**COP 3223 Section 4 Exam #2**

**Form A**

**Fall 2013**

**10/19/13**

**Lecturer: Arup Guha**

***Directions:*** Answer all multiple choice questions on the scantron. Each question has a single correct answer. In case of ambiguities, choose the most accurate answer. Each of these questions is worth 3 points for a correct answer. Incorrect answers and questions left blank are worth 0 points. Hand in ONLY the scantron, keep the test questions, and take the free response section of the exam.

1) Which of the following C statements prints out the character ‘n’ exactly 5 times?

A)printf(“\n\n\n\n\n”);

B)printf(“\nnnnn”);

C)printf(“\nn\nn\nn\nnn”);

D)printf(“how many ns are in this sentence?\n”);

E)None of the Above

2) Which of the following reads in a double into a variable of type double called radius?

A)scanf(radius);

B)scanf(&radius);

C)scanf(“%lf”, radius);

D)scanf(“%lf”, &radius);

E)None of the Above

3) What is the value of the following arithmetic expression?

17/(2 + 13/3) – (2 + 3\*2)\*(16 – 7\*(100/34))

A)-16 B)-14 C)-4 D)52 E)None of the Above

4) What is the value of the following arithmetic expression?

83%(16 – 14%7 + 3\*8%9)

A)1 B)3 C)17 D)83 E)None of the Above

5) What is the value of the variable answer after the code segment below completes?

int answer, a, b, c;

a = 3\*b;

b = 5;

c = 10;

answer = (a\*a + b\*b)/(c\*c);

A).5 B)2 C)2.5 D)250 E)None of the Above

6) Which of the following expressions falls in between 3.99 and 4.01?

A)sqrt(pow(256, .5))

B)pow(2, pow(1, 2))

C)sqrt(17)

D)pow(3, 99)

E)None of the Above

7) Which of the following expressions could equal any integer in the range 1000 to 1499, inclusive, but no others with roughly equal probability?

A)rand()%499 + 999

B)rand()%500 + 999

C)rand()%499 + 1000

D)rand()%1500

E)None of the Above

8) What is the output of the following segment of code?

int a = 7, b = 3, c = 6;

if (a > b + c)

 printf(“A”);

if (b > a – c)

 printf(“B”);

else

 printf(“C”);

if (a%b > c%b)

 printf(“D”);

A)A B)B C)BD D)CD E)None of the Above

9) What is the output of the following segment of code?

int a = 3, b = 5, c = 7;

if (a > c – b)

if (b > c – a)

 printf(“A”);

else

printf(“B”);

printf(“C”);

A)A B)AC C)ABC D)BC E)None of the Above

10) What is the output of the following segment of code?

int a = 10, b = 13;

if (a/b > a%b);

 printf(“A”);

if (b > a)

 printf(“B”);

else

 printf(“C”);

printf(“D”);

A)ABD

B)B

C)BD

D)CD

E)None of the Above

11) What is the value of the variable sum right after the following segment of code executes?

int i, j, sum = 0;

for (i=0; i<6; i++)

 for (j=1; j<=i+1; j++)

 sum = sum + 1;

A)5 B)6 C)15 D)21 E)None of the Above

12) What is the value of the variable sum right after the following segment of code executes?

int sum = 0, a = 1;

while (a < 7)

 a++;

 sum = sum + a;

A)7 B)21 C)27 D)28 E)None of the Above

13) What is the value of the variable product at the end of the following code segment?

int i, j, product = 0;

for (i=0; i<=10; i++)

 for (j=1; j<10; j++)

 product++;

A)121 B)101 C)100 D)99 E)None of the Above

14) What is the value of the variable count at the end of the following code segment?

int index = 0, count = 0;

while (index < 30) {

 index++;

 if (index%2 == 0 || index%3 == 0 || index%5 == 0)

 continue;

 count++;

}

A)2 B)8 C)16 D)30 E)None of the Above

15) What color socks are typically sewn into the jerseys of the Boston Red Sox players?

