

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.	$1/8-6-3\%$	(A) -61	(B) -37	(C) -3	(D) -1	(E) 0	(F) 3	(G) 5	(H) 54
2/1p.	$7+4<=0 5+7$	(A) -41	(B) 0	(C) 3	(D) 7	(E) 8	(F) 14	(G) 15	(H) 36
3/1p.	$4*4/4-6-9$	(A) -56	(B) -44	(C) -29	(D) -17	(E) -2	(F) 0	(G) 7	(H) 16
4/1p.	$9*3\%6-8/9$	(A) -94	(B) -34	(C) -9	(D) -6	(E) -5	(F) -1	(G) 2	(H) 27
5/1p.	$6+6\%5\%8*9$	(A) -42	(B) -39	(C) -17	(D) 7	(E) 12	(F) 18	(G) 63	(H) 89
6/1p.	$5/4\&\&4\&\&1-2$	(A) -78	(B) -33	(C) -23	(D) -5	(E) 1	(F) 3	(G) 39	(H) 50
7/1p.	$9+0<=3==3+6$	(A) -54	(B) -26	(C) -3	(D) 0	(E) 6	(F) 9	(G) 10	(H) 46
8/1p.	$3+2==4\&\&5+3$	(A) -98	(B) -93	(C) -62	(D) -1	(E) 1	(F) 4	(G) 6	(H) 12
9/1p.	$5\&\&7>=4-8+6$	(A) -94	(B) -48	(C) -14	(D) -13	(E) -2	(F) 0	(G) 7	(H) 42
10/1p.	$7/2+5\%5-3$	(A) -92	(B) -47	(C) -41	(D) -7	(E) -2	(F) 1	(G) 4	(H) 7
11/1p.	$2+8+7/5-6$	(A) -61	(B) -47	(C) -17	(D) -13	(E) -3	(F) 3	(G) 5	(H) 96
12/1p.	$8/2*1+8+3$	(A) -32	(B) 0	(C) 2	(D) 3	(E) 7	(F) 15	(G) 39	(H) 48
13/1p.	$6\%8/2\%3+3$	(A) -79	(B) -59	(C) 1	(D) 2	(E) 3	(F) 5	(G) 37	(H) 70
14/1p.	$3*7>=4<8+9$	(A) -65	(B) -57	(C) 0	(D) 1	(E) 8	(F) 10	(G) 12	(H) 30
15/1p.	$3+7+9\%9/7$	(A) -78	(B) -72	(C) -34	(D) 0	(E) 1	(F) 3	(G) 4	(H) 10
16/1p.	$4-9-4+9\%1$	(A) -9	(B) -5	(C) -1	(D) 0	(E) 4	(F) 24	(G) 49	(H) 59
17/1p.	$1-0-2-2*3$	(A) -83	(B) -7	(C) -3	(D) 1	(E) 5	(F) 9	(G) 13	(H) 15
18/1p.	$8/8!=9!=6*6$	(A) -97	(B) -8	(C) 0	(D) 6	(E) 8	(F) 35	(G) 39	(H) 48
19/1p.	$1\%2-4\%5-0$	(A) -63	(B) -54	(C) -31	(D) -3	(E) -1	(F) 1	(G) 2	(H) 4
20/1p.	$9-7*3!=3\&\&5$	(A) -59	(B) -51	(C) 0	(D) 2	(E) 8	(F) 9	(G) 21	(H) 74
21/1p.	$5-5\%5+6*3$	(A) -39	(B) -13	(C) -10	(D) -3	(E) 0	(F) 33	(G) 40	(H) 62
22/1p.	$5+3\%9/7+8$	(A) -99	(B) -67	(C) -55	(D) -32	(E) 0	(F) 5	(G) 9	(H) 13
23/1p.	$3*2-9+6/6$	(A) -24	(B) -20	(C) -18	(D) -9	(E) -7	(F) -3	(G) -2	(H) -1
24/1p.	$2\%1\%2+4-8$	(A) -97	(B) -71	(C) -6	(D) -5	(E) -4	(F) 0	(G) 34	(H) 45
25/1p.	$5+4*5\%4*4$	(A) -83	(B) 4	(C) 5	(D) 9	(E) 13	(F) 20	(G) 36	(H) 45
26/1p.	$8/8/5\%7-5$	(A) -92	(B) -61	(C) -50	(D) -5	(E) -4	(F) -2	(G) 3	(H) 8
27/1p.	$8-2<6!=2-1$	(A) -44	(B) -1	(C) 0	(D) 1	(E) 6	(F) 9	(G) 17	(H) 49
28/1p.	$6-7+9/1-2$	(A) -12	(B) -10	(C) -8	(D) 6	(E) 8	(F) 10	(G) 22	(H) 86
29/1p.	$4/8+6/1-2$	(A) -85	(B) -6	(C) -2	(D) -1	(E) 2	(F) 4	(G) 42	(H) 79
30/1p.	$4*9\%7\%3-5$	(A) -20	(B) -5	(C) -4	(D) -3	(E) -1	(F) 0	(G) 3	(H) 25
31/1p.	$9+7-0/5+9$	(A) -29	(B) 1	(C) 7	(D) 9	(E) 12	(F) 19	(G) 25	(H) 40
32/1p.	$0-8!=7>9*8$	(A) -89	(B) -39	(C) -8	(D) -1	(E) 1	(F) 8	(G) 76	(H) 94
33/1p.	$8/8/7-5-0$	(A) -50	(B) -43	(C) -15	(D) -5	(E) -2	(F) 3	(G) 74	(H) 90

