

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.**

**UNIX:** Which unix shell commands have what meaning? (If no match mark J.)

(A) cat (B) cd (C) cwd (D) exit (E) list (F) pass (G) pwd (H) quit (I) type

1/8p. change your password

2/8p. log out

3/8p. type out a text file

4/8p. tell what directory you are in

**UNIX:** Which unix shell commands have what meaning? (If no match mark J.)

(A) del (B) delete (C) df (D) fg (E) full (F) rd (G) rm (H) rmdir (I) volume

5/8p. see how full the disks are

6/8p. return from shell-out

7/8p. delete a directory

8/8p. delete a file

**UNIX:** Which unix shell commands have what meaning? (If no match mark J.)

(A) cat (B) du (C) emacs (D) mv (E) ren (F) rename (G) rm (H) space (I) top

9/8p. edit a file

10/8p. rename a file

11/8p. see how much disk space you are using

12/8p. see what is running

**UNIX:** Which unix shell commands have what meaning? (If no match mark J.)

(A) cap (B) cat (C) catalog (D) dir (E) gcc (F) ls (G) md (H) mkdir (I) who

13/8p. compile a program

14/8p. show the contents of the directory

15/8p. see who is logged in

16/8p. create a directory

**EMACS:** Which emacs commands have what meaning? (If no match mark J.)

(A) C- (C) C-c (E) C-p (G) C-x 2 (I) M-

(B) C-b (D) C-g (F) C-x (H) ESC-

17/5p. cancel the command in progress

18/5p. hold down CTRL

19/5p. go to previous character (left 1)

20/5p. open a second window

21/5p. press ESC first

**EMACS:** Which emacs commands have what meaning? (If no match mark J.)

(A) C-f (C) C-n (E) C-x C-f (G) C-x C-s (I) M-x rmail

(B) C-h t (D) C-t (F) C-x C-l (H) ESC-x rmail

22/5p. go to next character (right 1)

23/5p. show the tutorial

24/5p. run mail

25/5p. load a new file

26/5p. save current buffer, same filename

**EMACS:** Which emacs commands have what meaning? (If no match mark J.)

(A) C-d (C) C-p (E) C-x C-q (G) C-x n (I) C-z

(B) C-n (D) C-x C-c (F) C-x C-w (H) C-x o

27/5p. exit/quit

28/5p. go to next line (down 1)

29/5p. save-as current buffer, specify filename

30/5p. jump to next window

**EMACS:** Which emacs commands have what meaning? (If no match mark J.)

(A) C-a (C) C-delete (E) C-s (G) C-x i (I) C-z

(B) C-d (D) C-g (F) C-x C-i (H) C-x o

31/5p. go to start of line

32/5p. insert a file

33/5p. shell out

34/5p. delete current character

**EMACS:** Which emacs commands have what meaning? (If no match mark J.)

(A) C-c (C) C-l (E) C-r (G) C-x 1 (I) M-x rmail

(B) C-k (D) C-p (F) C-x 0 (H) C-y

35/5p. paste back what was deleted

36/5p. close all but current window

37/5p. cut to end of line

38/5p. center and redraw screen

**EMACS:** Which emacs commands have what meaning? (If no match mark J.)

(A) C-\_ (C) C-e (E) C-p (G) C-u (I) M-x rmail

(B) C-d (D) C-f (F) C-s (H) C-z

39/5p. go to end of line

40/5p. go to previous line (up 1)

