CSE 220 – Programming in C
Quiz #1
Spring 2016

Name: _____

Section: _____

1. What is the output of the following C programs? (24 pts)

Program A

```
#include <stdio.h>
int main() {
     int x = 5, y = 6, z = 0;
     int result1 = (x && y) || (z && y);
     float result2 = result1 ? x / y : y / x;
     printf("%.5f", result2);
     return 0;
}
```

0.00000

Explanation:
Result 1 is 1 because (5 && 6) || (0 && 6) = 1 || 0 = 1
Result 2 is x/y = 5/6 = 0 (integer div, digits after the decimal point are truncated)

Program B

```
#include <stdio.h>
int main() {
     int z = 5;
     for (;;) {
          printf("%d ", ++z);
          if (z == 8)
               break;
     }
     return 0;
}
```

6 7 8

Program C

```
#include <stdio.h>
int main(){
     int x = 7;
     int y = x >> 1;
     switch(y) {
          case 1:
               printf("One\n");
               break;
          case 2:
               printf("Two\n");
               break;
          case 3:
               printf("Three\n");
          default:
               printf("Too large\n");
     }
     return 0;
}
```

Three
Too large

Explanation:
x is 7, in binary 111
Bitwise shift right one position:
     results in 11 which is 3 in decimal
     So y is 3
Case 3 is printed. Since break statement is missing, the remaining cases are also printed.

Program D

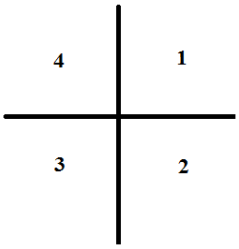
```
#include <stdio.h>
int main() {
     int x = 5, y = 2;
     float z = ++x + 12 / 5 + y--;
     printf("%.2f, %d, %d", z, x, y);
     return 0;
}
```

10.00, 6, 1

2. Write a loop to print integers between 20 and 50 in decreasing order. The output should be as follows: 50 49 48 47 … 21 20 (15pts):

```
int x;
for (x = 50; x >= 20; x--)
    printf("%d ", x);
```

3. The program below reads two integers from the user representing the x- and y-coordinates of a point and outputs which quadrant the point belongs to (as shown in figure). Complete the code. (15 pts)




```
#include <stdio.h>

int main(){

      float value1, value2, value3;


      printf("Enter three numbers:\n");


      scanf("%f %f %f", &value1, &value2, &value3);

      if (value1 > 0 && value2 > 0)
            printf("In quadrant 1");
      else if (value1 > 0 && value2 < 0)
            printf("In quadrant 2");
      else if (value1 < 0 && value2 < 0)
            printf("In quadrant 3");
      else if (value1 < 0 && value2 > 0)
            printf("In quadrant 4");
      else
            printf("On one of the axis or the origin");









      return 0;
}
```

4. The following program asks the user to enter 20 integers and prints out the largest one. There are a number of errors in the program. Fix 5 of them. (25 pts)

```
#define <stdio.h>

int main(void ) {

     int largest = -99999, number, total;

     printf("Enter 20 numbers:\n");

     for (total = 1; total <= 20; total++) {

          scanf("%d", &number);

          if (number > largest) {

               largest = number;

          }

          total++; Already incremented in loop

     }

     printf("The largest is: %d\n", largest);

     return 0;

}
```

5. Write a program that reads numbers from the user until the number 0 is encountered. The program must compute the ratio of the sum of positive numbers to the sum of negative numbers and output the ratio with up to 4 decimal digits, using scientific notation. (30 pts)

```
#include <stdio.h>
int main(void) {

        int number;
        int posSum = 0, negSum = 0;

        printf("Enter a series of numbers ( 0 to end) \n"");
        //start reading
        do {
                scanf("%d", &number);
                if (number == 0) {
                        break;          //exit the loop when 0 reached
                } else  if (number > 0) {
                        posSum += number;
                } else {
                        negSum += number;
        } while (1);

        float ratio = (float) posSum / negSum;
        printf("Ratio: %+.4E\n", ratio);

        return 0;
}
```