**CS 4250 Programming Languages Fall 2018**

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**KEY TO QUIZ #4 [6 points]**

1. Describe the advantages and disadvantages of a decimal type.

*Answer:*

Advantage: precision in storing decimal values. Disadvantages: restricted range (no exponents are allowed) and waste of storage.

1. Explain what type of 2-dimensional array is used to implement an array of strings in C: rectangular or jagged.

*Answer:*

In an array of strings individual strings may have various lengths. So, it is a jagged array, unlike a rectangular array where all rows must have the same number of elements.

1. Describe the major difference between traditional and associative arrays.

*Answer:*

In a traditional arrays subscripts are of integer type. They don’t need to be memorized in array processing. In an associative array subscripts are strings, called keys. So, the pairs “key/value” should be stored during the program execution.

1. Indicate the major difference between a record type and tuple type.

*Answer:*

In a record type fields have names, while in a tuple elements don’t have names.

1. Indicate the two common problems with pointers.

*Answer:*

Problems with dangling pointer and lost heap-dynamic variables.

1. Explain advantages of references over pointers as function parameters in C++.

*Answer:*

Easier syntax and convenience of both call-by-value and call-by-reference.