

Comprehensive Final Exam, Testing Center portion

Do NOT write on this test. Record all answers on the bubble sheet. **Closed book. No notes.** Work strictly from memory. **No calculators. No time limit. Scratch paper okay.**

Precedence: What is the value of each expression? Mark (I) for error, (J) for none of the above.

1/1p.	$3+5-2\%4-7$	(A) -89	(B) -1	(C) 0	(D) 3	(E) 9	(F) 13	(G) 30	(H) 95
2/1p.	$1-2\%7-5\%9$	(A) -79	(B) -76	(C) -74	(D) -6	(E) -5	(F) 1	(G) 4	(H) 61
3/1p.	$5*6+7/4+6$	(A) 3	(B) 5	(C) 6	(D) 15	(E) 21	(F) 37	(G) 41	(H) 65
4/1p.	$4-4<4!=2/2$	(A) -61	(B) -21	(C) 0	(D) 1	(E) 2	(F) 3	(G) 4	(H) 39
5/1p.	$3+1/7-6/3$	(A) -93	(B) -2	(C) -1	(D) 1	(E) 3	(F) 36	(G) 39	(H) 88
6/1p.	$8-3-6-9-7$	(A) -5	(B) -3	(C) 1	(D) 8	(E) 9	(F) 13	(G) 15	(H) 56
7/1p.	$3-6\&\&1 6-4$	(A) -54	(B) -3	(C) -2	(D) 1	(E) 2	(F) 6	(G) 25	(H) 78
8/1p.	$8-8+4-2*4$	(A) -32	(B) -24	(C) -12	(D) -8	(E) 5	(F) 7	(G) 8	(H) 56
9/1p.	$6-8+9-4+2$	(A) -63	(B) -33	(C) -17	(D) -13	(E) -9	(F) 5	(G) 16	(H) 47
10/1p.	$2+5/2-5-4$	(A) -75	(B) -7	(C) -6	(D) -5	(E) -1	(F) 1	(G) 2	(H) 3
11/1p.	$8*2/8+6\%5$	(A) -99	(B) -30	(C) 0	(D) 3	(E) 4	(F) 8	(G) 22	(H) 70
12/1p.	$8*5*8\%3\%8$	(A) -86	(B) -29	(C) -22	(D) 0	(E) 8	(F) 16	(G) 80	(H) 91
13/1p.	$3/4<9 9-8$	(A) -77	(B) -41	(C) -33	(D) -5	(E) -1	(F) 1	(G) 3	(H) 91
14/1p.	$5-7\%8/1+5$	(A) -1	(B) 0	(C) 1	(D) 3	(E) 4	(F) 5	(G) 10	(H) 11
15/1p.	$6/7\%7-2\%5$	(A) -67	(B) -13	(C) -2	(D) 0	(E) 2	(F) 3	(G) 48	(H) 81
16/1p.	$9/7\%5*1-5$	(A) -82	(B) -16	(C) -4	(D) -3	(E) -2	(F) 36	(G) 74	(H) 88
17/1p.	$7-2-4\%9*5$	(A) -36	(B) -28	(C) -15	(D) 0	(E) 1	(F) 5	(G) 25	(H) 45
18/1p.	$7+8/7*6+3$	(A) -33	(B) 0	(C) 3	(D) 7	(E) 16	(F) 18	(G) 51	(H) 72
19/1p.	$4-2\&\&7>9+9$	(A) -5	(B) 0	(C) 1	(D) 3	(E) 4	(F) 7	(G) 9	(H) 70
20/1p.	$4-3+7<=6<=3$	(A) -59	(B) 1	(C) 2	(D) 4	(E) 30	(F) 42	(G) 65	(H) 77
21/1p.	$7/3-7/4-7$	(A) -14	(B) -9	(C) -8	(D) -2	(E) 1	(F) 5	(G) 7	(H) 8
22/1p.	$9*7-1/6/3$	(A) -70	(B) -58	(C) 0	(D) 3	(E) 18	(F) 21	(G) 23	(H) 63
23/1p.	$1+4<=8\&\&5-7$	(A) -38	(B) -7	(C) -5	(D) 0	(E) 1	(F) 2	(G) 39	(H) 59
24/1p.	$8*3-3\%7-8$	(A) -64	(B) -54	(C) 0	(D) 4	(E) 24	(F) 29	(G) 64	(H) 86
25/1p.	$3*5+3\%4-5$	(A) -15	(B) 0	(C) 9	(D) 13	(E) 15	(F) 19	(G) 39	(H) 96
26/1p.	$6+1\%9\%8-6$	(A) -97	(B) -69	(C) -47	(D) -3	(E) 0	(F) 1	(G) 2	(H) 7
27/1p.	$6/7==3==1-1$	(A) -38	(B) -29	(C) -6	(D) -1	(E) 1	(F) 6	(G) 40	(H) 98
