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

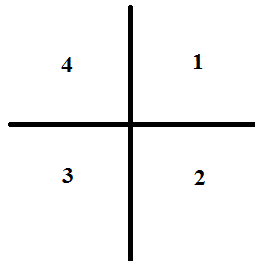
1. Write a loop to print integers between 20 and 50 in decreasing order. The output should be as follows: 50 49 48 47 … 21 20 (15pts):

int x;

for (x = 50; x >= 20; x--)

printf(“%d ”, x);

1. 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;

}

1. 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;

}

1. 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;

}