Project 3 – GraphMan

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COP4415 – Data Structures

Fall 2021

Due: December 5th, 2021

Environment

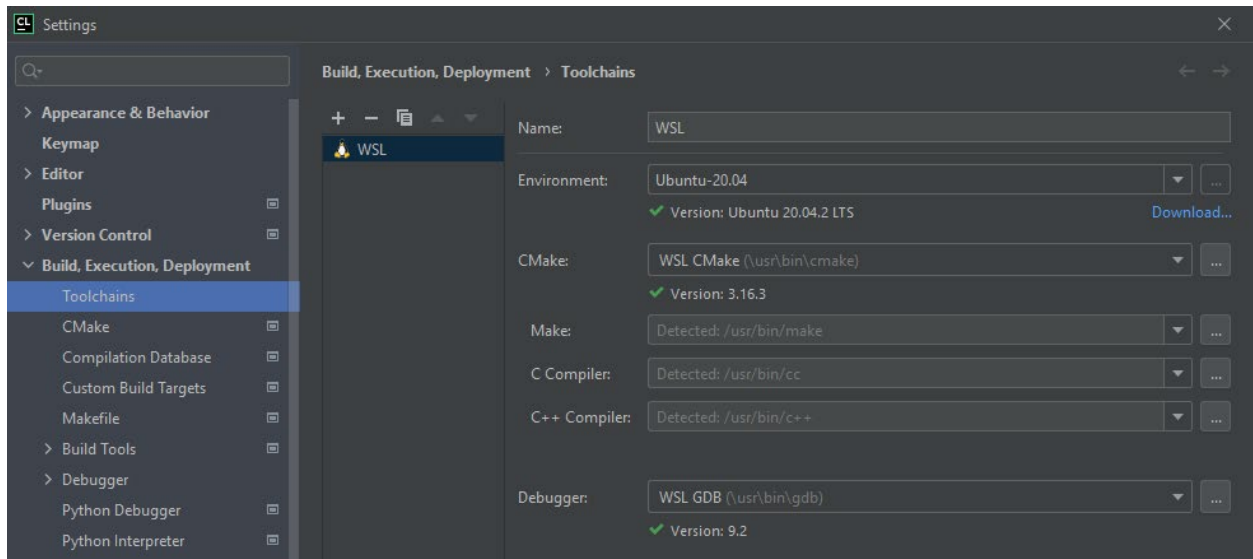- OS – Windows 10 (Running Ubuntu as Linux Subsystem for compiling)
- IDE – CLion 2021.2.1

Figure 1 - Windows Subsystem Linux (WSL) used for compiling and debugging
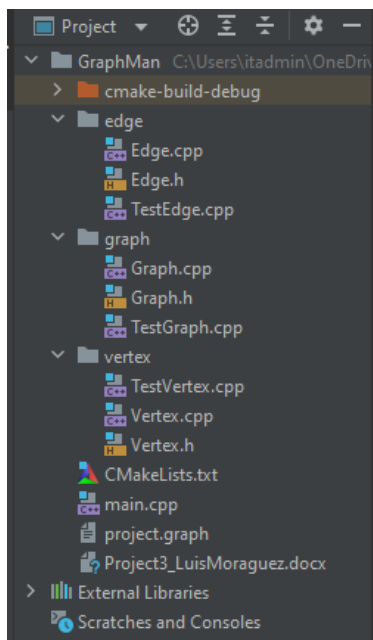
Directory Tree

Figure 2 - Directory Tree.