28/1p.	$6-2/1>=9>=1$	(A) -46	(B) 0	(C) 1	(D) 4	(E) 5	(F) 6	(G) 9	(H) 80
29/1p.	$6*5-5*6/4$	(A) -76	(B) -42	(C) -38	(D) -12	(E) -8	(F) -2	(G) 23	(H) 25
30/1p.	$2-0*7-9-6$	(A) -16	(B) -13	(C) -10	(D) -1	(E) 2	(F) 5	(G) 8	(H) 17
31/1p.	$9-5!=4 6/3$	(A) -84	(B) -66	(C) -59	(D) -35	(E) 0	(F) 1	(G) 2	(H) 9
32/1p.	$6*0>6<=8+6$	(A) -64	(B) -6	(C) 1	(D) 6	(E) 7	(F) 11	(G) 12	(H) 36
33/1p.	$2+0-7+2*8$	(A) -85	(B) -65	(C) -47	(D) -38	(E) -24	(F) -21	(G) 11	(H) 71

How many times does the body of the loop execute? (Mark 9 if 9 or more.)

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34/1p.  int u=1; do body; while( --u != -5 );
35/1p.  int s; for( s=-7; s<=-4; s-- ) body;
36/1p.  int w; for( w=-3; w!=3; --w ) body;
37/1p.  int a; for( a=-5; a>-9; --a ) body;
38/1p.  int t=2; do body; while( t++ < 4 );
39/1p.  int f=-10; while( f++ < -8 ) body;
40/1p.  int q; for( q=1; q<=0; ++q ) body;
41/1p.  int y; for( y=2; y!=10; y++ ) body;
42/1p.  int f=3; do body; while( ++f <= 10 );
43/1p.  int t=-9; do body; while( ++t != -2 );
44/1p.  int d=-2; do body; while( d++ != -7 );
45/1p.  int x=7; while( x++ <= 7 ) body;
46/1p.  int d=-3; while( d++ <= 0 ) body;
47/1p.  int u; for( u=5; u<5; u++ ) body;
48/1p.  int s=-1; do body; while( s++ >= -4 );
49/1p.  int q=10; while( q++ <= 10 ) body;
50/1p.  int k=2; while( --k != -3 ) body;
51/1p.  int a=-7; do body; while( --a != -12 );
52/1p.  int c=-9; do body; while( c-- != -3 );
53/1p.  int v=3; do body; while( v-- > -2 );
54/1p.  int s=-8; while( s++ <= -7 ) body;
55/1p.  int d=3; do body; while( --d >= -1 );
56/1p.  int m=8; do body; while( m-- < 11 );
57/1p.  int i=1; do body; while( ++i != 2 );
58/1p.  int f=4; while( f-- != 2 ) body;
59/1p.  int b=4; do body; while( --b > -2 );
60/1p.  int e=-2; do body; while( e++ < 3 );
61/1p.  int e=-10; do body; while( e-- > -10 );
62/1p.  int b=-5; do body; while( b++ <= 1 );
63/1p.  int v=3; while( ++v <= 9 ) body;
64/1p.  int b=-9; do body; while( ++b < -6 );
65/1p.  int f=0; while( ++f <= 7 ) body;
66/1p.  int a; for( a=-8; a>=-9; a-- ) body;
67/1p.  int q=5; while( --q != 3 ) body;
68/1p.  int e; for( e=-4; e<3; ++e ) body;
```

On the following printf questions you are given a list of inputs. For each problem line determine which printf statement created the accompanying outputs. (␣ means space.)

