

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.	$3+5\%8-8/4$	(A) -28	(B) -18	(C) 1	(D) 2	(E) 6	(F) 8	(G) 27	(H) 45
2/1p.	$3+1*9/3+7$	(A) -93	(B) -76	(C) -37	(D) 0	(E) 1	(F) 3	(G) 11	(H) 19
3/1p.	$6-1/4*5+2$	(A) 0	(B) 2	(C) 6	(D) 7	(E) 31	(F) 32	(G) 42	(H) 94
4/1p.	$8-5-8\%8\%3$	(A) -57	(B) -41	(C) -26	(D) -2	(E) 0	(F) 1	(G) 3	(H) 6
5/1p.	$5/6-8/6\%9$	(A) -5	(B) -2	(C) -1	(D) 0	(E) 1	(F) 7	(G) 8	(H) 96
6/1p.	$6/1-7+3/7$	(A) -79	(B) -6	(C) -3	(D) -1	(E) 0	(F) 5	(G) 31	(H) 39
7/1p.	$8-8<=3 8-7$	(A) -72	(B) -6	(C) 0	(D) 1	(E) 7	(F) 14	(G) 15	(H) 62
8/1p.	$4*5+9/3\%9$	(A) -4	(B) 0	(C) 5	(D) 7	(E) 9	(F) 12	(G) 16	(H) 32
9/1p.	$2+5+2/5-6$	(A) -94	(B) -17	(C) -5	(D) -3	(E) 1	(F) 5	(G) 45	(H) 84
10/1p.	$5+9<=4==0+6$	(A) -16	(B) 0	(C) 5	(D) 6	(E) 7	(F) 11	(G) 12	(H) 38
11/1p.	$7*3*2/9+1$	(A) -89	(B) -36	(C) 0	(D) 1	(E) 4	(F) 7	(G) 21	(H) 66
12/1p.	$9-8-8-7\%2$	(A) -6	(B) 0	(C) 2	(D) 8	(E) 10	(F) 27	(G) 31	(H) 97
13/1p.	$3*8-3/7+3$	(A) 0	(B) 1	(C) 2	(D) 6	(E) 9	(F) 15	(G) 24	(H) 27
14/1p.	$7*4+5\%7\%2$	(A) -94	(B) -92	(C) -67	(D) 0	(E) 1	(F) 28	(G) 35	(H) 96
15/1p.	$2*7-8+1-9$	(A) -73	(B) -22	(C) -18	(D) -13	(E) -10	(F) -4	(G) 14	(H) 25
16/1p.	$1+2<=2>6+9$	(A) -68	(B) 0	(C) 1	(D) 2	(E) 10	(F) 40	(G) 46	(H) 52
17/1p.	$8-7/1\%3-8$	(A) -81	(B) -7	(C) -4	(D) -1	(E) 9	(F) 10	(G) 11	(H) 15
18/1p.	$2+9\%1\%6-7$	(A) -7	(B) -1	(C) 0	(D) 2	(E) 42	(F) 54	(G) 65	(H) 72
19/1p.	$0>4!=0-7+7$	(A) -14	(B) 0	(C) 1	(D) 7	(E) 8	(F) 30	(G) 80	(H) 97
20/1p.	$2-7\%8\%3*7$	(A) -23	(B) -5	(C) 3	(D) 7	(E) 9	(F) 16	(G) 26	(H) 36
21/1p.	$9+9-0\&\&4>3$	(A) -79	(B) -13	(C) 0	(D) 1	(E) 9	(F) 10	(G) 18	(H) 46
22/1p.	$3+1 0!=0*6$	(A) -98	(B) -31	(C) -30	(D) 1	(E) 2	(F) 6	(G) 9	(H) 24
23/1p.	$1\%6-8/9-7$	(A) -77	(B) -8	(C) -7	(D) -4	(E) -3	(F) -1	(G) 0	(H) 8
24/1p.	$7-4<=7<5+1$	(A) 0	(B) 1	(C) 2	(D) 6	(E) 7	(F) 8	(G) 11	(H) 53
25/1p.	$1\%9*5\%4-9$	(A) -71	(B) -40	(C) -8	(D) -7	(E) 0	(F) 34	(G) 83	(H) 85
26/1p.	$3*6==7 2*7$	(A) -33	(B) -32	(C) -6	(D) 1	(E) 3	(F) 7	(G) 21	(H) 67
27/1p.	$8/2/3-0-5$	(A) -51	(B) -31	(C) -24	(D) -8	(E) -4	(F) -2	(G) 1	(H) 37
28/1p.	$5/0<2<=7+6$	(A) -78	(B) -16	(C) 0	(D) 1	(E) 5	(F) 7	(G) 11	(H) 18
29/1p.	$9\%9/7+9+7$	(A) -94	(B) 0	(C) 2	(D) 7	(E) 9	(F) 16	(G) 64	(H) 98
30/1p.	$9/4*7*1\%5$	(A) -5	(B) 0	(C) 1	(D) 3	(E) 6	(F) 14	(G) 46	(H) 96
31/1p.	$2/0 9\&\&2*6$	(A) -67	(B) -62	(C) -22	(D) 0	(E) 1	(F) 2	(G) 6	(H) 12
32/1p.	$7/9/7/4-5$	(A) -42	(B) -7	(C) -3	(D) -2	(E) 0	(F) 1	(G) 5	(H) 71
33/1p.	$8-1\%7*2\%8$	(A) -48	(B) -32	(C) 0	(D) 1	(E) 6	(F) 7	(G) 38	(H) 59