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

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34/1p.  int a; for( a=2; a>=-5; --a ) body;
35/1p.  int a=0; while( --a >= -6 ) body;
36/1p.  int t=-3; while( t++ <= -3 ) body;
37/1p.  int e=4; while( e++ < 11 ) body;
38/1p.  int k=5; while( k++ <= 12 ) body;
39/1p.  int v=2; while( v-- > -4 ) body;
40/1p.  int x=9; while( --x != 8 ) body;
41/1p.  int t; for( t=2; t!=9; ++t ) body;
42/1p.  int h=10; while( h-- > 2 ) body;
43/1p.  int r=4; do body; while( r++ < 10 );
44/1p.  int x=-2; while( ++x > -6 ) body;
45/1p.  int c; for( c=10; c>=4; c++ ) body;
46/1p.  int z=-9; while( z++ < -2 ) body;
47/1p.  int x=0; do body; while( --x > -2 );
48/1p.  int s=-6; while( ++s <= -1 ) body;
49/1p.  int n=5; do body; while( ++n < 9 );
50/1p.  int g=8; while( g++ != 11 ) body;
51/1p.  int f=-7; while( --f != -10 ) body;
52/1p.  int v; for( v=-3; v!=0; ++v ) body;
53/1p.  int y=-9; while( ++y <= -8 ) body;
54/1p.  int g; for( g=-10; g>=-13; g-- ) body;
55/1p.  int k; for( k=3; k!=-4; ++k ) body;
56/1p.  int w; for( w=-1; w!=-8; ++w ) body;
57/1p.  int v=0; do body; while( --v > -4 );
58/1p.  int q; for( q=7; q<14; ++q ) body;
59/1p.  int v=0; while( ++v != 9 ) body;
60/1p.  int y=-4; while( y-- != -8 ) body;
61/1p.  int n=7; do body; while( --n != 12 );
62/1p.  int p=3; do body; while( p++ < 10 );
63/1p.  int a=-7; do body; while( ++a != -4 );
64/1p.  int d=-9; while( --d >= -12 ) body;
65/1p.  int p; for( p=9; p<12; --p ) body;
66/1p.  int y=-4; while( ++y != -9 ) body;
67/1p.  int m; for( m=-9; m>=-14; ++m ) body;
68/1p.  int s=-4; while( ++s != 1 ) body;
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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("␣␣␣␣%␣d␣␣␣",x); (D) printf("␣␣%-+4d␣␣",x); (G) printf("␣%-3d␣␣␣␣",x);
 (B) printf("␣␣␣␣0␣4d␣",x); (E) printf("␣␣%␣-7d",x); (H) printf("%0+8d",x);
 (C) printf("␣␣%-+05d␣",x); (F) printf("␣%-+06d␣",x); (I) printf("%6d␣␣",x);