Which of these printf statements created the outputs shown for each problem below? (x is int x;)

- (A) printf("␣␣%+5d",x); (D) printf("␣␣%5d",x); (G) printf("%-6d␣",x);
 (B) printf("␣␣%-2d␣␣",x); (E) printf("␣%␣03d␣␣",x); (H) printf("%-7d",x);
 (C) printf("␣␣%-3d␣",x); (F) printf("%+4d␣␣",x); (I) printf("%02d␣␣␣␣",x);

inputs:	<u>9</u>	<u>-6</u>	<u>1785844110</u>	<u>-1179623709</u>
69/1p.	09␣␣␣␣␣	-6␣␣␣␣␣	1785844110␣␣␣␣␣	-1179623709␣␣␣␣␣
70/1p.	␣␣␣␣␣␣9	␣␣␣␣␣-6	␣␣1785844110	␣␣-1179623709
71/1p.	␣␣+9␣␣␣	␣␣-6␣␣␣	+1785844110␣␣␣	-1179623709␣␣␣
72/1p.	9␣␣␣␣␣␣	-6␣␣␣␣␣	1785844110	-1179623709

Which of these printf statements created the outputs shown for each problem below? (x is int x;)

- (A) printf("␣␣␣␣␣␣%d",x); (D) printf("␣%␣-7d",x); (G) printf("%␣4d␣␣␣␣",x);
 (B) printf("␣␣␣%5d",x); (E) printf("␣%+7d",x); (H) printf("%␣6d␣␣",x);
 (C) printf("␣␣%+04d␣",x); (F) printf("␣%-+5d␣",x); (I) printf("%0+7d␣",x);

inputs:	<u>8</u>	<u>-5</u>	<u>1075205808</u>	<u>-1839646769</u>
73/1p.	␣+8␣␣␣␣␣	␣-5␣␣␣␣␣	␣+1075205808␣␣	␣-1839646769␣␣
74/1p.	␣␣8␣␣␣␣␣	␣-5␣␣␣␣␣	␣␣1075205808	␣-1839646769
75/1p.	␣␣+008␣␣	␣␣-005␣␣	␣␣+1075205808␣␣	␣␣-1839646769␣␣
76/1p.	␣␣␣8␣␣␣␣	␣␣-5␣␣␣␣	␣1075205808␣␣␣␣	-1839646769␣␣␣␣

Which of these printf statements created the outputs shown for each problem below? (x is int x;)

- (A) printf("␣␣␣␣%+03d␣",x); (D) printf("␣␣%-␣5d␣",x); (G) printf("␣%-6d␣",x);
 (B) printf("␣␣␣%0␣4d␣",x); (E) printf("␣%␣-6d␣",x); (H) printf("␣%7d",x);
 (C) printf("␣␣␣%3d␣",x); (F) printf("␣%+4d␣␣",x); (I) printf("%8d",x);

inputs:	<u>3</u>	<u>-5</u>	<u>1456485417</u>	<u>-1896472386</u>
77/1p.	␣␣␣3␣␣␣␣	␣␣-5␣␣␣␣	␣␣␣1456485417␣	␣␣-1896472386␣
78/1p.	␣␣␣␣␣3␣␣	␣␣␣␣␣-5␣␣	␣␣␣1456485417␣␣	␣␣␣-1896472386␣␣
79/1p.	␣3␣␣␣␣␣␣	␣-5␣␣␣␣␣	␣1456485417␣	␣-1896472386␣
80/1p.	␣␣3␣␣␣␣␣	␣-5␣␣␣␣␣	␣␣1456485417␣	␣-1896472386␣

Which of these printf statements created the outputs shown for each problem below? (x is int x;)

- (A) printf("␣␣␣%+3d␣␣␣",x); (D) printf("␣␣%+6d␣␣",x); (G) printf("␣%␣-7d␣␣",x);
 (B) printf("␣␣␣%-+3d␣␣␣",x); (E) printf("␣␣%-␣3d␣␣␣␣",x); (H) printf("%␣8d␣␣",x);
 (C) printf("␣␣%+06d␣␣",x); (F) printf("␣␣%-6d␣␣",x); (I) printf("%+9d␣",x);

