Fontys Hogescholen

Algorithms 2

Assignment1

Aleksandar Georgiev, Ivaylo Ivanov
Supervisor: Suzana Andova

Table of Contents

1. Explanation

Main code (GUI)

We decided to use a python library named *PySimpleGUI* for the GUI of the assignment.

First we start with the GUI generation. We declare all the components that we are going to use and the actual window of the application.

After that we have an event loop with all the event of the application :

- We have the *generate* event which is activated if the user clicks on the generate button. This event is responsible for the adjacency matrix, dot file generation and the visualization of the graph itself.
- Next we have the *connect* event which is responsible for converting the disconnected graph into a connected one and then display the new graph.

Connect graph code:

We implemented a DFS algorithm starting from vertex 0. after we have traversed all the nodes that are connected to 0 we check if the number of visited vertices is the same as the number of all the vertices of the graph and if that is not the case we locate a vertex which is not connected to the traversed graph the connect that vertex to the last visited vertex. Then we continue with the DFS and check again if the number of visited nodes is the same as the number of vertices in the graph.

Generate dot file code:

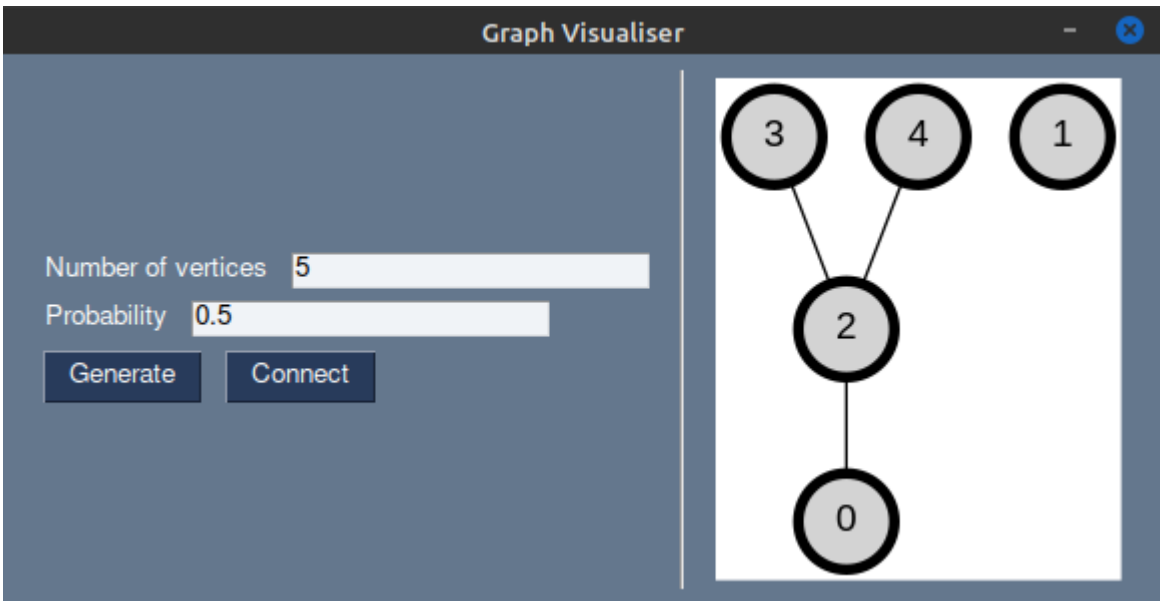
This function is really straightforward: we go through the adjacency matrix and generate the dot file base on it. We write everything as a string and then we use the *file.write()* to put the generated string into a file.

2. Testing

We decided to manually test our solution so we did an extensive testing on our solution with different numbers of vertices and probability for the edges. We covered all the features of the program and tested every edge case.

3. Result

before clicking *Connect*



after *Connect*