inputs:	<u>2</u>	<u>-7</u>	<u>1827691473</u>	<u>-2048971826</u>
69/1p.	␣2␣␣␣␣␣␣␣	␣-7␣␣␣␣␣␣	␣1827691473␣␣␣␣	␣-2048971826␣␣␣␣
70/1p.	␣␣2␣␣␣␣␣␣	␣-7␣␣␣␣␣␣	␣␣1827691473	␣-2048971826
71/1p.	␣␣␣␣␣␣2␣␣␣	␣␣␣␣␣␣-7␣␣␣	␣␣␣␣␣␣1827691473␣␣␣	␣␣␣␣␣␣-2048971826␣␣␣
72/1p.	+0000002	-0000007	+1827691473	-2048971826

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

- (A) printf("␣␣␣␣%2d␣␣␣",x); (D) printf("␣␣␣%0␣6d",x); (G) printf("␣%-+07d␣",x);
 (B) printf("␣␣␣␣%-+5d␣",x); (E) printf("␣␣%5d␣␣",x); (H) printf("␣%-8d",x);
 (C) printf("␣␣␣␣%-6d",x); (F) printf("␣␣%␣08d",x); (I) printf("%-+8d␣",x);

inputs:	<u>3</u>	<u>-5</u>	<u>1550268641</u>	<u>-1906558772</u>
73/1p.	␣␣0000003	␣-0000005	␣␣1550268641	␣-1906558772
74/1p.	␣␣␣␣00003	␣␣␣␣-00005	␣␣␣␣1550268641	␣␣␣␣-1906558772
75/1p.	+3␣␣␣␣␣␣␣	-5␣␣␣␣␣␣␣	+1550268641␣	-1906558772␣
76/1p.	␣␣␣␣␣␣3␣␣	␣␣␣␣␣␣-5␣␣	␣␣1550268641␣␣	␣␣-1906558772␣␣

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

- (A) printf("␣␣␣␣%03d␣",x); (D) printf("␣␣%␣6d",x); (G) printf("␣%-+5d␣␣",x);
 (B) printf("␣␣␣␣%2d␣␣",x); (E) printf("␣␣%-2d␣␣␣␣",x); (H) printf("␣%7d",x);
 (C) printf("␣␣␣␣%4d␣",x); (F) printf("␣␣%␣04d␣␣␣",x); (I) printf("%8d",x);

inputs:	<u>5</u>	<u>-7</u>	<u>1078133066</u>	<u>-1468783533</u>
77/1p.	␣␣␣␣␣5␣␣	␣␣␣␣␣-7␣␣	␣␣␣␣1078133066␣␣	␣␣␣␣-1468783533␣␣
78/1p.	␣␣␣␣␣␣␣5	␣␣␣␣␣␣␣-7	␣1078133066	␣-1468783533
79/1p.	␣+5␣␣␣␣␣	␣-7␣␣␣␣␣	␣+1078133066␣␣	␣-1468783533␣␣
80/1p.	␣␣5␣␣␣␣␣	␣␣-7␣␣␣␣␣	␣␣1078133066␣␣␣␣	␣␣-1468783533␣␣␣␣

