

Program 1.c

num	$num \leq 10$	Print?	num++
1	$1 \leq 10 \checkmark$	3	2
2	$2 \leq 10 \checkmark$	6	3
3	$3 \leq 10 \checkmark$	9	4
4	$4 \leq 10 \checkmark$	12	5
5	$5 \leq 10 \checkmark$	15	6
6	$6 \leq 10 \checkmark$	18	7
7	$7 \leq 10 \checkmark$	21	8
8	$8 \leq 10 \checkmark$	24	9
9	$9 \leq 10 \checkmark$	27	10
10	$10 \leq 10 \checkmark$	30	11
11	$11 \leq 10 X$	X	X

Program 2-C

num	$num \leq 40$	$num \% 2 = 0$	Print	+ num
20	$20 \leq 40$	X	X	21
21	$21 \leq 40$	✓	21	22
22	$22 \leq 40$	X	X	23
23	$23 \leq 40$	✓	23	24
24	$24 \leq 40$	X	X	25
25	$25 \leq 40$	✓	25	26
26	$26 \leq 40$	X	X	27
27	$27 \leq 40$	✓	27	28
28	$28 \leq 40$	X	X	29
29	$29 \leq 40$	✓	29	30
30	$30 \leq 40$	X	X	31
31	$31 \leq 40$	✓	31	32
32	$32 \leq 40$	X	X	33
33	$33 \leq 40$	✓	33	34
34	$34 \leq 40$	X	X	35
35	$35 \leq 40$	✓	35	36
36	$36 \leq 40$	X	X	37
37	$37 \leq 40$	✓	37	38
38	$38 \leq 40$	X	X	39
39	$39 \leq 40$	✓	39	40
40	$40 \leq 40$	X	X	41

Program 3.c

num <= 50 str1.num == 0 printf ++num

num	$1 \leq num \leq 50$	$str1.num == 0$	printf	$++num$
1	$1 \leq num \leq 50$	X	X	2
2	$2 \leq num \leq 50$	X	X	3
3	$3 \leq num \leq 50$	X	X	4
4	$4 \leq num \leq 50$	X	X	5
5	$5 \leq num \leq 50$	✓	5	6
6	$6 \leq num \leq 50$	X	X	7
7	$7 \leq num \leq 50$	X	X	8
8	$8 \leq num \leq 50$	X	X	9
9	$9 \leq num \leq 50$	X	X	10
10	$10 \leq num \leq 50$	✓	10	11
11	$11 \leq num \leq 50$	X	X	12
12	$12 \leq num \leq 50$	X	X	13
13	$13 \leq num \leq 50$	X	X	14
14	$14 \leq num \leq 50$	X	X	15
15	$15 \leq num \leq 50$	✓	15	16
16	$16 \leq num \leq 50$	X	X	17
17	$17 \leq num \leq 50$	X	X	18
18	$18 \leq num \leq 50$	X	X	19
19	$19 \leq num \leq 50$	X	X	20
20	$20 \leq num \leq 50$	✓	20	21
21	$21 \leq num \leq 50$	X	X	22
22	$22 \leq num \leq 50$	X	X	23
23	$23 \leq num \leq 50$	X	X	24
24	$24 \leq num \leq 50$	X	X	25
25	$25 \leq num \leq 50$	✓	25	26
26	$26 \leq num \leq 50$	X	X	27
27	$27 \leq num \leq 50$	X	X	28
28	$28 \leq num \leq 50$	X	X	29
29	$29 \leq num \leq 50$	X	X	30

