

COP 3223 Quiz #3 10/17/2025

Last Name: _____, First Name: _____

Circle Lab Time: 8:30 am 9:30 am 11:30 am 12:30 pm

1:30 pm 2:30 pm 3:30 pm 4:30 pm

1) (7 pts) For a positive integer, n , define $d(n)$ to be the number of digits in n . Complete the function below so that it returns the number of digits in the formal parameter, n . You may assume that n is positive.

```
int d(int n) {  
}  
}
```

2) (5 pts) What is the output of the following program?

```
#include <stdio.h>  
  
int main() {  
  
    int arr[5] = {6, 2, 8, 3, 5};  
    for (int i=0; i<4; i++)  
        arr[i+1] += arr[i];  
  
    for (int i=0; i<5; i++)  
        printf("%d ", arr[i]);  
    printf("\n");  
  
    return 0;  
}
```

3) (8 pts) What is the output of the following program?

```
#include <stdio.h>

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

int main() {
    int a = 2, b = 1;
    b = f(b, &a);
    printf("In main: a = %d, b = %d\n", a, b);
    a = g(&b, a);
    printf("In main: a = %d, b = %d\n", a, b);
    return 0;
}

int f(int a, int *b) {
    int c = *b + 2*a;
    a = c%9 + 2;
    *b = c - 2*(*b);
    printf("In f: a = %d, b = %d\n", a, *b);
    return a + 2*(*b);
}

int g(int* a, int b) {
    int c = b + 2*(*a);
    *a = c%9 + 2;
    b = c - 2*b;
    printf("In g: a = %d, b = %d\n", *a, b);
    return (*a) + 2*b;
}
```

In f: a = ____ , b = ____

In main a = ____ , b = ____

In g: a = ____ , b = ____

In main a = ____ , b = ____

4) (15 pts) James has logged the number of minutes he's read each day for a whole year. Specifically, the data is stored in the input file "reading.txt". The first 365 numbers in the file (one per line) are the number of minutes he read on each day of the year. The following line (line 366) stores a single integer, ***n***, representing the number of questions about James's reading. Each of the following ***n*** lines has two integers, ***s*** and ***e***, representing the start day number (in between 0 and 364) and the end day number (in between ***s*** and 364). You are to print out to the screen the total number of minutes James read in between day ***s*** and day ***e***, inclusive, for each question. (Note: Read in one pair of integers, ***s*** and ***e***, and immediately calculate and print out the answer for that question. Repeat this ***n*** times. Do not read all the information in before attempting to process it.)

```
#include <stdio.h>

int main() {
    int minutesRead[365], n, start, end;
    FILE* ifp = _____;
    _____;
    return 0;
}
```

5) (8 pts) Write a function that takes in 2 integer arrays, *list1* and *list2*, as well as the length of both of the arrays, *length*, and returns 1 if both arrays are equal (meaning the entries in each corresponding index are the same) and returns 0 otherwise (if there is at least one index, *i*, such that *list1[i] ≠ list2[i]*.)

```
int equal(int list1[], int list2[], int length) {  
    }  
}
```

6) (5 pts) Consider running an Insertion Sort on the array shown below. Show the state of the array after each iteration of the algorithm completes.

Index	0	1	2	3	4	5	6
Original	22	13	6	21	29	3	8
After 1 st iteration							
After 2 nd iteration							
After 3 rd iteration							
After 4 th iteration							
After 5 th iteration							
After 6 th iteration	3	6	8	13	21	22	29

8) (2 pts) This week is UCF Homecoming week. Specifically, homecoming represents that the football team is "coming back home". At what school's stadium will this weekend's football game between UCF and West Virginia be played?