inputs:	<u>6</u>	<u>-6</u>	<u>1596827388</u>	<u>-1705145562</u>
81/1p.	␣␣␣␣␣␣␣6␣␣	␣␣␣␣␣␣-6␣␣	␣1596827388␣␣	-1705145562␣␣
82/1p.	␣␣␣␣␣␣␣+6␣	␣␣␣␣␣␣-6␣	+1596827388␣	-1705145562␣
83/1p.	␣␣␣␣+6␣␣␣␣	␣␣␣␣-6␣␣␣␣	␣␣␣+1596827388␣␣␣␣	␣␣␣-1705145562␣␣␣␣
84/1p.	␣␣6␣␣␣␣␣␣␣	␣-6␣␣␣␣␣␣␣	␣␣1596827388␣␣	␣-1705145562␣␣

Which of these printf statements created the outputs shown for each problem below? (x is char * x;)

- (A) printf("____%1s",x); (D) printf("____%s____",x); (G) printf("_%-4s",x);
 (B) printf("____%s__",x); (E) printf("__%3s__",x); (H) printf("_%-5s",x);
 (C) printf("____%2s__",x); (F) printf("__%4s",x); (I) printf("%-7s",x);

inputs:	<u>""</u>	<u>"y"</u>	<u>"bg"</u>	<u>"ygkj"</u>	<u>"vcqvp"</u>	<u>"yykfldyq"</u>
85/1p.	____	____y____	____bg____	____ygkj____	____vcqvpc____	____yykfldyq____
86/1p.	____	____yy____	____bg__	____ygkj__	____vcqvpc__	____yykfldyq__
87/1p.	____	____yy__	____bg__	____ygkj__	____vcqvpc__	____yykfldyq__
88/1p.	____	__y____	__bg____	__ygkj__	__vcqvpc__	__yykfldyq__

Which of these printf statements created the outputs shown for each problem below? (x is char * x;)

- (A) printf("____%s",x); (D) printf("_%-3s",x); (G) printf("%2s__",x);
 (B) printf("____%1s",x); (E) printf("__%3s",x); (H) printf("%4s",x);
 (C) printf("_%-2s",x); (F) printf("%-4s",x);

inputs:	<u>""</u>	<u>"b"</u>	<u>"yg"</u>	<u>"zvgf"</u>	<u>"vqpgzg"</u>	<u>"jlxfhjpx"</u>
89/1p.	____	__b__	__yg__	__zvgf__	__vqpgzg__	__jlxfhjpx__
90/1p.	____	____b	__yg	zvgf	vqpgzg	jlxfhjpx
91/1p.	____	b____	yg__	zvgf	vqpgzg	jlxfhjpx
92/1p.	____	__b__	yg__	zvgf__	vqpgzg__	jlxfhjpx__

Which of these printf statements created the outputs shown for each problem below? (x is double x;)

- (A) printf("____%10.6f",x); (D) printf("____%12.2f",x); (G) printf("_%012.6f",x);
 (B) printf("____%+12.6f",x); (E) printf("_%+012f",x); (H) printf("_%12f",x);
 (C) printf("____%010.4f",x); (F) printf("_%0+10.0f____",x); (I) printf("%+13.2f",x);

inputs:	<u>2</u>	<u>1.09</u>	<u>-1.2924</u>	<u>-210612.360932</u>
93/1p.	____00002.0000__	____00001.0900__	____-0001.2924__	____-210612.3609__
94/1p.	____000000002.00	____000000001.09	____00000000-1.29	____-210612.36