30	$30 \leq 50\text{--}$	✓	30	31
31	$31 \leq 50\text{--}$	✗	31	32
32	$32 \leq 50\text{--}$	✗	32	33
33	$33 \leq 50\text{--}$	✗	33	34
34	$34 \leq 50\text{--}$	✗	34	35
35	$35 \leq 50\text{--}$	✓	35	36
36	$36 \leq 50\text{--}$	✗	36	37
37	$37 \leq 50\text{--}$	✗	37	38
38	$38 \leq 50\text{--}$	✗	38	39
39	$39 \leq 50\text{--}$	✗	39	40
40	$40 \leq 50\text{--}$	✓	40	41
41	$41 \leq 50\text{--}$	✗	41	42
42	$42 \leq 50\text{--}$	✗	42	43
43	$43 \leq 50\text{--}$	✗	43	44
44	$44 \leq 50\text{--}$	✗	44	45
45	$45 \leq 50\text{--}$	✓	45	46
46	$46 \leq 50\text{--}$	✗	46	47
47	$47 \leq 50\text{--}$	✗	47	48
48	$48 \leq 50\text{--}$	✗	48	49
49	$49 \leq 50\text{--}$	✗	49	50
50	$50 \leq 50\text{--}$	✓	50	51
51	$51 \leq 50\text{--}$	✗	51	52

Program 4.c

```
num    num≤70    printf    num
```

num	num≤70	printf	num
50	50≤70	50	52
52	52≤70	52	54
54	54≤70	54	56
56	56≤70	56	58
58	58≤70	58	60
60	60≤70	60	62
62	62≤70	62	64
64	64≤70	64	66
66	66≤70	66	68
68	68≤70	68	70
70	70≤70	70	72
72	72≤70	X	X
74	74≤70	X	X

Programs - C

num num ≤ 128 print ++num

num	num ≤ 128	print	++num
1	1 ≤ 128 ↴	—	2
2	2 ≤ 128 ↴	—	3
3	3 ≤ 128 ↴	—	4
4	4 ≤ 128 ↴	—	5
5	5 ≤ 128 ↴	—	6
6	6 ≤ 128 ↴	—	7
7	7 ≤ 128 ↴	—	8
8	8 ≤ 128 ↴	—	9
9	9 ≤ 128 ↴	—	10
10	10 ≤ 128 ↴	—	11
11	11 ≤ 128 ↴	—	12
12	12 ≤ 128 ↴	—	13
13	13 ≤ 128 ↴	—	14
14	14 ≤ 128 ↴	—	15
15	15 ≤ 128 ↴	—	16
16	16 ≤ 128 ↴	—	17
17	17 ≤ 128 ↴	—	18
18	18 ≤ 128 ↴	—	19
19	19 ≤ 128 ↴	—	20
20	20 ≤ 128 ↴	—	21
21	21 ≤ 128 ↴	—	22
22	22 ≤ 128 ↴	—	23
23	23 ≤ 128 ↴	—	24
24	24 ≤ 128 ↴	—	25
25	25 ≤ 128 ↴	—	26
26	26 ≤ 128 ↴	—	27
27	27 ≤ 128 ↴	—	28
28	28 ≤ 128 ↴	—	29
29	29 ≤ 128 ↴	—	30
30	30 ≤ 128 ↴	—	31

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31 $\leq 128 \cup$

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32 $\leq 128 \cup$

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33 $\leq 128 \cup$

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34 $\leq 128 \cup$

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35 $\leq 128 \cup$

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$125 \leq 128 \leftarrow$

$126 \leq 128 \leftarrow$

$127 \leq 128 \leftarrow$

$128 \leq 128 \leftarrow$

gramb.

ch != (char)91

Print? + ch

A := (char)91 ∪

A

B != (char)91 ∪

B

C != (char)91 ∪

C

D != (char)91 ∪

D

E != (char)91 ∪

E

F != (char)91 ∪

F

G != (char)91 ∪

G

H != (char)91 ∪

H

I != (char)91 ∪

I

J != (char)91 ∪

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K != (char)91 ∪

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L != (char)91 ∪

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M != (char)91 ∪

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N != (char)91 ∪

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O != (char)91 ∪

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P != (char)91 ∪

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Q != (char)91 ∪

Q

R != (char)91 ∪

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S != (char)91 ∪

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T != (char)91 ∪

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U != (char)91 ∪

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V != (char)91 ∪

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X != (char)91 ∪

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ch != (char)91

Print?

