

Print number is armstrong

Q1 Answer $p = 1101$, $\text{res} = 0$, $i = 1$

$$i > p$$

$$1 > 10 \rightarrow \underline{\text{False}}$$

LFB Col ← 01 LFB ←

$$\text{res} = \text{res} + i$$

$$(\text{res}) = 0 + 1 ; \text{res} = 1$$

$$i = i + 1 , i = 2$$

$$= 1 + 1 , i = 2$$

$$2 > 10 \rightarrow \underline{\text{False}}$$

$$\text{res} = 1 + 2 , \text{res} = 3$$

$$(\text{res}) = 2 + 1 , i = 3$$

$$(3 * 10) + 1$$

$$3 > 10 \rightarrow \underline{\text{false}}$$

$$\text{res} = 3 + 3 , \text{res} = 6$$

$$i = 3 + 1 , i = 4$$

$$4 > 10 \rightarrow \underline{\text{false}}$$

$$\text{res} = 6 + 4 ; \text{res} = 10$$

$$i = 4 + 1 , i = 5$$

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$$5 > 10 \rightarrow \underline{\text{false}}$$

$$\begin{aligned} \text{res} &= 10 + 5 , \quad \underline{\text{res}} = 15 \\ i &= 5 + 1 , \quad \underline{i} = 6 \end{aligned}$$

