CSC 236 T16 on C++ Arrays

**This is a pair assignment designed as an in-class activity.**

**Directions for use:**

* To use this form effectively, sign into a Google account.
* Then under “File” choose “Make a Copy” in order to be able to edit.
* Share with all team members, but allow Recorder to do the recording.
* Each yellow box should be filled with an appropriate team response..
* Download as *yourusernames(2).docx* and upload to Moodle

This pair assignment is designed for use with <http://cs.berea.edu/courses/csc236/tasks/t16.cpp.arrays.html>

First, rotate, confirm roles and complete the form below for assigned roles of each member.  Try to assign a role to each member that they have not done as often.

**Member Roles**

|  |  |
| --- | --- |
| **Team Roles** | **Member Name** |
| **Driver:** | **Jon Jeffrey** |
| **Navigator:** | **John Hellrung** |

**On C++ arrays**

C++ arrays are syntactically similar to python lists in that they support indexing but do not have all the flexibility of Python lists. C++ arrays must hold items that are all the same data type, and they do not support slices or the use of using negative indices to access items from the end of the array. Unlike in Python, C++ does no index range checking for any C++ array. If a C++ program attempts to access beyond the boundaries of an array, there is no telling what will happen. The program may crash or it may appear to work correctly. If you try to write, it will write even over other memory contents.

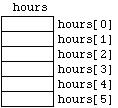
For example, you can declare an array of integers as follows:

int hours[6];

Just as in Python, we end up with space to hold 6 values with the identifiers:

hours[0] hours[1] hours[2] hours[3] hours[4] hours[5]

Each of these placeholders is referred to as an element or component of the array. The numbers 0 through 5 are the indexes (positions in the array) or subscripts of the elements. Important features of these 6 values is that they are allocated consecutive memory locations in the computer and the index always begins at 0. Unlike in Python, these can only store integers. Hence this declaration will set aside memory as follows:

**

Download the diceroll.cpp program from <http://cs.berea.edu/courses/csc236/tasks/diceroll.cpp>. Change the filename to *yourusername(s)-T16.cpp.*

This program uses several data structures beyond basic data types.  In particular, it uses a C++ array and two classes: a RandGen class that generates pseudo-random numbers and a Dice class that interacts with RandGen to simulate what results when throwing dice.  As a programmer, you really only need to look primarily at main and the interface for the Dice class because these are the only sets of code you will interact with directly.  The  Dice class just happens to use the RandGen class.

Try compiling and then running this program a several times without recompiling.

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| --- | --- |
| **Randomness in C++** |  |
| Do you get the same list of dice rolls each time when you rerun the program without recompiling? Explain. | No, we got different numbers. The reason for this because the numbers are produced by a random generator. |
| The very first cube.Roll();  is “thrown away.”   Change this by storing it in storeroll[0] and print it out using cout.  Run your program a number of times.  Does it seem to always be the same?  Explain. | It the first element of an array and the element don’t change unless to recompile the program. |

Reflecting upon object-oriented programming (OOP) principles, answer the following questions:

|  |  |
| --- | --- |
| **OOP Principles** |  |
| Why you you think the programmer used two classes? | The programmer separate the two methods because ADT. |
| Why do you think the programmer saw this as a better choice than to use a single class? | It made it easier to program them. By separating them into two separate classes it allowed the programmer to focus one class on making the die itself and the other class on generating the random number. |

Next you will be asked to make more significant changes to the program.  See the T16 assignment at <http://cs.berea.edu/courses/csc236/tasks/t16.cpp.arrays.html> before proceeding.

**Suggestions and Submission**

Please offer any suggestions for improvement of this activity from the team:

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| --- |
| **Suggestions for improvement** |
| The assignment was pretty straight forward. |

To submit, the Navigator will download as *yourusername(s)-T16.docx* and upload to Moodle and the Driver will upload *yourusername(s)-T16.cpp.*