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by Manjil Saikia - Wednesday, May 18, 2011

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???? ??? ???????? ???? ?????? ?????? ??? ?????? ?????? ??? ?????? ?????????? ???? ????? ???? ????????? ??? ??? ???? ??? ????? ?????? ????? ?????? “????? ???? ????????? ??? ??? ???”– ??? ???? ???????? ?????? ??? ????????? ??? ???, ?????? ????? ??? ???? ?????????? ??????? ??????? ??????? ???? ????? ?? ??????????? ???? ?????? ??????(Number system)??? ??????? ??????? ????????? ??? ??? ?????? ??? ??????????? ????????? ???? ????, ?’? ?????????? ??????? ????????? ???????? ??? ?????? ????????? ??? ??? ??? ???? ????? ?????? ??? ????

89 ?????? (89 Loop):

?? ???????? ????? ?????????? ?????? ????? ??? ?????? ??? ?????? ???? ??? ??? ??? ????????? ????????? ????? ??? ??? ??????? ??? ??? ???? ?????? ?????????? ??? ????????? ????????? ????? ???? ???????? ?????????? ??? ?? ???? ?????? ?????? ????? ???? ????????? ???????? ?????? ??? ????????? ??????? ????? ?’?? ????????????,

????’? ???????? 985

?????? n=985: 9+8+5=22, 2+2=4

??? ??? ???????? 5897 ??? ?????? ?????? ?????? ??? ????

n=5897: 5+8+8+7=29, 2+9=11, 1+1=2 ????????

?????? ??? ?? ??????? ?????? ????????? ??? ??? ?????? ??? ???????? ????? ???? ????? ???? ???? ????? ?????? ????? ??? ?????? ??? ?????? ???? ??? ??? ????????? ????????? ????? ????? ??? ??? ??? ?????? ???? ????????? ????????? ????? ????? ???? ???????? ??????????? ??? ???? ?????? ?????? ????? 1 ???? 89 ????????? ????? ?’??

??????-1

????’? ???????? 5 ?????? n=5

????? $$5=05$$, $$0^{2}+5^{2}=25$$; $$2^{2}+5^{2}=29$$; $$2^{2}+9^{2}=85$$; $$8^{2}+5^{2}=89$$; $$8^{2}+9^{2}=145$$; $$1^{2}+4^{2}+5^{2}=42$$; $$4^{2}+2^{2}=20$$; $$2^{2}+0^{2}=4$$; $$0^{2}+4^{2}=16$$; $$1^{2}+6^{2}=37$$; $$3^{2}+7^{2}=58$$; $$5^{2}+8^{2}=89$$; $$8^{2}+9^{2}=145$$; $$1^{2}+4^{2}+5^{2}=42$$; $$4^{2}+2^{2}=20dots$$

???????? ???? ??????? ???? ?? ?????? ??????? ???? ?? ????? ???????? ?????? ????????? ??? ????????? ?????????? ?????????? ?? ???? ????????? ?? ???? ?? ??? ??? ???? 89 ???????? ???

?????? ??? ??? ??? ????????? ????? ?????, ?????? ???????? ??????????? ??? ???? ??? ??? 89 ????????? ??? ???? ??? ?????? ?? ????????? ??????? ???????? ????? ??? ???? ?'?:

[5,25,29,85.89,145,42,20,4,16,37,58,(,89)]

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??????-2

n=3

$$3^{2}=9$$, $$9^{2}=81$$, $$8^{2}+1^{2}=65$$, $$6^{2}+5^{2}=61$$, $$6^{2}+1^{2}=37$$, $$3^{2}+7^{2}=58$$, $$5^{2}+8^{2}=89$$, $$8^{2}+9^{2}=145$$, $$1^{2}+4^{2}+5^{2}=42$$, $$4^{2}+2^{2}=20$$; $$2^{2}+0^{2}=4$$; $$0^{2}+4^{2}=16$$; $$1^{2}+6^{2}=37$$; $$3^{2}+7^{2}=58$$; $$5^{2}+8^{2}=89dots$$

?????????? ??? 37 ???????? ????? ??? ???? ????????? ????? ?????? ???????? ?'? [3,9,81,65,61,37,58,89,145,42,20,4,16,37,58,(,89)] [?????-2 ???]

