CS302 HW5

Problem 1

Consider the directed graph given by V={0, 1, 2, 3, 4, 5}, E={[0,2], [0,3], [0,4], [2,1], [2,4], [3,5], [4,0]}.

Determine the vertex visitation order that results from breadth-first traversal starting first from vertex 2 then vertex 3, 4, and 5. Use the breadth-first search function shown below. See the `graph1_handout` for layout details. Assume all vertex colors are reset to WHITE before any run. Process lowest numbered vertex first in case of a tie.

Instead of producing lots of arrays that indicate when the color is changed for which vertex, draw trees that represent the traversal process. Then extract the corresponding vertex visitation order.

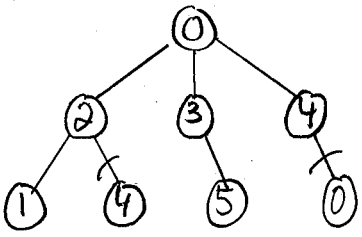
```
void graph::bfsearch(int source) {
  queue<int> Q;
  Q.push(source);

  while (!Q.empty()) {
    int i=Q.front();
    Q.pop();

    if (vcolor[i] == BLACK)
      continue;

    vcolor[i] = BLACK;
    for (int k=0; k<E[i].size(); k++)
      Q.push(E[i][k]);
  }
}
```

Source = 0



{0, 2, 3, 4, 1, 5}

Source = 1

{1}

Source = 2

Source = 3

Source = 4

Source = 5