A) red

B) blue

C) black

D) yellow

E) green

**Fall 2013 COP 3223 Section 3 Exam 2 Answer Sheet**

**Last Name: \_\_\_\_\_\_\_\_\_\_\_\_ , First Name: \_\_\_\_\_\_\_\_\_\_\_\_\_**

**Note: You may declare extra variables for any of the following questions.**

1) (10 pts) Complete the program below so it calculates and prints out the number of minutes the sun is up during the day. The user will enter both the hour and minute the sun rises (assumed to be am) and the hour and minute the sun sets (assumed to be pm).

#include <stdio.h>

int main() {

 int rise\_hr, rise\_min, set\_hr, set\_min;

 printf(“Enter sunrise, hour followed by minute.\n”);

 scanf(“%d%d”, &rise\_hr, &rise\_min);

 printf(“Enter sunset, hour followed by minute.\n”);

 scanf(“%d%d”, &set\_hr, &set\_min);

 printf(“The sun was up for %d minutes today.\n”, \_\_\_\_\_\_\_ );

 return 0;

}

2) (10 pts) Write a segment of code that opens up a file “million.txt” to write to, and writes each of the positive integers from 1 to one million, one integer per line, in the file in order, and closes the file.

3) (10 pts) Gatorade comes in containers of size 32 oz., 64 oz. and 128 oz. Complete the program below so that it calculates which of the three containers corresponds to buying the cheapest Gatorade per ounce. The user will enter the cost of each of the three containers. Your program should print out either “BUY 32”, “BUY 64” or “BUY 128”, depending on which is the cheapest buy, per ounce.

#include <stdio.h>

int main() {

 double cost32oz, cost64oz, cost128oz;

 printf(“Enter the cost of the 32 oz. container.\n”);

 scanf(“%lf”, &cost32oz);

 printf(“Enter the cost of the 64 oz. container.\n”);

 scanf(“%lf”, &cost64oz);

 printf(“Enter the cost of the 128 oz. container.\n”);

 scanf(“%lf”, &cost128oz);

 return 0;

}

4) (10 pts) Discounts ‘R Us sets an initial price to each item, and if it doesn’t sell in 7 days, discounts it 10% off the previous price. For example, a watch initially priced at $100 would have its price reduced to $90 after 7 days and if it still didn’t sell would have its price reduced to $81 after 14 days. The program below asks the user to enter the initial price of the item, as well as the price they are willing to buy the item. Complete the program to compute how many days the user must wait until she gets to buy the item at or below the price she wants, assuming the item doesn’t sell until that time. (Note: Your answer must be a multiple of 7.)

#include <stdio.h>

int main() {

 double init\_price, desired\_price;

 int day = 0;

 printf(“What is the initial price of the item?\n”);

 scanf(“%lf”, &init\_price);

 printf(“At what price do you want to buy it?\n”);

 scanf(“%lf”, &desired\_price);

 printf(“You will have to wait %d days to buy it.\n”, day);

 return 0;

}

5) (15 pts) An ascending number is one where all of its digits are in increasing order. For example, 13459 and 247 are ascending, but 134677 and 34829 are not. (Neither 77 nor 82 are allowed as contiguous sequences in the number. Complete the program below so that it determines whether or not the positive integer the user entered is an ascending number. **Note: You are not allowed to try to convert the input into a string, even if you happen to know how to do that. You must solve this problem numerically, dealing with ints only!**

#include <stdio.h>

int main() {

 int n;

 printf(“Please enter a positive integer.\n”);

 scanf(“%d”, &n);

 int saven = n, ascending = 1;

 int curdigit = \_\_\_\_\_\_\_\_\_\_ ;

 while ( \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ) {

 }

 if (ascending == 1)

 printf(“%d is ascending.\n”, saven);

 else

 printf(“%d is NOT ascending.\n”, saven);

 return 0;

}