95/1p.	____0000+2.000000	____0000+1.090000	____0000-1.292400	____-210612.360932
96/1p.	__+000000002____	__+000000001____	__-000000001____	__-000210612____

Which of these printf statements created the outputs shown for each problem below? (x is double x;)

- (A) printf("____%010.2f",x); (D) printf("_%+13.6f",x); (G) printf("_%11.6f__",x);
 (B) printf("_%+011.4f__",x); (E) printf("_%012.4f",x); (H) printf("%+12.6f__",x);
 (C) printf("_%+12.4f",x); (F) printf("_%10.2f____",x); (I) printf("%+13.2f",x);

inputs:	<u>5</u>	<u>1.61</u>	<u>-8.8658</u>	<u>-112348.845739</u>
97/1p.	__+00005.0000__	__+00001.6100__	__-00008.8658__	__-112348.8457__
98/1p.	____000005.00____	____000001.61____	____00000-8.87____	____-112348.85____
99/1p.	____00000005.00____	____00000001.61____	____-000008.87____	____-112348.85____
100/1p.	__00000005.0000__	__00000001.6100__	__-000008.8658__	__-112348.8457__

Total points 100.

Answer Key (points per line)

1 (1).	B (-1)	35 (1).	9	69 (1).	I
2 (1).	D (-6)	36 (1).	9	70 (1).	D
3 (1).	F (37)	37 (1).	4	71 (1).	F
4 (1).	C (0)	38 (1).	3	72 (1).	H
5 (1).	D (1)	39 (1).	2	73 (1).	F
6 (1).	J (-17)	40 (1).	0	74 (1).	D
7 (1).	D (1)	41 (1).	8	75 (1).	C
8 (1).	J (-4)	42 (1).	8	76 (1).	G
9 (1).	F (5)	43 (1).	7	77 (1).	D
10 (1).	D (-5)	44 (1).	9	78 (1).	C
11 (1).	D (3)	45 (1).	1	79 (1).	G
12 (1).	J (2)	46 (1).	4	80 (1).	E
13 (1).	F (1)	47 (1).	0	81 (1).	H
14 (1).	D (3)	48 (1).	9	82 (1).	I
15 (1).	C (-2)	49 (1).	1	83 (1).	A
16 (1).	C (-4)	50 (1).	4	84 (1).	G
17 (1).	C (-15)	51 (1).	5	85 (1).	D
18 (1).	E (16)	52 (1).	9	86 (1).	B
19 (1).	B (0)	53 (1).	6	87 (1).	C
20 (1).	B (1)	54 (1).	2	88 (1).	G
21 (1).	J (-6)	55 (1).	5	89 (1).	B
22 (1).	H (63)	56 (1).	9	90 (1).	H
23 (1).	E (1)	57 (1).	1	91 (1).	F
24 (1).	J (13)	58 (1).	2	92 (1).	G
25 (1).	D (13)	59 (1).	6	93 (1).	C
26 (1).	F (1)	60 (1).	6	94 (1).	D
27 (1).	E (1)	61 (1).	1	95 (1).	B
28 (1).	B (0)	62 (1).	8	96 (1).	F
29 (1).	G (23)	63 (1).	6	97 (1).	B
30 (1).	B (-13)	64 (1).	3	98 (1).	F
31 (1).	F (1)	65 (1).	7	99 (1).	A
32 (1).	C (1)	66 (1).	2	100 (1).	E
33 (1).	G (11)	67 (1).	1		
34 (1).	6	68 (1).	7		

Total points 100.