Instructions: This homework assignment focuses on the basics of C++ enums and structs. The answers to the following questions can be determined from Chapters 3 through 10 of the lecture notes and Chapters 10 and 11.1 – 11.2 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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For questions 1 through 3, assume the type definition:

```cpp
struct Book {
    string Title;
    string Author;
    string CallNo;
};
```

1. Which of the following is/are valid for creating and initializing a Book variable?

1) Book tSatF;
   tSatF.Title  = "The Sound and the Fury";
   tSatF.Author = "Faulkner, William";
   tSatF.CallNO = "PS3511 A86 S8 1946 ";

2) Book tSatF;
   Book.Title  = "The Sound and the Fury";
   Book.Author = "Faulkner, William";
   Book.CallNO = "PS3511 A86 S8 1946 ";

3) Book tSatF;
   Title  = "The Sound and the Fury";
   Author = "Faulkner, William";
   CallNO = "PS3511 A86 S8 1946 ";

4) All of these
5) 1 and 2 only
6) 1 and 3 only
7) 2 and 3 only
8) None of these

2. Given the variable declarations: Book EKAT, OFOtCN;

and assuming the two variables have been properly initialized, which of the following is/are valid expressions or statements involving Book variables?

1) EKAT = OFOtCN;
2) EKAT == OFOtCN
3) cout << EKAT;
4) All of these
5) 1 and 2 only
6) 1 and 3 only
7) 2 and 3 only
8) None of these
3. Given the variable declarations: Book EKAT, OFOtCN;

and assuming the two variables have been properly initialized, which of the following is/are valid expressions or statements involving Book variables?

1) cout << EKAT.Title;
2) OFOtCN.Author = "Kesey, Ken";
3) EKAT.Title == OFOtCN.Title
4) All of these
5) 1 and 2 only
6) 1 and 3 only
7) 2 and 3 only
8) None of these

4. Suppose that a struct parameter is to be passed to a function, and that the function does not need to modify either the formal parameter or the actual parameter. What advantage(s) could be gained by passing the parameter by constant reference instead of passing it by value in this situation?

1) This would require less space in memory.  
2) This would probably require less execution time.  
3) The syntax of the function call would be simpler.  
4) All of these  
5) 1 and 2 only  
6) 1 and 3 only  
7) 2 and 3 only  
8) None of these

5. Passing a struct parameter by constant reference instead of by reference:

1) increases the amount of memory needed  
2) reduces the time required for the function call  
3) increases the time required for the function call  
4) reduces the amount of memory needed  
5) 1 and 3 only  
6) 2 and 4 only  
7) None of these

For questions 6 through 19, consider the declarations and function:

```c
struct Bar {  
    int Foo[5];  
    int Size;  
};

Bar X = {{2, 4, 9, 11, 17}, 5},  // These are legal initializations.  
       Y = {{0, 3, 6}, 3};

Bar AddBar(const Bar& A, const Bar& B) {  
    Bar NewBar;  
    if (A.Size <= B.Size)  
        NewBar.Size = A.Size;  
    else  
        NewBar.Size = B.Size;  
    for (int Idx = 0; Idx < NewBar.Size; Idx++)  
        NewBar.Foo[Idx] = A.Foo[Idx] + B.Foo[Idx];  
    return NewBar;  
}
```

6. The statement: Y = X;

1) is syntactically illegal because you can't assign an array to an array  
2) is syntactically legal, but has a different effect than 1)  
3) would copy the contents of the Bar variable X into the Bar variable Y  
4) None of these
7. The statement: \( Y.Foo = X.Foo; \)
   1) is syntactically illegal because you can't assign an array to an array
   2) is syntactically legal, but has a different effect than 1)
   3) would copy the contents of the \( Foo \) field of \( X \) into the \( Foo \) field of \( Y \)
   4) None of these

8. Suppose the following statement is executed: \( \text{Bar } Z = \text{AddBar}(X, Y); \)

   Then the value of \( Z.Foo[2] \) would be:
   1) 0  2) 2  3) 8  4) 9  5) 15  6) None of these

9. Again, suppose the following statement is executed: \( \text{Bar } Z = \text{AddBar}(X, Y); \)

   Then the value of \( Z.Size \) would be:
   1) 0  2) 1  3) 2  4) 3  5) 4  6) 5  7) None of these

For questions 10 through 12 assume the following enumerated type declaration:

```c
enum Status {NEGATIVE, OK, UNUSED, TOOBIG};
```

The function `checkIndex()` is intended to validate an array index, as you did in Project 8, and indicate to the caller what is determined:

```c
checkIndex(int Idx, // index to be checked
           int Used, // # of used cells in array
           int Dimension) { // dimension of array

    if (Idx < 0)
        return Status; // line 1
    if (Idx < Used)
        return OK;
    if (Idx < Dimension)
        return UNUSED;
    return Status; // line 2
}
```

10. What should the return type of the function be?
   1) void  2) int  3) Status  4) UNUSED  5) None of these

11. How should the blank in line 1 be filled?
   1) Status  2) -1  3) 0  4) NEGATIVE  5) None of these
12. How should the blank in line 2 be filled?

1) OK
2) Status
3) It should be left blank.
4) TOOBIG
5) None of these

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