$$6 > 10 \rightarrow \underline{\text{false}}$$

$$\text{res} = 15 + 6 , \quad \underline{\text{res}} = 21$$

$$i = 6 + 1 , \quad \underline{i} = 7$$

$$7 > 10 \rightarrow \underline{\text{false}}$$

$$\text{res} = 21 + 7 , \quad \underline{\text{res}} = 28$$

$$i = 7 + 1 , \quad \underline{i} = 8$$

$$8 > 10 \rightarrow \underline{\text{false}}$$

$$\text{res} = 28 + 8 , \quad \underline{\text{res}} = 36$$

$$i = 8 + 1 , \quad \underline{i} = 9$$

$$9 > 10 \rightarrow \underline{\text{false}}$$

$$\text{res} = 36 + 9 , \quad \underline{\text{res}} = 45$$

$$i = 10 > 10 \rightarrow \text{false}$$

$$\text{res} = 45 + 10 , \quad \underline{\text{res}} = 55$$

$$i = 10 + 1 , \quad i = 11$$

$$11 > 10 \rightarrow \underline{\text{True}}$$

Print $\boxed{\text{res} = 55}$

Q 2 Answer

$$i = 0$$

while $i < 20, 0 < 20 \rightarrow \underline{\text{True}}$

$$i = i + 2, 0 + 2$$

$$\underline{i = 2}$$

$2 < 20 \rightarrow \text{True}$

$$i = 2 + 2, \underline{i = 4}$$

$4 < 20 \rightarrow \text{True}$

$$i = 4 + 2, \underline{i = 6}$$

$6 < 20 \rightarrow \text{True}$

$$i = 6 + 2, \underline{i = 8}$$

$8 < 20 \rightarrow \text{True}$

$$i = 8 + 2, \underline{i = 10}$$



$10 < 20 \rightarrow \text{True}$

$i = 10 + 2, i = \underline{\underline{12}}$

$12 < 20 \rightarrow \text{True}$

$i = 12 + 2, i = \underline{\underline{14}}$

$14 < 20 \rightarrow \text{True}$

$i = 14 + 2, i = \underline{\underline{16}}$

$16 < 20 \rightarrow \text{True}$

$i = 16 + 2, i = \underline{\underline{18}}$

$18 < 20 \rightarrow \text{True}$

$i = 18 + 2, i = \underline{\underline{20}}$

$20 < 20 \rightarrow \underline{\underline{\text{False}}}$

Point $\boxed{i = 20}$

Q3 Answer $N=5$, $a=1$, $b=1$

$$b = b \times a, b = 1 \times 1$$

$$\underline{b = 1}$$

$$a = N ?$$

$$1 = \cancel{2} \cancel{5} \rightarrow \underline{\text{False}}$$

$$a = a + 1, a = 1 + 1$$

$$\underline{a = 2}$$

$$\cancel{2 = 2} \cancel{0} \rightarrow \underline{\text{false}}$$

$$b = 1 \times 2, \underline{b = 2}$$

$$2 = \cancel{2} \cancel{5} \rightarrow \underline{\text{false}}$$

$$b = 2 \times 2, \underline{b = 4}$$

$$a = 2 + 1, \underline{a = 3}$$

$$3 = \cancel{2} \cancel{5} \rightarrow \underline{\text{false}}$$

$$b = 4 \times 3, \underline{b = 12}$$

$$a = 3 + 1, \underline{a = 4}$$

$$4 = \cancel{2} \cancel{5} \rightarrow \underline{\text{false}}$$

$$b = 12 \times 4, \underline{b = 28}$$

$$a = 4 + 1, \underline{a = 5}$$

$$5 = \cancel{2} \cancel{5} \rightarrow \underline{\text{false}}$$

$$\boxed{b = 28}$$

True

Q4 Answer

$$n = 5, i = 1, \text{fact} = 1$$

$$i \leq n \\ 1 \leq 5 \rightarrow \text{True}$$

$$\text{fact} = \text{fact} \times i$$

$$1 = 1 \times 1$$

$$\underline{\text{fact} = 1}$$

$$i = i + 1$$

$$= 1 + 1$$

$$\underline{i = 2}$$

$$2 \leq 5 \rightarrow \text{True.}$$

$$\text{fact} = 1 \times 2, \underline{\text{fact} = 2}$$

$$i = 2 + 1, \underline{i = 3}$$

$$3 \leq 5 \rightarrow \text{True.}$$

$$\text{fact} = 2 \times 3, \underline{\text{fact} = 6}$$

$$i = 3 + 1, \underline{i = 4}$$

$$4 \leq 5$$

$$\text{fact} = 6 \times 4, \underline{\text{fact} = 24}$$

$$i = 4 + 1, \underline{i = 5}$$

$$5 \leq 5 \rightarrow \text{True}$$

$$\text{fact} = 24 \times 5, \underline{\text{fact} = 120}$$

$$i = 5 + 1, \underline{i = 6}$$

Point $\boxed{\text{Fact} = 120}$

Q5 Answer

$$\text{num} = 371, \text{sum} = 0$$

$$n = \text{num} = 371, n = 371$$

$$\text{condition } \rightarrow n \geq 1 (371) \geq 1$$

True

$$\text{rem} = n \bmod 10$$

$$\text{rem} = 371 \% 10 \rightarrow$$

$$\text{rem} = 1$$

$$\begin{array}{r} 37 \\ 10) 371 \\ -30 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 37 \\ 370 \\ -1 \\ \hline \end{array}$$

$$\text{sum} = \text{sum} + (\text{rem} \times \text{rem} \times \text{rem})$$

$$= 0 + (1 \times 1 \times 1)$$

$$\underline{\text{sum} = 1}$$

$$n = n / 10$$

$$= 371 / 10 \rightarrow \begin{array}{r} 37 \\ 10) 371 \\ -30 \\ \hline 7 \end{array}$$

$$\underline{n = 37}$$

$$\begin{array}{r} 370 \\ -30 \\ \hline 7 \end{array}$$

(because we take floor value)

$$n \geq 1 \rightarrow \text{True.}$$

$$\text{rem} = n \bmod 10$$

$$= 37 \% 10$$

$$\underline{\text{rem} = 7}$$

$$\begin{array}{r} 37 \\ 10) 37 \\ -30 \\ \hline 7 \end{array}$$

$$\begin{array}{r} 70 \\ -60 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 10 \\ -10 \\ \hline 0 \end{array}$$

$$\text{sum} = \text{sum} + (\text{rem} \times \text{rem} \times \text{rem})$$

$$= 1 + (7 \times 7 \times 7)$$

$$\underline{\text{sum} = 344}$$

$$n = 37 / 10$$

$$\underline{n = 3}$$

$$n \geq 1$$

$$\text{rem} = 3 \% 10$$

$$\underline{\text{rem} = 3}$$

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~~sum = sum + C~~

Q5

$$\text{sum} = 344 + (3 \times 3 \times 3)$$

$$\text{sum} = 371$$

$$n = 3 / 10$$

$$n = 0$$

$$\text{num} = \text{sum} \rightarrow \text{True}$$

Print number is armstrong

Stop

Q6 Answer num = 370 , sum = 0 , n = num , n = 370 .

$$n > 1 \rightarrow \underline{\text{True}}$$

$$\text{rem} = n \bmod 10 , \text{rem} = 370 \% 10$$

$$\underline{\text{rem} = 0}$$

$$\text{sum} = \text{sum} + (\text{rem} \times \text{rem} \times \text{rem})$$

$$= 0 + (0 \times 0 \times 0)$$

$$\underline{\text{sum} = 0}$$

$$n = n / 10 , n = 370 / 10$$

$$\underline{n = 37}$$

$$37 > 1 \rightarrow \underline{\text{True}}$$

$$\text{rem} = 37 \% 10 , \text{rem} = 7$$

$$\text{sum} = 0 + (7 \times 7 \times 7)$$

$$\underline{\text{sum} = 343}$$

$$n = 37 / 10 , \underline{n = 3}$$

floor value.

$$3 > 1 \rightarrow \underline{\text{True}}$$

$$\text{rem} = 3 \% 10 , \underline{\text{rem} = 3}$$

$$\text{sum} = 343 + (3 \times 3 \times 3)$$

$$\underline{\text{sum} = 370}$$

$$n = 3 / 10 , \underline{n = 0}$$

0 ~~>~~ 1 → false

if num = sum

$$370 = 370 \rightarrow \text{True}$$

Number is armstrong.

