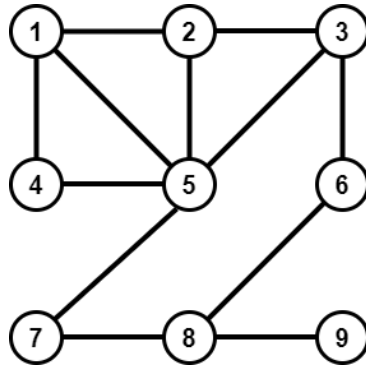


CSE 30
Spring 2021
Quiz 5

Solutions

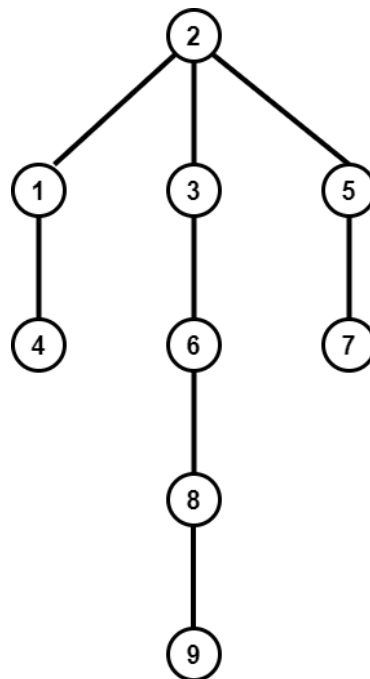
1. (25 Points) Run the BFS algorithm (found [here](#)) on the graph pictured below. Show the predecessor subgraph (shortest paths tree) that results, and show the vertices in the order that they enter the queue. (Hint: follow the example on page 2 of the notes from [5-20-21](#).)



Solution:

Queue: 2 1 3 5 4 6 7 8 9

Predecessor Subgraph:



2. (25 Points) Let G be a connected graph, and $x \in V(G)$. The *eccentricity* of x is defined to be the maximum possible distance of a vertex y from x . In other words, it is the furthest distance you can reach from x in G . Given the Graph class defined [here](#), complete the definition below of a new member function called `Eccentricity(self, x)` that calculates the eccentricity of x . (Hint: Use the `BFS()` function.)

```
def Eccentricity(self, x):
    """Return the eccentricity of x."""
    # your code begins here

    self.BFS(x)
    max = 0
    for y in self.vertices:
        d = self.getDistance(y)
        if d>max:
            max = d
    # end
    # end
    return max

    # your code ends here
# end
```