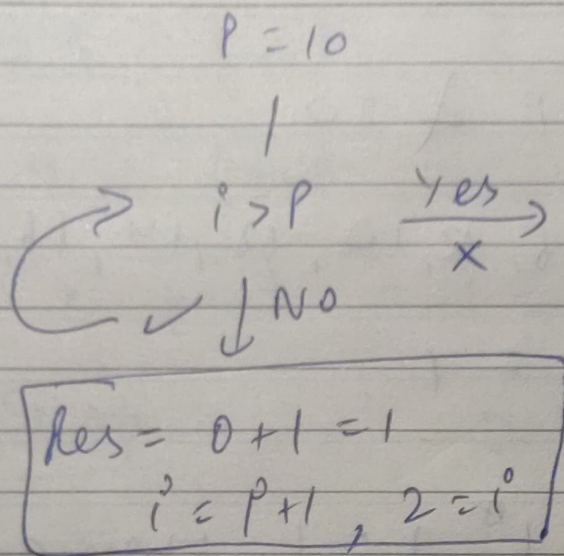


1)



→ so doing this till $i \leq 11$

we will get Res = 55 Ans.

2)

Start, $i = 1$
 while loop ($i \leq 20$).

$P = 0$, print '0', then	$i = 0 + 2 = 2$
$P = 2$, '2'	$i = 4$
$i = 4$, '4'	$i = 6$
$i = 6$, '6'	$i = 8$
$i = 8$, '8'	$i = 10$
$i = 10$, '10'	$i = 12$
$i = 12$, '12'	$i = 14$
$i = 14$, '14'	$i = 16$
$i = 16$, '16'	$i = 18$

$i = 18, 18, i = 20$
 $i = 20$, stop as $i \neq 20$.

Output $\rightarrow 0, 2, 4, 6, 8, 10, 12, 14, 16, 18$.

3) $N = 5$, $a = 1, b = 1$
loop:

$a = 1, b = b * a = 1 * 1 = 1$, then $a = a + 1 = 2$

$a = 2, b = b * a = 1 * 2 = 2$, $a = a + 1 = 3$

$b = 6, a = 4$

$b = 24, a = 5$

$b = 120$ ANS.

Stop as $a = N$

4) $n = 5$, $a = 1$, fact = 1

loop while $i \leq n$ ($i \leq 5$)

$i = 1$, fact = fact * $i = 1 * 1 = 1$

so, $i = i + 1 = 2$

$i = 2$, fact = 2, $i + 1 = 3$

$$i = 3, \text{ fact} = 6, i+1 = 4$$

$$i = 4, \text{ fact} = 24, i+1 = 5$$

$$i = 5, \text{ fact} = 120, i+1 = 6$$

Stop

$$\text{Output} = \underline{\underline{120}}$$

5)

$$\text{num} = 371$$

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

loop while $n >= 1$, 1st iteration

$$\text{rem} = n \bmod 10 = 371 \bmod 10 = 1$$

$$\text{sum} = \text{sum} + (\text{rem}^3) = 0 + (1)^3 = 1$$

$$n = n / 10 = 37$$

2nd

$$\text{rem} = 37 \bmod 10 = 7$$

$$\text{sum} = 344$$

$$n = 3$$

3rd Iterⁿ

$$\begin{aligned} \text{rem} &= 3 \bmod 10 = 3 \\ \text{sum} &= 344 + 27 = 371 \\ n &= 3/10 = 0 \\ &\quad (\text{stop}) \end{aligned}$$

$\text{num} = \text{sum}$
Output \rightarrow number is armstrong.

6) For $n = 23$

$i = 2 : 23 \div 2 = 11$ remainder 1 (not divisible)

$i = 3 : 23 \div 3 = 7$ rem 2 (not div)

$i = 4 : 23 \div 4 = 5$ rem 3 (not div)

$i = 22 : 23 \div 22 = 1$ rem 1 (not div)

$i = 23 : \cancel{23 \div 23} =$, loop ends as $i = n$.

Since i reached n without any divisors,
Output \rightarrow No. is Prime

7) $n = 23, i = 2$

$2 \nmid 23$, Yes (T)

check $23 \div 2 = 11 \neq 0$ (F)

$i = 1 + 1 = 3$

$$i < n$$

$$3 < 23 \text{ Yes (T)}$$

$$\text{check } 23 \times 3 = 2 \neq 0 \text{ (F)}$$

$$i = i + 1 = 4$$

}

$$i < n$$

$$23 < 23 \text{ No (F)}$$

$$\text{check } i = 4, \text{ Yes (T)}$$

Ans, no. is Prime.

Q)

$$x = 60, y = 36$$

$$y \neq 0, \text{ NO,}$$

$$x = y = 36$$

$$y = x \div y = 60 \div 36 = 24$$

$$y \neq 0 \text{ NO}$$

$$x = y = 24$$

$$y = x \div y = 36 \div 24 = 12$$

$$y \neq 0 \text{ NO}$$

$$x = y = 12$$

$$y = x \div y = 24 \div 12 = 0$$

$$y \neq 0 \text{ ? Yes,}$$

$$\text{Ans. } x = 12$$

$$\text{GCD}(60, 36) = 12$$

10)

[start]



[Read n]



[sum = 0]

[i = 1]



[loop: i < n?] → NO → [is sum = n?] → Yes

→ ["Perfect Number"]

↓ Yes

[n % i == 0?] → Yes → [sum = sum + i]

["Not Perfect Number"] ←

↓ NO

[i = i + 1] ←

To test, let's try n = 3

i = 1

- $1 < 3$ Yes
- $3 \% 1 = 0$ Yes
- $Sum = 0 + 1 = 1$
- $i = 2$

$i = 2$

- $2 < 3$ Yes
- $3 \% 2 = 1$ [No]
- $i = 3$

① $i = 3$

$3 < 3$ NO

• Is $sum(1) == n(3)$? No.

② Output "Not Perfect Number".