Q7

Answer

$$n = 23, i = 2$$

$$i < n, 2 < 23 \rightarrow \text{True}$$

$$n \% i, 23 \% 2 == 0 \rightarrow \text{False}$$

$$i = i + 1, i = 2 + 1 \quad i = 3$$

$$3 < 23 \rightarrow \text{True}$$

$$23 \% 3 == 0 \rightarrow \text{False}$$

$$i = 3 + 1, i = 4$$

$$4 < 23 \rightarrow \text{True}$$

$$23 \% 4 == 0 \rightarrow \text{False}$$

$$i = 4 + 1, i = 5$$

$$5 < 23 \rightarrow \text{True}$$

$$23 \% 5 == 0 \rightarrow \text{False}$$

$$i = 5 + 1, i = 6$$

$$23 \% 6 == 0 \rightarrow \text{False}$$

$$i = 6 + 1, i = 7$$

~~$$7 < 23 \rightarrow \text{True}$$~~

$$23 \% 7 == 0 \rightarrow \text{False}$$

$$i = 7 + 1, i = 8, 8 < 23 \rightarrow \text{True}$$

$$23 \% 8 == 0 \rightarrow \text{False}$$

$$i = 8 + 1, i = 9, 9 < 23 \rightarrow \text{True}$$

$$23 \% 9 == 0 \rightarrow \text{False}$$

$$i = 9 + 1, i = 10, 10 < 23 \rightarrow \text{True}$$

$$23 \% 10 == 0 \rightarrow \text{False}$$

$$i = 10 + 1, i = 11, 11 < 23 \rightarrow \text{True}$$

$$23 \% 11 == 0 \rightarrow \text{False}$$

$$i = 11 + 1, i = 12, 12 < 23 \rightarrow \text{True}$$

$$23 \% 12 == 0 \rightarrow \text{False}$$

$$i = 12 + 1, i = 13, 13 < 23 \rightarrow \text{True}$$

$$23 \% 13 == 0 \rightarrow \text{False}$$

$$i = 13 + 1, i = 14, 14 < 23 \rightarrow \text{True}$$

$$23 \% 14 == 0 \rightarrow \text{False}$$

$$i = 14 + 1, i = 15, 15 < 23 \rightarrow \text{True}$$

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Q7

$$23 \% 15 == 0 \rightarrow \underline{\text{false}}$$

$$i = 15 + 1, i = 16, 16 < 23 \rightarrow \underline{\text{True}}$$

$$23 \% 16 == 0 \rightarrow \underline{\text{false}}$$

$$i = 16 + 1, i = 17, 17 < 23 \rightarrow \underline{\text{True}}$$

$$23 \% 17 == 0 \rightarrow \underline{\text{false}}$$

$$i = 17 + 1, i = 18, 18 < 23 \rightarrow \underline{\text{True}}$$

$$23 \% 18 == 0 \rightarrow \underline{\text{false}}$$

$$i = 18 + 1, i = 19, 19 < 23 \rightarrow \underline{\text{True}}$$

$$23 \% 19 == 0 \rightarrow \underline{\text{false}}$$

$$i = 19 + 1, i = 20, 20 < 23 \rightarrow \underline{\text{True}}$$

$$23 \% 20 == 0 \rightarrow \underline{\text{false}}$$

$$i = 20 + 1, i = 21, 21 < 23 \rightarrow \underline{\text{True}}$$

$$23 \% 21 == 0 \rightarrow \underline{\text{false}}$$

$$i = 21 + 1, i = 22, 22 < 23 \rightarrow \underline{\text{True}}$$

$$23 \% 22 == 0 \rightarrow \underline{\text{false}}$$

$$i = 22 + 1, i = 23, 23 < 23 \rightarrow \underline{\text{false}}$$

$$i == n, 23 == 23 \rightarrow \underline{\text{True}}$$

Print "No. is Prime"

$16 \% 3$

Q8 Answer

$$n = 16, i = 2$$

$$i < n, 2 < 16 \rightarrow \underline{\text{True}}$$

$$n \% i == 0, 16 \% 2 == 0 \rightarrow \underline{\text{True}}$$

$$i == n, 2 == 16 \rightarrow \underline{\text{False}}$$

Print "No. is not Prime"

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Q9 Answer

$$x = 60, y = 36$$

$$y = 0? \rightarrow \text{No}$$

$$x = y, x = 36$$

$$y = x \% y, y = 36 \% 36$$

$$y = 0? \rightarrow \text{Yes}$$

$$x = 36$$



Q10 Answer