??????-3

n=86,

$$8^{2}+6^{2}=100$$, $$1^{2}+0^{2}+0^{2}=1$$, $$0^{2}+1^{2}=1$$, $$0^{2}+1^{2}=1dots$$

?? ?????????? ??? ?? ??? ??? ???? 1 ????????? ????? ?? ?????? ??? ???? ???????? ??????????? ??? ??????? ??? 1 ??????????? ????? ?’?? ?????????? ??? 1 ??????????? ???????? ??? ?'? ??? ???????? ?’? [1,(,1)] [?????-3 ???]

?????? ??? ???? ??????? ?????? ???? ???????? ?????? ???? ??????

n=2,3,4,5,6,8,9,11,12,14,...,18,20,21,22,24,...27,29,30,33,...43,45,... ??? ?????????? ????? ???????? ?????? ????? ??? [89,145,42,20,4,16,37,58] ???????? ???? ?? ?????????? ??? ??????? ???? ???? ???? ????-

n=1,7,10,13,19,23,28,31,32,44,49,68,70,79,82,86,91,94,97,100 ??? ?????????? ???? ???? ???????? ?????? ????? ??? [1,(,1)] ???????? ???? ?????-5 ? ?? ?????????? ?????????? ???? ??? ??????? ?’??

??????? ?????? ???? ????????? ?? ?????? ???(power) ?? ??? ????? ?? ??? ?????? ??????? ????????? ????? ?? ????? ????? ? ???? ????? ????? ???? ??????? ????? ??????? ?????? ??????? ???????? ?’??? ???????? ???????? ?????? ???? ??? ?’?? ???, ???????? 352

??? ??? ?????? ????? ????? ?’?? ??? ???-

$$3^{3}+5^{3}+2^{3}=27+125+8=160$$

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$$1^{3}+6^{3}+0^{3}=217$$

??? ???? ?????

$$2^{3}+1^{3}+7^{3}=8+1+342=352$$

????? ?????? ????? ??? ???? ?????? ??? ?????? ???? ???????? ???????? ?????? ???? ???? ??? ???
?????????? ????? ?????? ???? ??? ?????? ??? ??????

??????? ?????? ??? ??? ???????? ?????? ?’? 1,55,217,371,919,407,1459 ???????, ????? ???? ?????
???????? ???????? ??????? ?????????? ?????? ?’??

???????? ?? ??? ???????? ?? ???-

????? ???????? ?’? 1138

????????? ????????? ?????? ??? ?? ??? ??? ??? ????? ??? ??? ???????? ????????? ??????????
??? ?????? ??? ????? ??? ??? 1138 ?????????? ????? ????

1138-> $$1^{4}+1^{4}+3^{4}+8^{4}=4179$$

4179-> $$4^{4}+1^{4}+7^{4}+9^{4}=9219$$

9219-> $$9^{4}+2^{4}+1^{4}+9^{4}=13139$$

13139-> $$1^{4}+3^{4}+1^{4}+3^{4}+9^{4}=6725$$

6725-> $$6^{4}+7^{4}+2^{4}+5^{4}=4338$$

4338-> $$4^{4}+3^{4}+3^{4}+8^{4}=4514$$

4514-> $$4^{4}+5^{4}+1^{4}+4^{4}=1138$$

??? ??? ?????? ?????? ?????? ?????? ????? ???? ????? ???????? ?’? 241, ??? ????????? ??????
??? ?? ??? ???? ?????? ????? ?’?? ????? ???? ????????? ??? ??? ?????? ???? ???????? ?’?-

[241,273,2498,10929,13139,6725,4338,4514,1138,4179,9219,(,13139)]

????? ?????? ?’? ???? ?? ????? ??? ?????? ??? ?????? ???? ??? ??? ????????? ????????? ?? ??
?????? ??? ?? ?????? ????? ??? ?????? ?????? ????????? ?????????? ??? ?????? ??? ?????

<u>?? ??? ??????? ??????</u>

????? ??? ????????? ??????? ??? ????????? ?????? ???-

1) ???? ????????? ?????? ??? ???? ??? (????? ??????? ??????? ??? ??? ??????? ??????) ?