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

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34/1p.  int a=0; do body; while( --a != -3 );
35/1p.  int f; for( f=0; f<7; f++ ) body;
36/1p.  int m; for( m=-5; m!=0; ++m ) body;
37/1p.  int x; for( x=-10; x!=-2; x++ ) body;
38/1p.  int b=-2; while( b++ != 5 ) body;
39/1p.  int t; for( t=1; t<2; t++ ) body;
40/1p.  int b=10; do body; while( b-- > 10 );
41/1p.  int z; for( z=-5; z!=-11; z++ ) body;
42/1p.  int q=0; do body; while( q-- >= -4 );
43/1p.  int u; for( u=-6; u<-3; u++ ) body;
44/1p.  int u; for( u=-8; u<-2; u++ ) body;
45/1p.  int t; for( t=1; t<=8; ++t ) body;
46/1p.  int f=1; do body; while( --f <= 6 );
47/1p.  int f=-8; do body; while( f-- != -9 );
48/1p.  int u=-6; do body; while( u++ < -6 );
49/1p.  int e; for( e=-3; e!=-2; ++e ) body;
50/1p.  int f=10; do body; while( ++f != 18 );
51/1p.  int x=2; while( x++ != 6 ) body;
52/1p.  int y=4; do body; while( ++y < 10 );
53/1p.  int w; for( w=1; w!=3; w++ ) body;
54/1p.  int b; for( b=-4; b>-10; --b ) body;
55/1p.  int i=-7; while( i++ != 0 ) body;
56/1p.  int s; for( s=6; s>-2; --s ) body;
57/1p.  int n; for( n=-7; n<=-2; n-- ) body;
58/1p.  int m=6; while( ++m <= 8 ) body;
59/1p.  int h=-8; do body; while( --h >= -13 );
60/1p.  int a=9; while( a-- >= 10 ) body;
61/1p.  int p=-3; while( --p != -9 ) body;
62/1p.  int p=-8; while( p++ < -5 ) body;
63/1p.  int p; for( p=4; p<12; p++ ) body;
64/1p.  int c=1; while( c++ != 8 ) body;
65/1p.  int r=-1; do body; while( ++r <= 4 );
66/1p.  int u=9; while( u++ != 9 ) body;
67/1p.  int y=3; while( --y >= 2 ) body;
68/1p.  int x; for( x=5; x<11; x++ ) 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("␣␣␣%05d␣",x); (D) printf("␣␣␣%d␣␣␣␣",x); (G) printf("%+9d",x);
 (B) printf("␣␣␣%-4d␣",x); (E) printf("␣%0+7d␣",x); (H) printf("%-+8d",x);
 (C) printf("␣␣␣%0␣6d",x); (F) printf("␣%08d",x); (I) printf("%09d",x);

inputs:	<u>3</u>	<u>-9</u>	<u>1767791434</u>	<u>-1893431964</u>
69/1p.	␣+000003␣	␣-000009␣	␣+1767791434␣	␣-1893431964␣
70/1p.	␣␣␣␣␣␣+3	␣␣␣␣␣␣-9	+1767791434	-1893431964
71/1p.	000000003	-000000009	1767791434	-1893431964
72/1p.	␣␣␣␣0003␣	␣␣␣␣-0009␣	␣␣␣␣1767791434␣	␣␣␣␣-1893431964␣

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

- (A) printf("␣␣␣␣␣%3d␣",x); (D) printf("␣␣␣%5d␣",x); (G) printf("␣%␣-8d␣",x);
 (B) printf("␣␣␣␣␣%-2d␣",x); (E) printf("␣%␣-6d␣",x); (H) printf("␣%␣9d",x);
 (C) printf("␣␣␣␣␣%-5d␣",x); (F) printf("␣%␣06d␣",x); (I) printf("␣%␣09d␣",x);

inputs:	<u>1</u>	<u>-5</u>	<u>1245481556</u>	<u>-1098598738</u>
73/1p.	␣␣1␣␣␣␣␣␣	␣-5␣␣␣␣␣␣	␣1245481556␣	␣-1098598738␣
74/1p.	␣␣␣00001␣	␣␣-00005␣	␣␣1245481556␣	␣␣-1098598738␣
75/1p.	␣␣␣␣␣␣1␣	␣␣␣␣␣␣-5␣	␣␣␣1245481556␣	␣␣␣-1098598738␣
76/1p.	␣␣␣␣␣␣1␣	␣␣␣␣␣␣-5␣	␣␣␣␣␣1245481556␣	␣␣␣␣␣-1098598738␣

