

DIGITS

1000

PUN IN ORBIT

Said a rocket man, winking an eye,
"Into orbits computers must fly.
Now it might be more sound,
If they stayed on the ground,
But the people want p in the sky."

-Hilbert Schenck, JR.

Math. Magpie, p. 292

Binary

11.

```
0010010000 1111110110 1010100010 0010000101 1010001100
0010001101 0011000100 1100011001 1000101000 1011100000
0011011100 0001110011 0100010010 1001000000 1001001110
0000100010 0010100110 0111110011 0001110100 0000001000
0010111011 1110101001 1000111011 0001001110 0110110010
0010010100 0101001010 0000100001 1110011000 1110001101
0000000100 1101110111 1011111001 0101000110 0110110011
1100110100 1110100100 0011000110 1100110000 0010101100
0010100110 1101111100 1001011111 0001010000 1101110100
1111111000 0100110101 0110110101 1011010101 0001110000
1001000101 1110010010 0001011011 0101011101 1001100010
0101111001 1111101100 0110111101 0001001100 0100001011
1010011010 0110001101 1111101101 0110101100 0010111111
1111010111 0010110110 1111010000 0001101011 0111111011
0111101110 0011100001 1010111111 1011010110 1010001001
1001111110 1001011010 1110100111 1100100100 0001000101
1111000100 1011000111 1111100110 0100100100 1010000110
0110010100 0111101100 1110010001 0110110011 1101110000
1000000000 0111110010 1110001010 0001011000 1110111111
0000010110 0110001101 1010010010 0000110110 0001110001
```

Decimal

3.

1415926535 8979323846 2643383279 5028841971 6939937510
5820974944 5923078164 0628620899 8628034825 3421170679
8214808651 3282306647 0938446095 5058223172 5359408128
4811174502 8410270193 8521105559 6446229489 5493038196
4428810975 6659334461 2847564823 3786783165 2712019091
4564856692 3460348610 4543266482 1339360726 0249141273
7245870066 0631558817 4881520920 9628292540 9171536436
7892590360 0113305305 4882046652 1384146951 9415116094
3305727036 5759591953 0921861173 8193261179 3105118548
0744623799 6274956735 1885752724 8912279381 8301194912
9833673362 4406566430 8602139494 6395224737 1907021798
6094370277 0539217176 2931767523 8467481846 7669405132
0005681271 4526356082 7785771342 7577896091 7363717872
1468440901 2249534301 4654958537 1050792279 6892589235
4201995611 2129021960 8640344181 5981362977 4771309960
5187072113 4999999837 2978049951 0597317328 1609631859
5024459455 3469083026 4252230825 3344685035 2619311881
7101000313 7838752886 5875332083 8142061717 7669147303
5982534904 2875546873 1159562863 8823537875 9375195778
1857780532 1712268066 1300192787 6611195909 2164201989

Hexadecimal

3.

243f6a8885 a308d31319 8a2e037073 44a4093822 299f31d008
2efa98ec4e 6c89452821 e638d01377 be5466cf34 e90c6cc0ac
29b7c97c50 dd3f84d5b5 b547091792 16d5d98979 fb1bd1310b
a698dfb5ac 2ffd72dbd0 1adfb7b8e1 afed6a267e 96ba7c9045
f12c7f9924 a19947b391 6cf70801f2 e2858efc16 636920d871
574e69a458 fea3f4933d 7e0d95748f 728eb65871 8bcd588215
4aee7b54a4 1dc25a59b5 9c30d5392a f26013c5d1 b023286085
f0ca417918 b8db38ef8e 79dcb0603a 180e6c9e0e 8bb01e8a3e
d71577c1bd 314b2778af 2fda55605c 60e65525f3 aa55ab9457
48986263e8 144055ca39 6a2aab10b6 b4cc5c3411 41e8cea154
86af7c72e9 93b3ee1411 636fbc2a2b a9c55d7418 31f6ce5c3e
169b87931e afd6ba336c 24cf5c7a32 5381289586 773b8f4898
6b4bb9afc4 bfe81b6628 219361d809 ccfb21a991 487cac605d
ec8032ef84 5d5de98575 b1dc262302 eb651b8823 893e81d396
acc50f6d6f f383f44239 2e0b4482a4 84200469c8 f04a9e1f9b
5e21c66842 f6e96c9a67 0c9c61abd3 88f06a51a0 d2d8542f68
960fa728ab 5133a36eef 0b6c137a3b e4ba3bf050 7efb2a98a1
f1651d39af 017666ca59 3e82430e88 8cee861945 6f9fb47d84
a5c33b8b5e bee06f75d8 85c1207340 1a449f56c1 6aa64ed3aa
62363f7706 1bfedf7242 9b023d37d0 d724d00a12 48db0fead3

