2, gcc version 2.2.2 running NEXTSTEP for Intel Processors NEXTSTEP 3.1.

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