41/5p. undo last change

42/5p. start incremental search

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

43/10p.	$6-6>=5<=2*6$	(A) -89	(B) -61	(C) -37	(D) 0	(E) 1	(F) 6	(G) 30	(H) 31
44/10p.	$7*5!=4<5-8$	(A) -49	(B) -28	(C) -24	(D) -8	(E) -7	(F) -1	(G) 1	(H) 7
45/10p.	$7+5>2&&7*6$	(A) -98	(B) -72	(C) -18	(D) 1	(E) 8	(F) 13	(G) 48	(H) 61
46/10p.	$3*6/5-7\%3$	(A) -77	(B) -63	(C) 0	(D) 2	(E) 3	(F) 18	(G) 44	(H) 49
47/10p.	$1-3\%9/1-8$	(A) -91	(B) -57	(C) -10	(D) -1	(E) 0	(F) 1	(G) 2	(H) 35
48/10p.	$6-6<7<3*9$	(A) -3	(B) 0	(C) 5	(D) 9	(E) 45	(F) 54	(G) 55	(H) 86
49/10p.	$6/8==8&&2-3$	(A) -77	(B) -69	(C) -3	(D) -2	(E) 1	(F) 3	(G) 6	(H) 9
50/10p.	$5*9\%3\%2+5$	(A) -70	(B) -68	(C) -67	(D) 0	(E) 3	(F) 5	(G) 46	(H) 87
51/10p.	$7*2<9!=6-3$	(A) -21	(B) -17	(C) -14	(D) 0	(E) 1	(F) 4	(G) 7	(H) 72
52/10p.	$6-4/3-1-3$	(A) -4	(B) -2	(C) 0	(D) 2	(E) 3	(F) 6	(G) 9	(H) 10
53/10p.	$1+2/5/2*5$	(A) -40	(B) -2	(C) -1	(D) 0	(E) 1	(F) 6	(G) 10	(H) 86
54/10p.	$3\%6\%8+9/3$	(A) -66	(B) -49	(C) -36	(D) -2	(E) 0	(F) 1	(G) 3	(H) 6
55/10p.	$4+9/9==9<=4$	(A) -74	(B) 0	(C) 1	(D) 4	(E) 5	(F) 13	(G) 45	(H) 66
56/10p.	$4+6\%8*3/9$	(A) -20	(B) -10	(C) 1	(D) 2	(E) 3	(F) 4	(G) 6	(H) 92
57/10p.	$1\%7/6-8\%5$	(A) -39	(B) -3	(C) -1	(D) 0	(E) 1	(F) 4	(G) 49	(H) 82
58/10p.	$6+1<2&&5+4$	(A) 0	(B) 1	(C) 4	(D) 5	(E) 7	(F) 10	(G) 11	(H) 78
59/10p.	$4+5+1/7/4$	(A) -54	(B) -44	(C) -22	(D) 0	(E) 1	(F) 2	(G) 9	(H) 10
60/10p.	$2*2>=2&&1*3$	(A) -83	(B) 0	(C) 1	(D) 3	(E) 6	(F) 20	(G) 31	(H) 68
61/10p.	$3+9*2/4\%8$	(A) -71	(B) -69	(C) -28	(D) -12	(E) 0	(F) 3	(G) 5	(H) 7
62/10p.	$6/4/9/8-3$	(A) -49	(B) -3	(C) -2	(D) -1	(E) 0	(F) 1	(G) 8	(H) 64
63/10p.	$1+2>8==0*5$	(A) -68	(B) -4	(C) 0	(D) 1	(E) 5	(F) 6	(G) 10	(H) 41
64/10p.	$4+1-3/6+9$	(A) -96	(B) -91	(C) -4	(D) 0	(E) 5	(F) 9	(G) 12	(H) 14
65/10p.	$4/1\%3*8-8$	(A) -91	(B) -69	(C) -18	(D) -8	(E) -4	(F) -1	(G) 4	(H) 5
66/10p.	$3*7-0&&2<=7$	(A) 0	(B) 1	(C) 3	(D) 20	(E) 21	(F) 44	(G) 53	(H) 75
67/10p.	$1&&9>=6+2+3$	(A) -96	(B) -92	(C) 0	(D) 1	(E) 3	(F) 5	(G) 6	(H) 46

