

.....Student Name:..... NID:.....

COP 3223 Sec 2: Fall'23 C Programming Prac Test 3 (50 points)

1. (8 points)

NOT ON TEST THREE: Write the output for the following program. Assume input is aBcD!0

Use this scale below if it is useful to you.

0	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
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

WRITE YOUR OUTPUT HERE

```
-----
Out Line 1 |
           |
           |
Out Line 2 |
```

```
#include <stdio.h>
```

```
#include <ctype.h>
```

```
int main() {
```

```
    char c;
```

```
    while ((c = getchar()) != '0') {
```

```
        if (isupper(c))
```

```
            putchar(('A' + 15-(c-'A')));
```

```
        else if (islower(c))
```

```
            putchar(('a' + 5 +(c-'a')) );
```

```
        else
```

```
        putchar(c);  
    }  
  
    return 0;  
}
```

2. (6 points) NOT ON TEST THREE: Write down what the printed output of this program is:

```
#include <stdio.h>
```

```
int main(){
```

```
    return 0;
```

```
}
```

3. (3 points) Write down what the printed output of this program is:

```
#include <stdio.h>

int main(){

    int i;
    int *i_ptr;

    i_ptr = &i;

    i = 10;

    (*i_ptr) = 24;

    if(i == 10) {
        printf("i1=%d\n", i);
    }
    if(i == 24) {
        printf("i2=%d\n", *i_ptr);
    }

    return 0;
}
```

4. (6 points) Write down what the printed output of this program is:

```
#include <string.h>
#include <stdio.h>

int main(){

char my_array[15];
char *my_array_ptr;

strcpy(my_array, "niels");

my_array_ptr = my_array;

my_array_ptr += 5;
*my_array_ptr = 'l';

my_array_ptr++;
*my_array_ptr = 'o';

my_array_ptr++;
*my_array_ptr = '\\0';

my_array_ptr = my_array;

printf("string=%s\\n",my_array_ptr);

return 0;
}
```

Answers q1:

f0hM!

Answers q4:

nielslo

5. (15 points) Write down what the printed output of this program is:

```
#include <stdio.h>

int f1(int *a, int b);

int f2(int a, int *b);

int main(void) {

    int a=5, b=2, c=7, d=9;

    c = f1(&d, a);

    printf("a=%d b=%d c=%d d=%d\n",a,b,c,d);

    a = f2(c-d, &a);

    printf("a=%d b=%d c=%d d=%d\n",a,b,c,d);

    b = f1(&c, 8);

    printf("a=%d b=%d c=%d d=%d\n",a,b,c,d);

    d = f2(b, &a);

    printf("a=%d b=%d c=%d d=%d\n",a,b,c,d);

    return 0;

}

int f1(int *a, int b) {

    *a = b -8;

    b = b*2 - (*a);

    printf("In f1: a=%d b=%d\n", *a, b);
```

```
    return b - *a;

}

int f2(int a, int *b) {

    a = *b+a;

    *b = 37 - *b;

    printf("In f2: a=%d b=%d\n", a, *b);

    return a;

}
```

6. (10 points)

Write down what the printed output of this program is:

WRITE YOUR OUTPUT HERE

|
Out Line 1 |
|
|
Out Line 2 |

```
1.  #include <stdio.h>
2.  int f(int c, int b, int a);
3.
4.  int main() {
5.
6.      int a = 2, b = 3, c=5;
7.      printf("a=%d b=%d c=%d\n", a, b, c);
8.
9.      a = f(b, a, b+c);
10.     printf("a=%d b=%d c=%d\n", a, b, c);
11.
12.     return 0;
13. }
14.
```

```
15.  int f(int c, int b, int a) {  
16.  
17.      int sum;  
18.      sum = a + b + c;  
19.      if (sum > a*c)  
20.          return a*c;  
21.      if (sum <= b*c)  
22.          return b*c;  
23.  
24.      return a*b;  
25.  }
```

7. (12 points) Write down what the printed output of this program is:

```
#include <stdio.h>

int f1(int *a, int c);

int main(void) {

    int a=2, b=3, c=4, d=5;

    a = f1(&c, b);

    printf("a= %d b= %d c= %d d= %d\n",a,b,c,d);

    return 0;

}

int f1(int *a, int c) {

    *a = c - 2;

    c = c*2 - (*a);

    printf("a= %d c= %d\n", *a, c);

    return c - *a;

}
```

THIS OUTPUT WILL BE GRADED

```
-----
Out Line 1 |
           |
           |
Out Line 2 |
```

Out Line 3

|
|
|
|
|

8. (14 points) Write down what the printed output of this program is:

```
#include <stdio.h>

int f1(int *a, int c);

int main(void) {

    int a=2, b=3, c=4, d=5;

    a = f1(&c, f1(&b,d));

    printf("a= %d b= %d c= %d d= %d\n",a,b,c,d);

    return 0;

}

int f1(int *a, int c) {

    *a = c - 2;

    c = c*2 - (*a);

    printf("a= %d c= %d\n", *a, c);

    return c - *a;

}
```