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

- (A) printf("␣␣␣␣%+06d",x); (D) printf("␣␣%␣05d␣␣␣",x); (G) printf("%9d␣",x);
 (B) printf("␣␣␣␣%+3d␣␣",x); (E) printf("␣␣%␣d␣␣␣␣␣␣␣",x); (H) printf("%+10d",x);
 (C) printf("␣␣␣␣%03d␣␣",x); (F) printf("␣␣%-+7d␣",x); (I) printf("%0␣7d␣␣␣",x);

inputs:	<u>6</u>	<u>-2</u>	<u>1464550687</u>	<u>-1771627242</u>
81/1p.	␣␣␣␣+00006	␣␣␣␣-00002	␣␣␣␣+1464550687	␣␣␣␣-1771627242
82/1p.	␣000006␣␣␣	-000002␣␣␣	␣1464550687␣␣␣	-1771627242␣␣␣
83/1p.	␣␣␣␣␣␣␣+6	␣␣␣␣␣␣␣-2	+1464550687	-1771627242
84/1p.	␣␣␣␣␣␣␣␣6␣	␣␣␣␣␣␣␣␣-2␣	␣1464550687␣	-1771627242␣

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

- (A) printf("____%-2s",x); (D) printf("_%2s_",x); (G) printf("%-6s",x);
 (B) printf("____%1s_",x); (E) printf("_%3s_",x); (H) printf("%5s_",x);
 (C) printf("____%s____",x); (F) printf("_%4s_",x); (I) printf("%6s",x);

inputs:	<u>" "</u>	<u>"y"</u>	<u>"fc"</u>	<u>"cllg"</u>	<u>"kqkldf"</u>	<u>"bxkwhlqd"</u>
85/1p.	____	____y	____fc	____cllg	____kqkldf	____bxkwhlqd
86/1p.	____	____y	____fc	____cllg	____kqkldf	____bxkwhlqd
87/1p.	____	____y	____fc	____cllg	____kqkldf	____bxkwhlqd
88/1p.	____	____y	____fc	____cllg	____kqkldf	____bxkwhlqd

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

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

inputs:	<u>" "</u>	<u>"z"</u>	<u>"qg"</u>	<u>"llgg"</u>	<u>"ycbdb"</u>	<u>"xkljvdy"</u>
89/1p.	____	____z	____qg	____llgg	____ycbdb	____xkljvdy
90/1p.	____	____z	____qg	____llgg	____ycbdb	____xkljvdy
91/1p.	____	____z	____qg	____llgg	____ycbdb	____xkljvdy
92/1p.	____	____z	____qg	____llgg	____ycbdb	____xkljvdy

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

- (A) printf("____%11.4f",x); (D) printf("_%+12.2f",x); (G) printf("_%0+11.4f____",x);
 (B) printf("_%+010.0f____",x); (E) printf("_%+12.4f",x); (H) printf("_%11f____",x);
 (C) printf("_%+012.0f",x); (F) printf("_%12f",x); (I) printf("%+010.6f____",x);

inputs:	<u>4</u>	<u>4.37</u>	<u>-2.8828</u>	<u>-61888.401602</u>
93/1p.	____4.0000	____4.3700	____-2.8828	____-61888.4016
94/1p.	____+4.00	____+4.37	____-2.88	____-61888.40
95/1p.	____+00004.0000	____+00004.3700	____-00002.8828	____-61888.4016
96/1p.	____+04.000000	____+04.370000	____-02.882800	____-61888.401602

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

- (A) printf("_%11.2f_",x); (D) printf("%+014f",x); (G) printf("%013.0f_",x);
 (B) printf("_%+011.6f____",x); (E) printf("%0+13f_",x); (H) printf("%11.0f____",x);
 (C) printf("_%+13.6f",x); (F) printf("%012.6f____",x); (I) printf("%14.6f",x);

inputs:	<u>9</u>	<u>-3.51</u>	<u>-2.1654</u>	<u>-604095.970631</u>
97/1p.	____9	____-4	____-2	____-604096
98/1p.	____+000009.000000	____-000003.510000	____-000002.165400	____-604095.970631
99/1p.	____0000000000009	____-000000000004	____-000000000002	____-000000604096
100/1p.	____+00009.000000	____-00003.510000	____-00002.165400	____-604095.970631

Total points 100.

Answer Key (points per line)

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

Total points 100.