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

```
68/10p. int f=8; do body; while( f++ < 13 );
69/10p. int x=-1; do body; while( x++ < 1 );
70/10p. int e; for( e=-8; e!=-12; e-- ) body;
71/10p. int v; for( v=2; v>0; v-- ) body;
72/10p. int d=-10; while( d++ != -6 ) body;
73/10p. int v=3; do body; while( ++v < 6 );
74/10p. int n=2; while( ++n != 6 ) body;
75/10p. int i; for( i=-7; i<=-6; ++i ) body;
76/10p. int j=2; do body; while( j-- < 9 );
77/10p. int q=-10; do body; while( q-- != -3 );
78/10p. int y=4; do body; while( ++y != -3 );
79/10p. int z=-9; while( --z > -17 ) body;
80/10p. int b=5; do body; while( b++ != 6 );
81/10p. int u=6; do body; while( u++ != 10 );
82/10p. int t; for( t=7; t<12; ++t ) body;
83/10p. int c=9; while( ++c <= 16 ) body;
84/10p. int g; for( g=10; g>4; g-- ) body;
85/10p. int a; for( a=8; a!=6; a-- ) body;
86/10p. int q=-1; do body; while( --q >= -7 );
87/10p. int q=3; do body; while( q-- != -3 );
88/10p. int h=-8; while( h++ > -12 ) body;
89/10p. int b; for( b=0; b!=2; b++ ) body;
90/10p. int a=-7; do body; while( ++a > -10 );
91/10p. int v; for( v=-4; v>=-3; --v ) body;
92/10p. int s=-5; while( s-- != -9 ) 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("␣␣␣␣%05d",x); (D) printf("␣␣%+06d␣",x); (G) printf("␣%-␣7d␣",x);  
 (B) printf("␣␣␣␣%+03d␣␣␣␣",x); (E) printf("␣␣%0+4d␣␣␣␣",x); (H) printf("␣%3d␣␣␣␣␣␣",x);  
 (C) printf("␣␣%␣07d",x); (F) printf("␣␣%0+5d␣␣",x); (I) printf("%-8d",x);

inputs:	<u>4</u>	<u>-9</u>	<u>1780511903</u>	<u>-1561275425</u>
93/6p.	4␣␣␣␣␣␣␣␣␣	-9␣␣␣␣␣␣␣␣	1780511903␣	-1561275425␣
94/6p.	␣␣␣␣00004	␣␣␣␣-0009	␣␣␣␣1780511903	␣␣␣␣-1561275425
95/6p.	␣␣4␣␣␣␣␣␣␣	␣-9␣␣␣␣␣␣␣	␣␣1780511903␣	␣-1561275425␣
96/6p.	␣␣␣4␣␣␣␣␣	␣␣-9␣␣␣␣␣	␣1780511903␣␣␣␣␣	␣-1561275425␣␣␣␣␣
97/6p.	␣␣␣000004	␣␣-000009	␣␣␣1780511903	␣␣-1561275425

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("␣%0␣6d␣",x);  
 (B) printf("␣␣␣␣%+-4d",x); (E) printf("␣%␣4d␣␣␣",x); (H) printf("%+06d␣",x);  
 (C) printf("␣␣␣%+03d␣",x); (F) printf("␣%-␣5d␣",x); (I) printf("%08d",x);

inputs:	<u>4</u>	<u>-7</u>	<u>1924151018</u>	<u>-1185354784</u>
98/6p.	␣␣4␣␣␣␣␣	␣␣-7␣␣␣␣	␣␣1924151018␣	␣␣-1185354784␣
99/6p.	␣␣␣␣+4␣␣	␣␣␣␣-7␣␣	␣␣␣␣+1924151018	␣␣␣␣-1185354784
100/6p.	␣␣␣␣␣␣4␣	␣␣␣␣␣␣-7␣	␣␣␣␣␣1924151018␣	␣␣␣␣␣-1185354784␣
101/6p.	␣␣00004␣	␣-00007␣	␣␣1924151018␣	␣-1185354784␣
102/6p.	␣␣␣4␣␣␣	␣␣␣-7␣␣␣	␣␣1924151018␣␣␣	␣-1185354784␣␣␣

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

- (A) printf("␣␣␣␣␣%␣d␣",x); (D) printf("␣␣%03d␣␣␣␣",x); (G) printf("%+010d",x);  
 (B) printf("␣␣␣%-3d␣␣␣",x); (E) printf("␣␣%05d␣␣␣",x); (H) printf("%+07d␣␣␣",x);  
 (C) printf("␣␣%␣06d␣",x); (F) printf("␣%+9d",x); (I) printf("%010d",x);

