Fall 2014 Exam 2 Key 1 Question 2

Edit C++ I/O Arrays Visible

Suppose we have the following code:

```
int arr[5][3] = {{1,2,3},{4,5,6},{7,8,9},{10,11,12},{13,14,15}};

for (int i = 0; i < 3; i++) {
    for (int j = 0; j < 3; j++) {
        cout << arr[i][j] << ' ';
    }
    cout << endl;
}
```

What will print as a result of running the above code?

A.
```
1 2 3
4 5 6
7 8 9
```

B.
```
1 4 7
2 5 8
3 6 9
```

C.
```
1 2 3
4 5 6
7 8 9
10 11 12
13 14 15
```

D.
```
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
```

E.
```
1 4 7 10 13
2 5 8 11 14
4 6 9 12 15
```

Fall 2014 Exam 2 Key 1 Question 3

Edit C++ Arrays Visible

Given the following code:

```
const int SIZE = 5;
char a[SIZE][SIZE];
for (int i = 0; i < SIZE; i++) {
   a[i][i+1] = i;
}
```

What is the first location accessed by this code that goes out of bounds of the array?

A. `a[-1][0]`

B. `a[0][-1]`

C. `a[4][5]`

D. `a[5][6]`

E. The code never goes out of bounds of the array.

Winter 2014 Exam 2 Key 1 Question 14

Edit C++ Functions While loops Pass-by-reference Arrays Visible

Consider the following function `comp_replace`:

```
#include <iostream>
using namespace std;
bool comp_replace(int x,int &y)
{
    if(x<y)
    {
       y=x;
       return true;
    }
    return false;
}

int main()
{
    int i=0;
    int arr[] = { 2, 3, 5, 1, 8 };
    while(i < 4 && comp_replace(arr[i], arr[i + 1]))
        i++;

    for(i = 0; i < 5; i++)
        cout << arr[i] <<'';
    return 0;
}
```

What prints?

A. `2 2 2 1 8`

B. `2 3 5 1 8`

C. `2 2 2 2 2`

D. Results in an infinite loop.

E. Code does not compile.

For questions 5 and 6, consider the following code.

Steve has written a new cipher function in C++, which he calls `sillyCipher`. It is implemented in the following function:

```
void sillyCipher (const string &original, string &result) {
     for (int x = 0; x < original.length(); x++) {
         if (original[x] >= 'A' && original[x] <= 'M') {
             result[x] = 'A';
         }
         else if (original[x] >= 'N' && original[x] <= 'Z') {
             result[x] = 'B';
         }
     }
}
```

Suppose `sillyCipher` is called and a string containing "LISA" is passed as the first parameter. What would be stored in `result` by the end of `sillyCipher`'s execution (assuming `result` is also of length 4)?

A. AABA

B. ABAA

C. ABAB

D. BBAB

E. BABA

Fall 2014 Exam 2 Key 1 Question 7

Edit C++ Streams Visible

Which of the following is not a valid stream state?

