COP3223 Sec 3: Sp'24 C Programming PracTest 3 (50 pts)

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  |
```

```c
#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:

```c
#include <stdio.h>

int main(){

  return 0;
}
```

3. (4 points)   Write down what the printed output of this program is:

```c
#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:

```c
#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:

fOhM!

Answers q4:

nielslo

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

```c
#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  |
```

```c
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:

```c
#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

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Out Line 1 |
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Out Line 2 |
```

```
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            |
Out Line 3 |
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```

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

```c
#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

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13

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9. (11 points)

Write down what the printed output of this program is:

```
                                        ONLY THIS OUTPUT WILL BE GRADED

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                           Out Line 2 |
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                           Out Line 3 |
                                        |
```

```c
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:

```c
#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

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Out Line 1 |
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Out Line 2 |
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Out Line 3 |
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11. (14 points)   NOT ON TEST THREE: Write down what the printed output of this program is:

```c
#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

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Out Line 2 |
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Out Line 3 |
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Out Line 4 |
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              |
Out Line 5 |
```
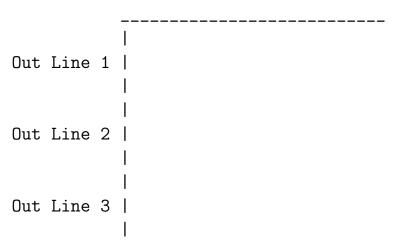
12. (12 points)
    Write down what the printed output of this program is:

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                                    ONLY THIS OUTPUT WILL BE GRADED

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                  Out Line 3  |
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```

```
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.     }
```

13. (16 points)
    Write down what the printed output of this program is:

```c
#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 = 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

```
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Out Line 1 |
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Out Line 3 |
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```