inputs:	<u>7</u>	<u>-3</u>	<u>1712225016</u>	<u>-1768809013</u>
103/6p.	+000000007	-000000003	+1712225016	-1768809013
104/6p.	+000007␣␣␣	-000003␣␣␣	+1712225016␣␣␣	-1768809013␣␣␣
105/6p.	0000000007	-0000000003	1712225016	-1768809013
106/6p.	␣␣␣7␣␣␣␣␣␣	␣␣␣-3␣␣␣␣␣	␣␣␣1712225016␣␣␣␣	␣␣␣-1768809013␣␣␣␣
107/6p.	␣␣00007␣␣␣	␣␣-0003␣␣␣	␣␣1712225016␣␣␣	␣␣-1768809013␣␣␣

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

- (A) printf("␣␣%+4d␣",x); (D) printf("␣%␣06d",x); (G) printf("␣%5d␣",x);  
 (B) printf("␣␣%-␣4d␣",x); (E) printf("␣%+6d",x); (H) printf("%-7d",x);  
 (C) printf("␣␣%0+3d␣",x); (F) printf("␣%05d␣",x); (I) printf("%0␣7d",x);

inputs:	<u>0</u>	<u>-9</u>	<u>1231514082</u>	<u>-1350798463</u>
108/6p.	␣00000␣	␣-0009␣	␣1231514082␣	␣-1350798463␣
109/6p.	␣␣␣0␣␣␣	␣␣-9␣␣␣	␣␣1231514082␣	␣␣-1350798463␣
110/6p.	0␣␣␣␣␣␣	-9␣␣␣␣␣	1231514082	-1350798463
111/6p.	␣␣␣␣+0␣	␣␣␣␣-9␣	␣␣+1231514082␣	␣␣-1350798463␣
112/6p.	␣␣␣␣␣0␣	␣␣␣␣␣-9␣	␣1231514082␣	␣-1350798463␣

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

- (A) printf("\_\_\_\_\_%1s",x); (D) printf("\_%-5s\_",x); (G) printf("\_%6s",x);  
 (B) printf("\_\_\_\_%-2s\_",x); (E) printf("\_%1s\_\_\_\_\_",x); (H) printf("%-7s",x);  
 (C) printf("\_\_\_\_%3s\_",x); (F) printf("\_%4s\_",x); (I) printf("%7s",x);

inputs:	<u>" "</u>	<u>"v"</u>	<u>"kx"</u>	<u>"ldpj"</u>	<u>"fjlvyj"</u>	<u>"fgfqvvkz"</u>
113/6p.	____	____v	____kx	____ldpj	____fjlvyj	____fgfqvvkz
114/6p.	____	____v	____kx	____ldpj	____fjlvyj	____fgfqvvkz
115/6p.	____	____v	____kx	____ldpj	____fjlvyj	____fgfqvvkz
116/6p.	____	____v	____kx	____ldpj	____fjlvyj	____fgfqvvkz
117/6p.	____	____v	____kx	____ldpj	____fjlvyj	____fgfqvvkz

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

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

inputs:	<u>" "</u>	<u>"j"</u>	<u>"fk"</u>	<u>"ppgg"</u>	<u>"ylzyfc"</u>	<u>"yyxfcfdz"</u>
118/6p.	____	____j	____fk	____ppgg	____ylzyfc	____yyxfcfdz
119/6p.	____	____j	____fk	____ppgg	____ylzyfc	____yyxfcfdz
120/6p.	____	____j	____fk	____ppgg	____ylzyfc	____yyxfcfdz
121/6p.	____	____j	____fk	____ppgg	____ylzyfc	____yyxfcfdz
122/6p.	____	____j	____fk	____ppgg	____ylzyfc	____yyxfcfdz

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

- (A) printf("\_\_\_\_%10.6f\_",x); (D) printf("\_%10f\_\_\_\_\_",x); (G) printf("%+13f",x);  
 (B) printf("\_\_\_\_%0+13.6f",x); (E) printf("%+012.0f\_",x); (H) printf("%014.4f",x);  
 (C) printf("\_\_\_\_%011.0f\_",x); (F) printf("%+12f\_",x); (I) printf("%14.0f",x);

inputs:	<u>6</u>	<u>-1.31</u>	<u>-1.6768</u>	<u>-19623.458489</u>
123/6p.	____0000000006	____-0000000001	____-0000000002	____-0000019623