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(char)91

(char)91 != (char)91 X X

(char)91 X

Program 7.c.

num

~~$n \leq 10$~~ num ≤ 10

Print?

$num = num + num$

1	$1 \leq 10 \checkmark$	6	2
2	$2 \leq 10 \checkmark$	12	3
3	$3 \leq 10 \checkmark$	18	4
4	$4 \leq 10 \checkmark$	24	5
5	$5 \leq 10 \checkmark$	30	6
6	$6 \leq 10 \checkmark$	36	7
7	$7 \leq 10 \checkmark$	42	8
8	$8 \leq 10 \checkmark$	48	9
9	$9 \leq 10 \checkmark$	54	10
10	$10 \leq 10 \checkmark$	60	11
11	$11 \leq 10 X$	X	X

Programs:

ch3 ch! = 'I' Print ch--

8

Y	Y != 'I' —	Y	X
X	X != 'I' —	X	W
W	W != 'I' —	W	V
V	V != 'I' —	V	U
U	U != 'I' —	U	T
T	T != 'I' —	T	S
S	S != 'I' —	S	R
R	R != 'I' —	R	Q
Q	Q != 'I' —	Q	P
P	P != 'I' —	P	O
O	O != 'I' —	O	N
N	N != 'I' —	N	M
M	M != 'I' —	M	L
L	L != 'I' —	L	K
K	K != 'I' —	K	J
J	J != 'I' —	J	I
I	I != I X	X	

Program9-C

num

~~num~~ num ≤ 30

Print?

num = num +

15	$15 \leq 30$	30	17
17	$17 \leq 30$	28	19
19	$19 \leq 30$	26	21
21	$21 \leq 30$	24	23
23	$23 \leq 30$	22	25
25	$25 \leq 30$	20	27
27	$27 \leq 30$	18	29
29	$29 \leq 30$	16	31
31	$31 \leq 30$	X	X

$$\cancel{45} - 15 = 30$$

$$45 - 17 = 28$$

45

-21

14

Program 10. C

if ($85 \% .100m == 0$) Print ~~+ 100m~~

num

 $nwm \leq 85/2$ ~~But Print~~

	$1 \leq 32$	✓	↙ 1	2
1	$1 \leq 32$	✗	✗	3
2	$2 \leq 32$	✗	✗	4
3	$3 \leq 32$	✗	✗	5
4	$4 \leq 32$	✗	✗	6
5	$5 \leq 32$	✓	↙ 5	6
6	$6 \leq 32$	✗	✗	7
7	$7 \leq 32$	✗	✗	8
8	$8 \leq 32$	✗	✗	9
9	$9 \leq 32$	✗	✗	10
10	$10 \leq 32$	✗	✗	11
11	$11 \leq 32$	✗	✗	12
12	$12 \leq 32$	✗	✗	13
13	$13 \leq 32$	✓	↙ 13	14
14	$14 \leq 32$	✗	✗	15
15	$15 \leq 32$	✗	✗	16
16	$16 \leq 32$	✗	✗	17
17	$17 \leq 32$	✗	✗	18
18	$18 \leq 32$	✗	✗	19
19	$19 \leq 32$	✗	✗	20
20	$20 \leq 32$	✗	✗	21
21	$21 \leq 32$	✗	✗	22
22	$22 \leq 32$	✗	✗	23
23	$23 \leq 32$	✗	✗	24
24	$24 \leq 32$	✗	✗	25
25	$25 \leq 32$	✗	✗	26
26	$26 \leq 32$	✗	✗	27
27	$27 \leq 32$	✗	✗	28
28	$28 \leq 32$	✗	✗	29
29	$29 \leq 32$	✗	✗	30

30	$30 \leq 65/2$	X	X	31
31	$31 \leq 65/2$	X	X	32
32	$32 \leq 65/2$	X	X	33
33	$33 \leq 65/2$ X	X	X	