Instructions: This homework assignment focuses on the basics of C++ arrays. The answers to the following questions can be determined from Chapters 3 through 8 of the lecture notes and Chapters 11 and 12 of the text. Assume any #include directives, variable declarations, etc, which are needed to make the given code syntactically correct.

After you have analyzed the questions and decided what answers you believe are correct, you may find it useful to write some short programs to test your logic.

The on-line Opscan form for this quiz provided by the Curator system must be used for this assignment. (No other submissions will be accepted!) Check the course web site for the due date for this quiz.

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Questions 1 through 3 refer to the following incomplete program:

```c++
void FillEm(__________ arr1[], ________ arr2[], int length); // line 1
void Copy(______ arr1[], ______ arr2[], int length); // line 2

int main() {
  const int dim = 200;
  char alpha[dim];
  char beta[dim];

  FillEm(alpha, beta, dim); // Initialize arrays alpha and beta
  Copy(alpha, beta, dim); // Copy all components of beta into alpha
  return 0;
}

void Copy(______ arr1[], ______ arr2[], int length) {
  for (int Idx = 0; Idx < length; Idx++) {
    arr1[Idx] = arr2[Idx];
  }
  return;
}

void FillEm(__________ arr1[], ________ arr2[], int length) {
  // some initialization code goes here
}
```

1. What is the most appropriate way to fill the blank preceding the first formal parameter of FillEm() in line 1?
   1) int&
   2) char&
   3) char
   4) const char
   5) int
   6) const int
   7) all are equally good
   8) none are good
2. What is the most appropriate way to fill the blank preceding the first formal parameter of `Copy()` in line 2?

1) int&
2) char&
3) char
4) const char
5) int
6) const int
7) all are equally good
8) none are good

3. What is the most appropriate way to fill the blank preceding the second formal parameter of `Copy()` in line 2?

1) int&
2) char&
3) char
4) const char
5) int
6) const int
7) all are equally good
8) none are good

4. Which of the following code fragments can be used to input values into a 3-element int array named `Alpha`?

1) `cin >> Alpha[0] >> Alpha[1] >> Alpha[2];`
2) `cin >> Alpha;`
3) `for (i = 0; i < 3; i++) cin >> Alpha[i];`
4) `cin >> Alpha[0]; cin >> Alpha[1]; cin >> Alpha[2];`
5) All of them
6) 1 and 4 only
7) 1, 3 and 4 only
8) None of them

5. You are writing a program to keep track of majors for a collection of students. Given the following declarations

```cpp
const int MAXSTUDENTS = 100;
const int NUMMAJORS   =   4;
const string MAJORS[NUMMAJORS] = {"CS", "CpE", "Math", "Other"};
```

which of the following will properly declare two parallel arrays for storing student names and majors?

1) `string Name[MAXSTUDENTS];
   string Major[NUMMAJORS];`
2) `string Name[MAXSTUDENTS];
   string Major[MAXSTUDENTS];`
3) `string Name[NUMMAJORS];
   string Major[NUMMAJORS];`
4) All of them
5) 1 and 2 only
6) 1 and 3 only
7) 2 and 3 only
8) None of these
For questions 6 through 9, assume that the following are global declarations in a program:

```cpp
const int NOMATCH = -1;
const int NUMMAJORS = 4;
const string MAJORS[NUMMAJORS] = {"CS", "CpE", "Math", "Other");
```

The following function should search the array `MAJORS[]` for the string `toFind`, and return the index of the matching string or an error indicator, as appropriate:

```cpp
int FindMajor(toFind) { // line 1
    int Idx; // line 2
    for (Idx = 0; ; Idx++) { // line 3
        if (MAJORS[Idx] == toFind) // line 4
            return Idx; // line 5
    }
    return NOMATCH; // line 6
}
```

6. What is the most appropriate way to fill the blank preceding the formal parameter `toFind` in line 1?

1) `string`
2) `string&`
3) `const string&`
4) All are equally good
5) It should be left blank
6) None are good

7. What is the most appropriate way to fill the blank in line 3?

1) `Idx < NUMMAJORS`
2) `Idx <= NUMMAJORS`
3) `Idx < MAJORS.length()`
4) All are equally good
5) It should be left blank
6) None are good

8. What is the most appropriate way to fill the blank in line 4?

1) `MAJORS[NUMMAJORS]`
2) `MAJORS[Idx]`
3) `MAJORS`
4) All are equally good
5) It should be left blank
6) None are good

9. What is the most appropriate way to fill the blank in line 5?

1) `MAJORS[NUMMAJORS]`
2) `MAJORS[Idx]`
3) `MAJORS`
4) All are equally good
5) It should be left blank
6) None are good
10. Given the declarations below, how many components of type double does Depth have?

```c
const int HEIGHT = 100;
const int WIDTH = 50;
double Depth[HEIGHT][WIDTH];
```

1) 100  
2) 50  
3) 99 * 49  
4) 100 * 50  
5) None, they are of type int.  
6) None of these

11. Given the declarations from question 10, the expression `Depth[5][3]` refers to:

1) the third element of the fifth row of Depth  
2) the fifth element of the third row of Depth  
3) the fourth element of the sixth row of Depth  
4) the sixth element of the fourth row of Depth  
5) The expression is not allowed.  
6) None of these

12. Given the declarations below, the elements of X could be copied to the corresponding locations in Y by:

```c
char X[100], Y[100];
```

1) the statement: `Y = X;`  
2) the statement: `Y[] = X[];`  
3) a user-defined function to which X and Y are passed  
4) All of these.  
5) 1 and 3 only  
6) The elements of Y cannot possibly be copied into X.  
7) None of these

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