A. good

B. bad

C. fail

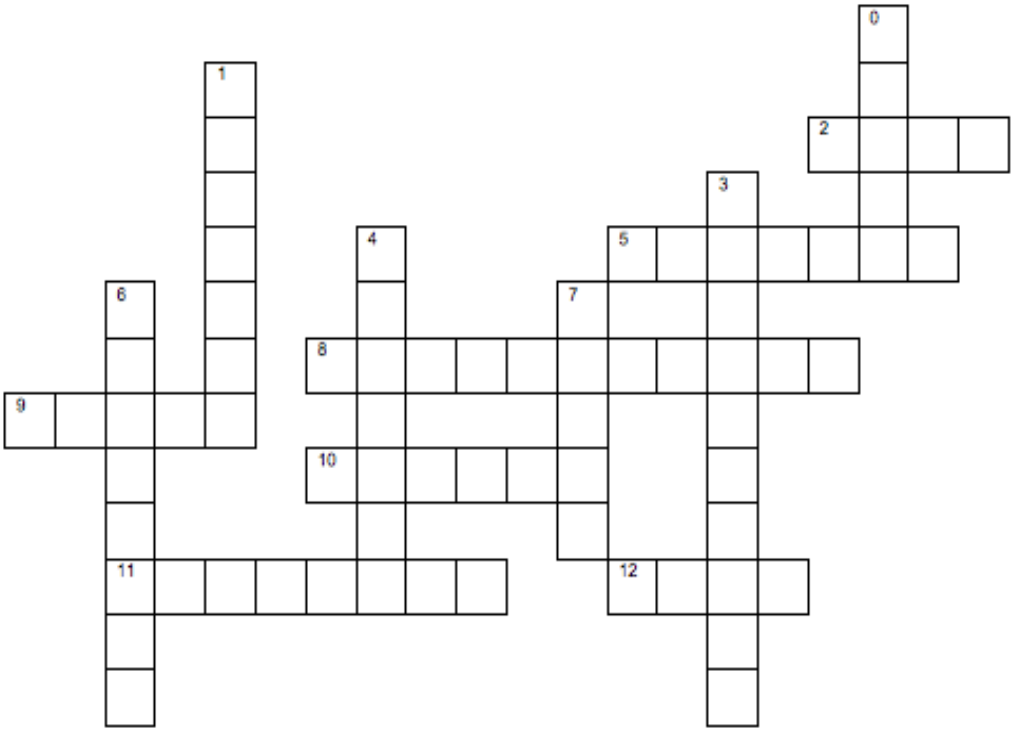
D. eof

E. clear

Fall 14 Exam 2 Question 1 (group challenge)

Crossword

[3 points per word] Put a letter in each box according to the clues below.



Across (C++)

2. The stream state that you always want to be in to read.
5. Member variables and functions in classes cannot be directly accessed from outside of their class if they are _____.
8. A member function with no return type that has the same name as the class it is in.
9. The keyword used to make sure values cannot be changed.
10. All non-void functions must include this statement.
11. If a class is named **Dog** and I declare in `main`
    `Dog snoopy;`
    then `snoopy` is a(n) _____ of type `Dog`.
12. If a `string s` has length > 0, then `s[0]` is of type _____.

Down (Python)

0. The data type in Python that is the equivalent of a double in C++.
1. # indicates the start of a(n) _____ in Python.
3. This data structure stores `{key: value}` pairs.
4. The full name of the data type has possible values of `True` and `False`.
6. The `def` keyword begins the definition of a(n) _____ in Python.
7. The keyword used to output to the console.

Winter 14 Exam 3 Question 1

1. **(16 points, 2 per blank) In the class declaration given below, fill in the missing portions. It is intended to track custom burrito orders at a popular chain.**

```
____________ int MAX_INGREDIENTS = 20;


class ____________ {


____________:
    Chipotle();


    // Determines whether a certain ingredient is already
    // included in this burrito or not
    ____________ isIngredientPresent(string ingredientName) ____________;

    // Adds the given ingredient to the burrito, if it is not
    // already present.  If it is already present, this
    // function does nothing.
    ____________ addIngredient(string ingredientName);


____________:
    string ingredientNames[MAX_INGREDIENTS];
    ____________ numIngredients;
};
```

Fall 13 Exam 2 Question 2

2. **(30 points) Write a Small Program** – Before giving you this exam, we tested various superheroes on their C++ programming skills. Write a complete program that will read superhero names and scores from a file, display the name of the highest-scoring superhero, and the name of the lowest-scoring superhero. If two superheroes have the same high or low score, you can display either one. The name of the file is "superheroes.txt". Each superhero name will be exactly one contiguous string of text with no spaces, and every superhero will have an integer score. The file will have at least one superhero in it. Assume scores are in the range 0 – 170. Here is an example of a valid input file:

```
Hulk       43
Spiderman 167
Jubilee    96
```

The output for this should look like the following:

```
Highest: Spiderman
Lowest: Hulk
```

Fall 13 Final Exam 2 << good example, exams are cumulative, but you still need to know these!

2. **(20 points total, 2 points each) Logical Expressions –** In the following question, assume that all 3 variables a, b, and c are integer variables and have been initialized with some values. Select which conditional expression on the right hand side will do each of the following tests and put its letter in the space to the left of the test. It is possible th one conditional expression could be the answer for more than one test. Some of the conditional expressions will not be used for any of the tests. Write only ONE letter per box. Write your answer CLEARLY.

Answer	Test if
	a is greater than the values of b and c combined
	Any of the three variables are negative
	All three of the variables are positive
	a has the maximum value of the three variables
	All three variables have the same value
	Any two of the variables have the same value
	All three variables have different values
	All three variables are non-zero
	Assuming (required) that a < c, determine whether b is between a and c, inclusive
	a is not a valid value, where valid values are b, c

Conditional
A) (a < 0 || b < 0 || c < 0)
B) (a == 0 && b == 0 && c == 0)
C) (a > 0 && b > 0 && c > 0)
D) (c < b || c < a)
E) !(a == 0 || b == 0 || c == 0)
F) (a <= b <= c)
G) (a != b || a != c)
H) (a >= b && a >= c)
I) (a != b && a != c && b != c)
J) (a == b && b == c)
K) (c < b && c < a)
L) (a == b || b == c || c == a)
M) (a <= b && b <= c)
N) (a == 0 || b == 0 || c == 0)
O) (a > (b + c))
P) (a != b && a != c)