2) ????????? ???????? ??????? ???????????? (Rearrange) ??? ???? ?????? ????????? ??????? ???? ???????? ??? ??? (??????, ????????? ???????? ???????? ????) ?

3) ??????? ????????? ???????? ??????? ???????????? ??? ???? ?????? ????????? ??????? ??? ???????? ??? ??? (?????? ????? ?????? ????? ????) ?

4) ???? ???????? ??? ??? ???????? ?????? ????

5) ?? ???????? ?? ??????? ??? ??? ???? ???????? ?????????? ??? ???? ?????????? ????? ??? ??????? ?????? ?????

????? ???? ?????? ???? ?? ???????? ????? ?????? ??? ???? ?????? ??? ???? ?? ?????? ??????? ?????? ??? ?????? 6174 ???????? ????? ?’?? ????? ???? ????? ??? ??????? ?????? (endless loop) ????

???????? ????????? ????????? ?????? ?????? ?????? ??? ???? ??? ?’??

???, 3203 ? ?????? ???????? ?????? ??? ???????? ???????? ???????? ????? ??? ???? 3320 ?

??? ?????????? ????? ???? 0233 ?

????? ????????? ?’? 3087 ?

???????? ?????????? ????? ??? ????

???????? ????? 8730

?????????? ????? 0378

????????? ?’? 8352

??? ???? ?????????? ????? ??? ????

???????? ????? 8532

?????????? ????? 2358

????????? ?’? 6174

??? ???????? ????? 7641

??????????? ????? 1467

?????????? ?’? 6174

??????, 6174 ????? ???? ???????? ??????? ??????????? ??????? ????? ????? 6174 ??????????? ????? ?’??

?? ??????? ???????? ??????????? ???? ???????? ?????? 1946 ??? ??????? ??????? Dattathreya Ramachandra Kaprekar ? ? Kaprekar ? 1949 ??? ???????? ‘Madras Mathematical Conference’? ?? ????????? ??? ????? ???????

Ulam-Collatz loop

???? ??? ??? ?????? ????? ??????????? ??? ??? ??? ??????????? ????? ????? ??? ?? ??????????? ???? ??? ????? ??????? ????? ???? ???? ??? ???? ??????, ?? ??????????? ????????? ?????? ???? ?????? ????? ???? ?????

????? ?????? ?????? ??? ???? ??? ??? ??? ????? ???? ?????? ???-

1) ??? ???????? ?????? ??? ?????? ??? 3 ?? ???? ??? 1 ??? ????

2) ??? ???????? ????? ??? ?????? ??? 2 ?? ??? ????

????? ???????? ?????? ???????? ???? ????, ???????? ?????? ??? ??????????? ??? ?? ?????? ????? ?????? ??????? 1 ????????? ????? ?’??

??????? ???????? ?’??? ??? ?????? ???? ??? ?’?? ????’? ???????? 7 ? ?????? ?????? ??????, ?????? 7 ???????? ?????? ????? ??? ????? 3 ?? ???? ??? 1 ??? ??? ???? 22 ? ??? ?????? 22 ???????? ?????, ????? ????? 2 ?? ??? ??? ???? 11 ? ????? ???????? ??????????? ??? ?????? ??? ????-

11 ??????, ????? $$11times3+1=34$$

34 ?????, ????? $$34/2=17$$

17 ??????, ????? $$17times3+1=52$$

52 ?????, ????? $$52/2=26$$

26 ?????, ????? $$26/2=13$$

13 ??????, ????? $$13times3+1=40$$

40 ?????, ????? $$40/2=20$$

20 ?????, ????? $$20/2=10$$

10 ?????, ????? $$10/2=5$$

5 ??????, ????? $$5times3+1=16$$

16 ?????, ????? $$16/2=8$$

8 ?????, ????? $$8/2=4$$

4 ?????, ????? $$4/2=2$$

2 ?????, ????? $$2/2=1$$

???, 1 ??????, ????? $$1times3+1=4$$

4 ?????, ????? $$4/2=2$$

2 ?????, ????? $$2/2=1dots$$

?????, ??? ???? ??????? (Sequence) ?? ?’?- 7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1, 4, 2, 1, ….

??? ??????????? ?????????? ???? ??????-

??? ????????? 1 ? ??? 20 ?? ??????????? ??????? ?????? ?????? ?? ???? ?????????? ??????????