6,442,450,000

In History, the accuracy of the ratio of the circumference to the diameter calculated in a country can serve as a measure of the level of scientific development of that country, at that time.
(by a German mathematician ?)

Dear folks,

Our latest record was established as the followings;

Declared record:

6,442,450,000 decimal digits
Two independent calculation based on two different algorithms generated 6,442,450,944 ($=3 \times 2^{31}$) decimal digits of pi and comparison of two generated sequences matched 6,442,450,938 decimal digits, e.g., 6 decimal digits difference. Then we are declaring 6,442,450,000 decimal digits as the new world record.

Main program run:

Job start : 19th September 1995 20:54
Job end : 24th September 1995 17:32
Elapsed time : 116:38:12
Vector CPU : 112:36:06
Main memory : 1856.75 MB
ES memory : 32764 MB
Algorithm : Borwein's 4-th order convergent algorithm

Verification program run:

Job start : 06th October 1995 09:58
Job end : 11th October 1995 21:38
Elapsed time : 131:40:24
Vector CPU : 135:45:52
Main memory : 1792.75 MB
ES memory : 32328 MB
Algorithm : Gauss-Legendre algorithm

==== From here
====

4,000,000,000-th digits of pi and 1/pi:

pi : 94375 34306 22684 47216
1/pi: 71480 70425 69013 58924

4,000,000,000-th

(First digit '3' for pi or '0' for 1/pi is not included in the above count.)
===== to there, to be updated later =====

Frequency distribution for pi-3 up to 6,000,000,000 decimal places:
'0' : 599963005; '1' : 600033260; '2' : 599999169; '3' : 600000243
'4' : 599957439; '5' : 600017176; '6' : 600016588; '7' : 600009044
'8' : 599987038; '9' : 600017038; Chi square = 9.00

Frequency distribution for 1/pi up to 6,000,000,000 decimal places:
'0' : 599978305; '1' : 600024329; '2' : 600007880; '3' : 600006529
'4' : 599976720; '5' : 599986534; '6' : 600012285; '7' : 600023761
'8' : 599975659; '9' : 600007998; Chi square = 5.44

===== From here
=====

4,294,960,000-th digits of pi and 1/pi;
pi : 55675 13149 35865 45528
1/pi: 96350 29339 14953 51156
 ^

4,294,960,000-th
(First digit '3' for pi or '0' for 1/pi is not included in the above count.)
===== to there, to be updated later =====

Programs were written by Mr. Daisuke TAKAHASHI, a member of Kanada Lab.
CPU used was HITAC S-3800/480 at the Computer Centre, University of Tokyo.
Two CPU were definitely used through single job parallel processing for total of four programs run.

Yasumasa KANADA
Computer Centre, University of Tokyo
Bunkyo-ku Yayoi 2-11-16
Tokyo 113 Japan
Fax : +81-3-3814-7231 (office)
E-mail: kanada@pi.cc.u-tokyo.ac.jp

ftp://www.cc.u-tokyo.ac.jp/README.our_latest_record