Engineering 12 - Spring, 2001

Hour Exam II

Name:_____

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Group Members

1 _____

2 _____

3 _____

This exam consists of Five (5) questions. Some questions count more than others.

Write all answers in this exam booklet.

Question 1: (15 pts) _____

Question 2: (10 pts) _____

Question 3: (15 pts) _____

Question 4: (10 pts) _____

Question 5: (25 pts) _____

Total: (75 pts) _____/75

Problem 1. (15 Points) Identify the correct output, for the following bits of C code.

```
#include<stdio.h>
int
main(void)
{
    int n,i;
    double x=3,r;
    do {
        if(x<=4) {
            r=3;
        }
        else if(x!=5&&x<6) {
            r=5;
        }
        else if(x==5) {
            r=2;
        }
        else if(x<10) {
            r=0;
        }
        else {
            r=-2;
        }
        printf("\n x = %4.1f", x);
        printf("\n r = %4.1f", r);
        x+=3;
    } while (x<17) ;
return(0);
}
```

Problem 2. (10 Points) Identify the correct output, for the following bits of C code (assume all values are integers):

```
for ( i = l ; i <= m ;  i = i + n )
        {
        printf ( “i=  %d”, i );
        printf (“\n”);
        }
```

1. with l = 0, m = 2, n = 1

2. with l = 0, m = 3, n = 2

3. with l = -3, m = 0, n = 2

4. with l = 2, m = 0, n = 1

Problem 3 (15 points). Identify the correct output, for the following bits of C code (assume all values are integers):

```
int sum = 0,i,j ;
for ( i = 1; i <= 3 ;  i = i + 1 ) {
    sum = sum + i ;
    printf ( "sum1 = %d\n", sum ) ;

        for ( j = i + 1 ;  j <= 4 ;  j = j + 1 ) {
        sum = sum + i*j ;
        printf ( "j= %d,   sum2 = %d\n", j, sum ) ;
        }
    }
```

Problem 4 (10 points). What will be displayed by the following program? Pay attention to formatting in the printf statement.

```
#include<stdio.h>
main()
{ /* begin main */

        int  a = 1, b = 3, c = 2, d = 9, e, f;
        double  alfa = 3.0, beta = 4.0, gamma = 2.0, delta, epsilon;

        delta = alfa*(a*b/c+c);
        e = (d%b)*b;
        epsilon = (alfa*beta/gamma)*(d%c);
        beta = beta/gamma+d-a*b;
        f = d/b+c*a-b;

        printf( "\ndelta = %.3f \ne = %d \nepsilon = %.4f"
       "\nbeta = %f \nf = %d ", delta, e, epsilon, beta, f);

} /* end main */
```

delta =

e =

epsilon =

beta =

f =

Problem 5 (25 Points). Read through the following program TEST1.C and the associated data file DATA.DAT and answer the following questions a-d on the next page. The lines in TEST1.C are numbered 1-46 for you convenience:

DATA.DAT

```
0.5
2.0
3.0
4.0
5.5
```

TEST1.C

```
1 #include <stdoio.h>
2
3 double my_func(double a, double b, double c, double d double e)
4
5 main()
6
7 double x1, x2, x3, x4, x5, a;
8 FILE fPTR;
9
10 fPTR = fopen("data.dat", "w");
11
12 fscanf(fPTR, "%lf", x1);
13 fscanf(fPTR, "%lf", x2);
14 fscanf(fPTR, "%lf", x3);
15 fscanf(fPTR, "%lf", x4);
16 fscanf(fPTR, "%lf", x5);
17 fclose(fPTR);
18
19 my_func(x1, x2, x3, x4, x5) = a;
20
21 x1 =x1 -a;
22 x2 =x2 -a;
23 x3 =x3 -a;
24 x4 -= a;
25 x5 =x5 -a;
26
27 printf("Corrected value 1 is %4.2lf\n", x1);
28 printf("Corrected value 2 is %4.2lf\n", x2);
29 printf("Corrected value 3 is %4.2lf\n", x3);
30 printf("Corrected value 4 is %2.4lf\n", x4);
31 printf("Corrected value 5 is %4.2lf\n", x5);
32
33 return(0);
34
35 }
36
37
38 double my_func(double val1, double val2, double val3, double val4, double val5) {
39
40 double value;
41
42 value = (val1 + val2 + val3 + val4 + val5) / 5.0;
43 printf("The mean value is %4.2lf\n, value);
44
45 return(valeu)
46 }
```

---

a) What intended purpose of this program?

b) For a moment, neglect all errors <u>which would keep the program from compiling and executing</u> and write down the precise output (verbatim - as it would appear on the screen) in the grid provide below. The rows and fist 30 columns represented from the screen are numbered for you convenience.

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

c) Below is an excerpt of the compiler messages which relate to the subroutine my_func() only. Explain the problem associated with each:

- `Error TEST1.C 43: Unterminated string or character constant in function my_func(double,double,double,double,double)`

- `Error TEST1.C 46: Statement missing ; in function my_func(double,double,double,double,double)`

- `Warning TEST1.C 49: Function should return a value in function my_func(double,double,double,double,double)`

- `Warning TEST1.C 49: 'value' is assigned a value that is never used in function my_func(double,double,double,double,double)`

d) Find 12 of 13 mistakes *besides* the ones found in subroutine my_func() in part 3 above.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.