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

- (A) printf("␣␣␣␣␣%+3d",x); (D) printf("␣%␣-3d␣",x); (G) printf("␣%5d␣",x);
 (B) printf("␣␣␣␣␣%02d␣",x); (E) printf("␣%␣5d␣",x); (H) printf("␣%-9d",x);
 (C) printf("␣%␣+d␣",x); (F) printf("␣%-8d",x); (I) printf("␣09d",x);

inputs:	<u>8</u>	<u>-6</u>	<u>1418890621</u>	<u>-1262504995</u>
77/1p.	␣␣␣␣␣8␣	␣␣␣␣␣-6␣	␣1418890621␣	␣-1262504995␣
78/1p.	␣␣␣␣␣8␣	␣␣␣␣␣-6␣	␣1418890621␣	␣-1262504995␣
79/1p.	␣8␣␣␣␣␣	-6␣␣␣␣␣	␣1418890621	-1262504995
80/1p.	␣␣␣␣␣␣+8	␣␣␣␣␣␣-6	␣␣␣␣␣+1418890621	␣␣␣␣␣-1262504995

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

- (A) printf("␣␣␣␣␣␣%␣d",x); (D) printf("␣%08d",x); (G) printf("%+10d",x);
 (B) printf("␣␣␣␣␣%02d␣",x); (E) printf("␣%07d␣",x); (H) printf("␣%-8d",x);
 (C) printf("␣%␣-+6d",x); (F) printf("␣%7d",x); (I) printf("␣0+10d",x);

inputs:	<u>3</u>	<u>-1</u>	<u>1559513640</u>	<u>-2107707535</u>
81/1p.	␣␣␣␣␣03␣	␣␣␣␣␣-1␣	␣␣␣␣1559513640␣	␣␣␣␣-2107707535␣
82/1p.	␣␣␣␣␣␣␣␣3␣	␣␣␣␣␣␣␣␣-1␣	␣␣␣␣␣␣1559513640␣	␣␣␣␣␣␣-2107707535␣
83/1p.	3␣␣␣␣␣␣	-1␣␣␣␣␣␣	1559513640␣	-2107707535␣
84/1p.	+000000003	-000000001	+1559513640	-2107707535

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

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

inputs:	<u>"</u>	<u>"g"</u>	<u>"cl"</u>	<u>"kvcj"</u>	<u>"lwlhjj"</u>	<u>"bpfxpwwx"</u>
85/1p.	_____	g	cl	kvcj	lwlhjj	bpfxpwwx
86/1p.	_____	g	cl	kvcj	lwlhjj	bpfxpwwx
87/1p.	_____	g	cl	kvcj	lwlhjj	bpfxpwwx
88/1p.	_____	g	cl	kvcj	lwlhjj	bpfxpwwx

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

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

inputs:	<u>"</u>	<u>"y"</u>	<u>"gg"</u>	<u>"jfw"</u>	<u>"jybvjf"</u>	<u>"khhxlkhv"</u>
89/1p.	_____	y	gg	jfw	jybvjf	khhxlkhv
90/1p.	_____	y	gg	jfw	jybvjf	khhxlkhv
91/1p.	_____	y	gg	jfw	jybvjf	khhxlkhv
92/1p.	_____	y	gg	jfw	jybvjf	khhxlkhv

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

- (A) printf("_____%+10.0f_",x); (D) printf("_____%010f_",x); (G) printf("%+013.0f_",x);
 (B) printf("_____%+11.4f_",x); (E) printf("_____%0+11.6f_",x); (H) printf("%12.2f_",x);
 (C) printf("_____%0+11.0f_",x); (F) printf("_____%012.4f_",x); (I) printf("%14.0f",x);

inputs:	<u>5</u>	<u>3.80</u>	<u>1.1578</u>	<u>-25843.711896</u>
93/1p.	+0000000000005	+0000000000004	+0000000000001	-000000025844
94/1p.	+005.000000	+003.800000	+001.157800	-25843.711896
95/1p.	0000000000005	0000000000004	0000000000001	0000000-25844
96/1p.	00005.000000	00003.800000	00001.157800	00-25843.711896

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

- (A) printf("_____%11.2f_",x); (D) printf("_____%+13.0f",x); (G) printf("%+13f_",x);
 (B) printf("_____%+013.2f",x); (E) printf("_____%10.6f_",x); (H) printf("%+14.2f",x);
 (C) printf("_____%+12.4f_",x); (F) printf("_____%13f",x); (I) printf("%014f",x);

inputs:	<u>3</u>	<u>-1.68</u>	<u>-8.2349</u>	<u>-35642.935268</u>
97/1p.	+0000000003.00	-0000000001.68	-0000000008.23	-000035642.94
98/1p.	0000+3.000000	0000-1.680000	0000-8.234900	-35642.935268
99/1p.	000000+3.00000	000000-1.68000	000000-8.23490	00-35642.93530
100/1p.	0003.000000	00-1.680000	00-8.234900	-35642.935268

Total points 100.

Answer Key (points per line)

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

Total points 100.