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CS 141

Homework 3

1. Generic programming is the idea of programming algorithms and data structures in the abstract. With that method, programmers can use those generic programming templates to create algorithms and data structures of many different data types.

2. C++ requires templates to be implemented in the header files as those algorithms and data structures will be declared for the compiler files that include the header file. The template algorithms and data structures will be defined in a separate file, so that they can be initialized once and can be used for whichever compiler file that needs those algorithms and data structures. If the template was declared and defined in the header file, then any compiler file that includes the header file will initialize all the algorithms and data structures. That will cause the linker to not be able to determine which initialized algorithm or data structure to use.

3. Submitted

4. The first const means that the method will return a constant T object. The second const declares that the integer I will not be changed. The third const declares that the method can be used on const objects and will not change the information in the given data.

5. 1 will return v with whatever v had before as v is passed by copy. 2 will return v[0] as 0 since v is given as a reference. 3 will be invalid as v is constant and you cannot change it.

6. For Static:

   In Simple_Scoping Initially m = 10

   In Q m = 6

   In Simple_Scoping after Q m = 10

   In Simple_Scoping after P m = 10

   For Dynamic:

   In Simple_Scoping Initially m = 10

   in Q m = 12

   In Simple_Scoping after Q m = 10

   In Simple_Scoping after P m = 12