

Question 1: Copy your answer for each of the following questions to the table:

1. What is the output of the following code fragment?

6


2. What is the output of the following code fragment?

$$\begin{array}{r} \cancel{377}6 \\ \cancel{612}7 \\ 18,129 \\ 271.6 \\ 6,05 \\ 5,2 \\ 2,5 \\ 4 \end{array}$$

3. What is the output of the following code fragment?

12, 9 1+3
1+3

4. What is the output of the following code fragment?



5. What is the value of x after the following code is executed?

$$\begin{array}{r} x=3 \\ \hline (12) \\ x=3+2=5 \\ \hline (1) \\ x=5+1=6 \end{array}$$

- Scanned with CamScanner

6. What is the output of the following code fragment?

```
int i = 1;
do {
    printf("%d ", i++);
} while (i < 5);
```

- A. 1 2 3 4 B. 1 2 3 4 5 C. 2 3 4 5 D. Compilation error

7. What is the output of the following code fragment?

```
int x = 5, y = 2;
x = x > y ? x + y : y - x;
printf("%d", x);
```

- A. 7 B. 3 C. -3 D. Compilation error

8. The following is a syntactically correct infinite for-loop:

- A. for(;;); B. for(i=5;i;i=5); C. A & B D. None of the given

9. Considering the following loop, how many times will the condition be checked: ~~500~~

```
for (i = 17; i > 0; i >>= 1);
```

- A. 0 B. 3 C. 5 D. 6

10. What is the output of the following code fragment?

```
int a[] = {100, 102, 104, 106}, *aPtr = a;
printf("%d", *aPtr+2);
```

- A. 102 B. 104 C. 106 D. None of the given

Question 2: Answer the following questions based on the given code fragments:

```
A. 110 include <stdio.h>
11 int cube(int yy);
12 int main(){
13     int x;
14     for(x=1 ; x<=10; x++)
15         printf("%d\n", cube(x));
16     return 0;
17 }
18 int cube(int y){
19     return y*y*y ;
20 }
```

Select the scope type (1.function, 2.file, 3.block, 4.function prototype) for each of the following:

1. cube: 1 2. x: 3 3. y: 4 4. yy: 2

```
B. 10 int sum(int n){
11     if (n != 0)
12         return n + sum(n-1);
13     else
14         return 5/n;
15 }
```

What is the error in the previous code segment?

1. Line: 14
2. Error (type,details): will divide on zero
Runtime Error

C. 10 char *str = "CSC 215 Midterm Exam";
 20 char a = str[1];
 30 char b = *(char*)((int*)str + 3);
 40 char c = str[sizeof(void*)];

What are the char of variables a, b, and c?

1. a = s 2. b = ... space ... 3. c = ... C ...

D. 10 int a[] = {1, 2, 3, 4, 5}, *p = a;
 11 *(p+=3) = 3;
 12 char str[] = "CSC 215 Midterm Exam", *ps = str+7;
 13 *ps = 0;

What is the output of:

1. printf("%s", ps+p[0]); .. CSC 215 ..
 2. printf("%s%d", str, *p-1); .. 1 2 3 3 5 ..

Question 3: Complete the following programs:

A. The following program copies the letters of string X into string Y in reverse order.

#include <stdio.h>

#include <string.h>

int main() {

char X[100] = "CSC 215 Midterm Exam";

int i, Xlen = strlen(X); // write length of X as literal int

char *Y = calloc((char*) (100, sizeof(char)));

for (i=0; i<Xlen; i++; j=Xlen-1; j--)

Y[j] = X[i];

printf("%s", Y);

return 0;

}

B. The following program finds the number of integers between two input integers a and b, inclusive, that have no repeated digits in their decimal representation.

#include <stdio.h>

int hasRepeatedDigits(int n) {

int digits[10] = { 0 }; /*initialize each digits' counters*/

while (n > 0) { /*iterate over digits of n*/

int digit = n/10; /*extract a digit each time*/

/* if the digit has been encountered before return true */

if (digits[digit] > 0) return 1;

digits[digit] = 1; /*update the digit's counter*/

n /= 10;

}

return digits[digit];

}


```

int main() {
    int a, b;
    /* read the values of a and b from the keyboard */
    scanf("%d%d", &a, &b);
    int count = 0, i;
    /* count the integers with no repeating digits in [a, b] */
    for (i = a; i <= b; i++)
        if (!hasRepeatingDigits(i))
            count++;
    printf("%d\n", count);
    return 0;
}

```

