Prime Savage

The Savage Benchmark

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- The Savage benchmark consists of repeatedly calculating:
  - X = 1 + TAN(ATAN(EXP(LN(SQRT(SQ(X))))))

- for X from 1 to 2499. On the HP48g, up to the HP50g this can be written as:

- << DEPTH →LIST 'STKTMP' STO TICKS 'TTMP' STO 1. 1. 2499. START SQ √ LN EXP ATAN TAN 1. + NEXT TICKS TTMP - B→R 8192. ÷ 'TTMP' STO 'XTMP' STO STKTMP OBJ→ DROP XTMP TTMP >>
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Times on Saturn machines

- On the HP48SX this took 195 seconds.

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- The HP48GX, introduced 3 years later, took 115 seconds.

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- The HP49G, 6 years later, took 112 seconds.

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- The HP50g, another 7 years on, took 65 seconds.

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- All gave a result of 2499.99948647. Indeed all calculators based on the Saturn processor, or emulations of it, have given the same result, right back from the HP-71B.

Savage on the Prime

- EXPORT SVG()
- BEGIN
- X:=1;
- T:=TICKS;
- FOR N FROM 1 to 2499 DO
- X:=1+TAN(ATAN(e^(LN($\sqrt{(X^2)}$))));
- END;
- U:=TICKS;
- T:=(U-T)/1000;
- PRINT(T+" SECS, RESULT " +X);
- END;

Result & comments

- On the Prime, the time taken was 0.57 sec.
- Whereas previous top-of-the-range models, introduced about every 5 years on average, had typically managed an improvement by about a factor of 2 each time, the HP Prime has improved the speed by a factor of over 100. The HP Prime rules!

Extra remarks

- The Prime has a command TIME(program), but I wanted to time just the loop, not the parts to display the time and the result, so I used TICKS.

- On the Prime, TICKS gives the number of ms since the calculator was reset, so the time in seconds is the number of ticks divided by 1000, not by 8192.

- I would have liked to use the Prime's ITERATE command to perform the loop, but I found that ITERATE only works for a maximum of 200 iterations; beyond that it gives a totally misleading message about an illegal input value, is this a bug?

Thank you

- Thank you for listening

- Thank you HP for the HP Prime