Assignment

Use the graph<size_t>::neighbors() member function to find the neighbors of each vertex in a graph, and display the result.

Start with the programs in Blackboard week 16 folder:

graph.h
graph.template
graphs_01.cpp

add a section of code to display the neighbors of each vertex.

See the last section of this document for test cases.

Example of Program Output

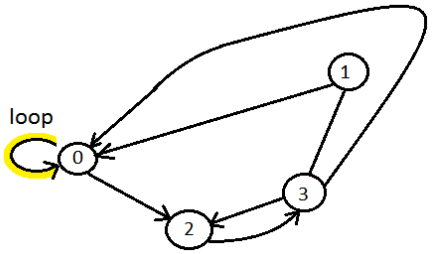
For the graph on the right, the output is:

```
Vertices: 0, 1, 2, 3,

Adjacency Matrix:
        0  1  2  3
      ------------
  0 |   1  0  1  0
  1 |   1  0  0  1
  2 |   0  0  0  1
  3 |   1  0  1  0

Neighbor of vertex 0 are 0, 2,
Neighbor of vertex 1 are 0, 3,
Neighbor of vertex 2 are 3,
Neighbor of vertex 3 are 0, 2,

Press any key to continue . . .
```



<set> template class

See: http://www.cplusplus.com/reference/set/set/

STL set class stores unique elements

- No duplicate values are allowed.
- Elements are in order

See attached program, demo_set.cpp, for using STL <set> class.

Notes

From the header file, function prototype of neighbors() is

```
std::set<std::size_t> neighbors(std::size_t vertex) const;
```

Function neighbors()

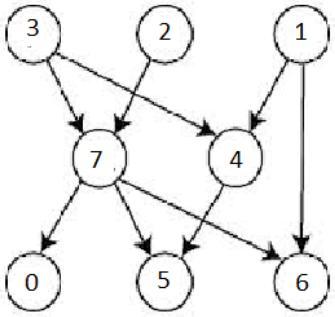
- takes one argument, the vertex number, and
- returns a set of size_t, which holds the vertices of neighbors.

To display the neighbors from the set, you use a <set> iterator. See demo_set.cpp on how to use the iterator to step through the set.

Test Cases

Test Case #2

Use graph on the right for test case 2.



Test Case #3

Create a test case of your own. Submit the drawing of your graph.