THIS OUTPUT WILL BE GRADED

```
-----
Out Line 1 |
           |
           |
Out Line 2 |
```

Out Line 3

|
|
|
|
|

9. (11 points)

Write down what the printed output of this program is:

ONLY THIS OUTPUT WILL BE GRADED

```
-----  
|  
Out Line 1 |  
|  
|  
Out Line 2 |  
|  
|  
Out Line 3 |  
|
```

1. `#include <stdio.h>`

2. `int f(int c, int b, int a);`

3. `int main() {`

4. `int a = 1, b = 2, c=2;`

5. `a = f(b, f(a, c, b+c), a+c);`

6. `printf("a=%d b=%d c=%d\n", a, b, c);`

7. `return 0;`

8. `}`

9. `int f(int c, int b, int a) {`

10. `int sum;`

11. `b = a + c;`

12. `sum = a + b + c;`

13. `printf("a=%d b=%d c=%d\n", a, b, c);`

```
14.      if (sum > a*c)

15.          return a*c;

16.      if (sum <= b*c)

17.          return b*c;

18.      return a*b;

19.  }
```

10. (15 points)

Write down what the printed output of this program is:

```
#include <stdio.h>

int f(int *a, int c, int b);

int main(void) {

    int a=1, b=3, c=2;

    a =    f(&c, f(&b,a,c),a);

    printf("a= %d b= %d c= %d\n",a,b,c);

    return 0;

}


int f(int *a, int c, int b) {

    *a = *a - 1;

    c = c*2 + (*a);
```

```
b = b - 1;

printf("a= %d, b= %d, c= %d\n", *a, b, c);

return c - *a + 1;
}
```

ONLY THIS OUTPUT WILL BE GRADED

Out Line 1		
Out Line 2		
Out Line 3		

11. (14 points) NOT ON TEST THREE: Write down what the printed output of this program is:

```
#include <stdio.h>
#include <ctype.h>

int main() {

    char first[30], last[30];
    char wholename[60];

    scanf("%s", first);
    scanf("%s", last);

    if (strcmp(first, last) < 0)
        printf("Your first name comes first alphabetically.\n");
    else if (strcmp(first, last) == 0)
        printf("You're weird.\n");
    else
        printf("Your last name comes first alphabetically.\n");

    printf("first = %s, last = %s\n", first, last);

    strcat(first, last);

    printf("first = %s, last = %s\n", first, last);

    strcpy(wholename, first);

    printf("first = %s, wholename = %s\n", first, wholename);

    printf("Your whole name is %d characters.\n", strlen(wholename));

    return 0;
}
```

THIS OUTPUT WILL BE GRADED

```
-----
|
Out Line 1 |
```

|
|
Out Line 2 |
|
|
Out Line 3 |
|
|
Out Line 4 |
|
|
Out Line 5 |

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12. (12 points)

Write down what the printed output of this program is:

ONLY THIS OUTPUT WILL BE GRADED

```
-----  
|  
Out Line 1 |  
|  
|  
Out Line 2 |  
|  
|  
Out Line 3 |  
|
```

1. `#include <stdio.h>`

2. `int f(int a, int d, int b, int c);`

3. `int main() {`

4. `int a = 1, b = 3, c=2, d=4;`

5. `a = f(d, a, f(a, c, b+c, d), a+c);`

6. `printf("a=%d b=%d c=%d d=%d\n", a, b, c, d);`

7. `return 0;`

8. `}`

9. `int f(int a, int d, int b, int c) {`

10. `int sum;`

11. `b = a + c;`

12. `sum = b - c;`

13. `d = sum + d;`

```
14.      printf("a=%d b=%d c=%d d=%d\n", a, b, c, d);

15.      if (sum > a*c)

16.          return a*c;

17.      if (sum <= b*c)

18.          return sum+a;

19.      return a*b;

20.  }
```

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13. (16 points)

Write down what the printed output of this program is:

```
#include <stdio.h>
```

```
int f(int *d, int c, int b, int *a);
```

```
int main(void) {
```

```
    int a=1, b=3, c=2, d=4, e=5;
```

```
    e =    f(&a, f(&b,a,e,&c),e,&d);
```

```
    printf("a= %d b= %d c= %d d= %d e= %d\n",a,b,c,d,e);
```

```
    return 0;
```

```
}
```

```
int f(int *d, int c, int b, int *a) {
```

```
    *a = *a + 1;
```

```

c = c + (*a);

b = b + c;

*d = *a + 2;

printf("a= %d, b= %d, c= %d d=%d\n", *a, b, c, *d);

return *d - *a + 2;

}

```

ONLY THIS OUTPUT WILL BE GRADED

Out Line 1		
Out Line 2		
Out Line 3		