124/6p.	____+00006.000000	____-00001.310000	____-00001.676800	____-19623.458489
125/6p.	____000000000006	____0000000000-1	____0000000000-2	____0000000-19623
126/6p.	____+6.000000	____-1.310000	____-1.676800	____-19623.458489
127/6p.	____6.000000	____-1.310000	____-1.676800	____-19623.458489

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

- (A) printf("\_\_\_\_%+12.2f",x); (D) printf("\_%+013.6f",x); (G) printf("%0+14.2f",x);  
 (B) printf("\_\_\_\_%010.4f\_",x); (E) printf("%+13.6f",x); (H) printf("%012.4f\_",x);  
 (C) printf("\_\_\_\_%010.6f\_",x); (F) printf("%+14.0f",x); (I) printf("%014.6f",x);

inputs:	<u>2</u>	<u>7.68</u>	<u>-1.7431</u>	<u>-324557.767126</u>
128/6p.	____+0000000002.00	____+0000000007.68	____-0000000001.74	____-0000324557.77
129/6p.	____+00002.000000	____+00007.680000	____-00001.743100	____-324557.767126
130/6p.	____000002.000000	____000007.680000	____-00001.743100	____-324557.767126
131/6p.	____+2.000000	____+7.680000	____-1.743100	____-324557.767126
132/6p.	____002.000000	____007.680000	____-01.743100	____-324557.767126

Total points 998.

## Answer Key (points per line)

1 (8).	J	45 (10).	D (1)	89 (10).	2
2 (8).	D	46 (10).	D (2)	90 (10).	9
3 (8).	A	47 (10).	C (-10)	91 (10).	0
4 (8).	G	48 (10).	J (1)	92 (10).	4
5 (8).	C	49 (10).	J (0)	93 (6).	I
6 (8).	D	50 (10).	F (5)	94 (6).	A
7 (8).	H	51 (10).	E (1)	95 (6).	G
8 (8).	G	52 (10).	J (1)	96 (6).	H
9 (8).	C	53 (10).	E (1)	97 (6).	C
10 (8).	D	54 (10).	H (6)	98 (6).	D
11 (8).	B	55 (10).	B (0)	99 (6).	B
12 (8).	I	56 (10).	G (6)	100 (6).	A
13 (8).	E	57 (10).	B (-3)	101 (6).	G
14 (8).	F	58 (10).	A (0)	102 (6).	E
15 (8).	J	59 (10).	G (9)	103 (6).	G
16 (8).	H	60 (10).	C (1)	104 (6).	H
17 (5).	D	61 (10).	H (7)	105 (6).	I
18 (5).	A	62 (10).	B (-3)	106 (6).	B
19 (5).	B	63 (10).	D (1)	107 (6).	E
20 (5).	G	64 (10).	H (14)	108 (6).	F
21 (5).	I	65 (10).	J (0)	109 (6).	B
22 (5).	A	66 (10).	B (1)	110 (6).	H
23 (5).	B	67 (10).	C (0)	111 (6).	A
24 (5).	I	68 (10).	6	112 (6).	G
25 (5).	E	69 (10).	3	113 (6).	G
26 (5).	G	70 (10).	4	114 (6).	F
27 (5).	D	71 (10).	2	115 (6).	C
28 (5).	B	72 (10).	4	116 (6).	H
29 (5).	F	73 (10).	3	117 (6).	B
30 (5).	H	74 (10).	3	118 (6).	B
31 (5).	A	75 (10).	2	119 (6).	F
32 (5).	G	76 (10).	9	120 (6).	D
33 (5).	I	77 (10).	9	121 (6).	E
34 (5).	B	78 (10).	9	122 (6).	G
35 (5).	H	79 (10).	7	123 (6).	C
36 (5).	G	80 (10).	2	124 (6).	B
37 (5).	B	81 (10).	5	125 (6).	I
38 (5).	C	82 (10).	5	126 (6).	F
39 (5).	C	83 (10).	7	127 (6).	D
40 (5).	E	84 (10).	6	128 (6).	G
41 (5).	A	85 (10).	2	129 (6).	D
42 (5).	F	86 (10).	7	130 (6).	I
43 (10).	E (1)	87 (10).	7	131 (6).	E
44 (10).	G (1)	88 (10).	9	132 (6).	C

Total points 998.