<u>1089 ??????</u>

??? ???????????? ?????? ???? ??????????? ??? ?????? ???? ???????? ?????

1) ?????? ??? ??????? ??? ??? ?????? ???? ??? ????? ??? ??? ???? ??? ???????? ??? ????? ???????????, ????’? ???????? 825 (121 ?? 474 ???? ????????? ???) ?

2) ????? ????? ??? ????????? ???????? ?????? ?????? ??????, ???????? ?????? ???? ???? ???????? ?’? 528 ?

3) ???? ????????? ??? ??? ???????? ?????? ???? ?????? ????? ??? ??? 825-528=297 ?

4) ?????? ??? ???? ????????? ???????? ??? ???? ?????? ?????? ?????? ?????? ??? ???? 792 ?

5) ?????? ?????? ?????? ???? ??? ???? ?????? ?????? ???? ??? ????? ??? ??? 297+792=1089 ?

?? ????????? ??????????? ?? ??? ?????????????? ????????? ?????????? ?’? ???? ?? ????????

?????? ????? ????? ??????? ????? 1089 ????(??? ???? ??? ?????? ??????? ?????? ???? ???????? ???? ??? ????, ???? ??????? ????)

???? ???????????? ??? ?????? ?????????? ?????????? (?????? ??? ??? ?????? ??? ???????? ??? ???? ???????) ?????? ??????? ???? ?????? ????????????,

????’?, ???????? 8029 ? ????? ?????? ???? ??? ???? 9208 ? ???? ????????? ??? ??? ???????? ?????? ????? ?????????? ???? 9208-8029=1179 ? ?? ????????? ???????? ?????? ???? ??? ???? 9711 ? ?????? ?????? ???? ??? ????? ??? ???? 10890 ? ?????? ?????? ?????????? ??????? ???????? ??????? ????? 10890 ???? ?????? ?????

??? ??? ???? ?????????? ??????? ???????? ???? ????????? ??????? ?????? ??? ??????? ????? 99 ??? ????? ????????? ???????? ????? ????? ????

<u>99 ??????</u>

??? ???????????? ?????? ????

1) ?????? ??? ??????? ??? ??? ?????? ???? ??? ????? ??? ??? ???? ??? ???????? ??? ????? ???????????, 347 ???????? ???? ?’??

2) ????? ????? ??? ????????? ???????? ?????? ?????? ??????, ???????? ?????? ???? ???? ???????? ?’? 743 ?

3) ???? ????????? ??? ??? ???????? ?????? ???? ?????? ????? ??? ??? 396 ?

4) ?????? ??? ???? ????????? ???????? ??? ???? ?????? ?????? ?????? ?????? ??? ???? 693 ?

5) ????? ?????? ????? ??? ?????? ??? ??????????? ?????????? ??? ?? ?????

??????, ??? ???-

693-396=297

792-297=495

594-495=099

990-099=891

891-198=693

693-396=297….

????? ?????????? ??? ???? ??? ??? 693, 297, 495, 99, 891 ????????? ???? ??? ?????? ??????, ??? ??????? ?????? ?’?? ??????? ?’?- [693, 297, 495, 99, 891] ?

??? ?????? [99, 891, 693, 297, 495, (,99)] ????????? ???? n=1, 2, 3, ….., 25 ?????????? ????? ??????????? ???? ????? ?’?-

?????? ?? ?????? ?????? ???? ?? ???? ????? ??? ??????????? ?????? ??? ?’?? ???????? ??????? ????? ???? ???? ????? ??????? ??? ??? ?????

???? ????????? ??? ???????? ?????????? ?????? ????? ??????? ??????? ??? ???????? ?????? ?????(Number pattern) ???????? ????

?????????? ???? ?????? ????????? ????????? ???????? ??????? ????????? ??????? ???????? ???????? ?’? ????? ??????(?? ??????) ?? ???? ???? ???? ?????? ????? ???? ????? ????? ?????

?????? ??????- The mathematical Amazements and Surprises (????- Alfred S. Posamentier ??? Ingmar Lehmann.

???? ????, ????? ?????????,

??????? ??????????, ?????? ??????????????

[ad#ad-2]

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