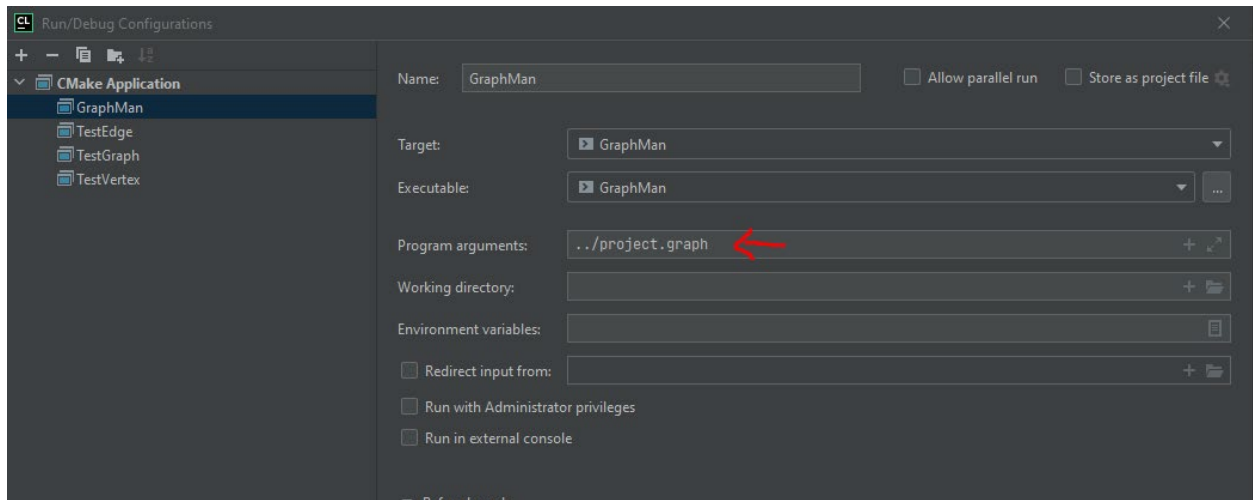# Running Main Program

- Provide file path as argument

Figure 3 - Running with file path as argument

```
Run:    GraphMan ×

          Welcome to GraphMan
          -------------------
    Please select one of the following tasks:
      [1] Shortest path between two nodes
      [2] Print adjacency list
      [3] Breadth-first search
      [4] Depth-first search
      [5] Depth-first search (node edges are ordered depending on the increasing degree of the destination node)
      [6] Print Graph
      [7] Exit

      Enter your selection:6
       6
      ------------
      | Vertex: a|
      ------------
      | ab,a,b,1 |
      | ac,a,c,5 |
      ------------
      ------------
      | Vertex: b|
      ------------
      | be,b,e,7 |
      ------------
      ------------
      | Vertex: c|
      ------------
      |    --    |
      ------------
      ------------
      | Vertex: d|
      ------------
      | db,d,b,3 |
      | da,d,a,2 |
      | dc,d,c,1 |
      ------------
```

Figure 4 - Print graph with option 6 (part 1)
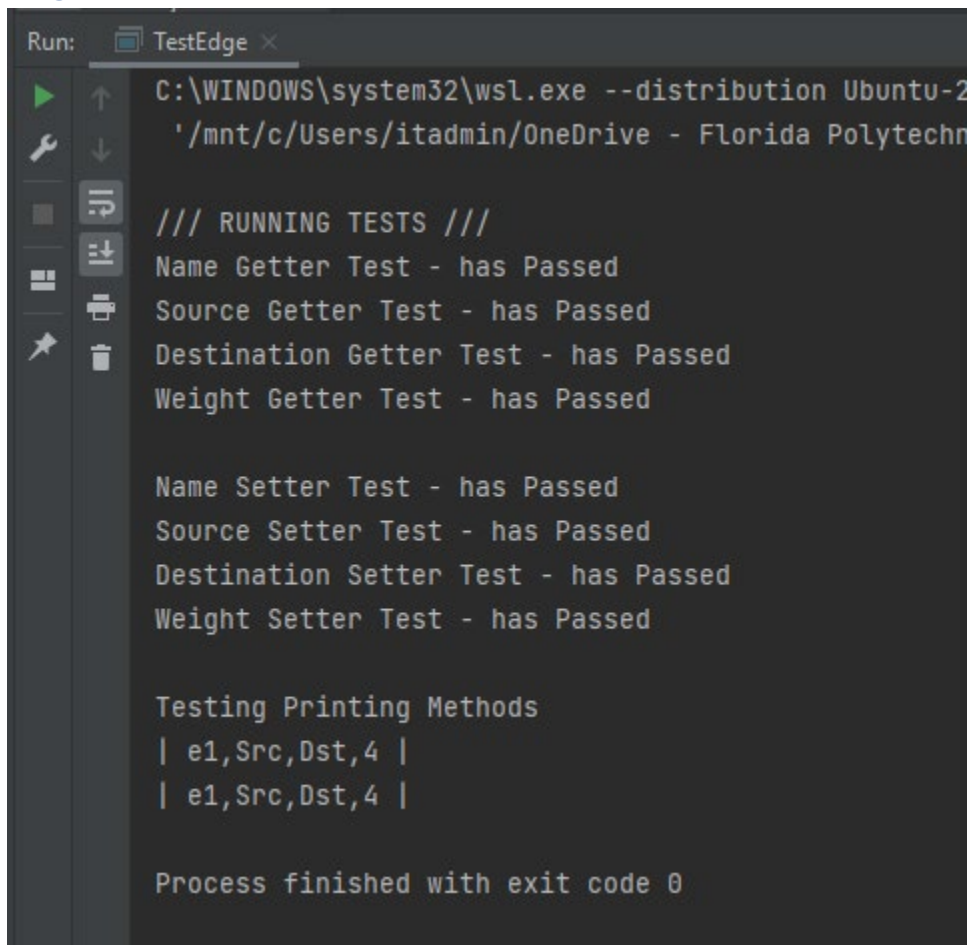
```
Run:        GraphMan ×

              ------------
              ------------
              | Vertex: d|
              ------------
              | db,d,b,3 |
              | da,d,a,2 |
              | dc,d,c,1 |
              ------------

              ------------
              | Vertex: e|
              ------------
              | ed,e,d,2 |
              | eg,e,g,1 |
              ------------

              ------------
              | Vertex: f|
              ------------
              | fe,f,e,2 |
              ------------

              ------------
              | Vertex: g|
              ------------
              | gd,g,d,3 |
              | gf,g,f,5 |
              ------------
```

Figure 5 - Print graph with option 6 (part 2)

Edge Class Tests

```
Run:    TestEdge ×

        C:\WINDOWS\system32\wsl.exe --distribution Ubuntu-2
         '/mnt/c/Users/itadmin/OneDrive - Florida Polytechn

        /// RUNNING TESTS ///
        Name Getter Test - has Passed
        Source Getter Test - has Passed
        Destination Getter Test - has Passed
        Weight Getter Test - has Passed

        Name Setter Test - has Passed
        Source Setter Test - has Passed
        Destination Setter Test - has Passed
        Weight Setter Test - has Passed

        Testing Printing Methods
        | e1,Src,Dst,4 |
        | e1,Src,Dst,4 |

        Process finished with exit code 0
```
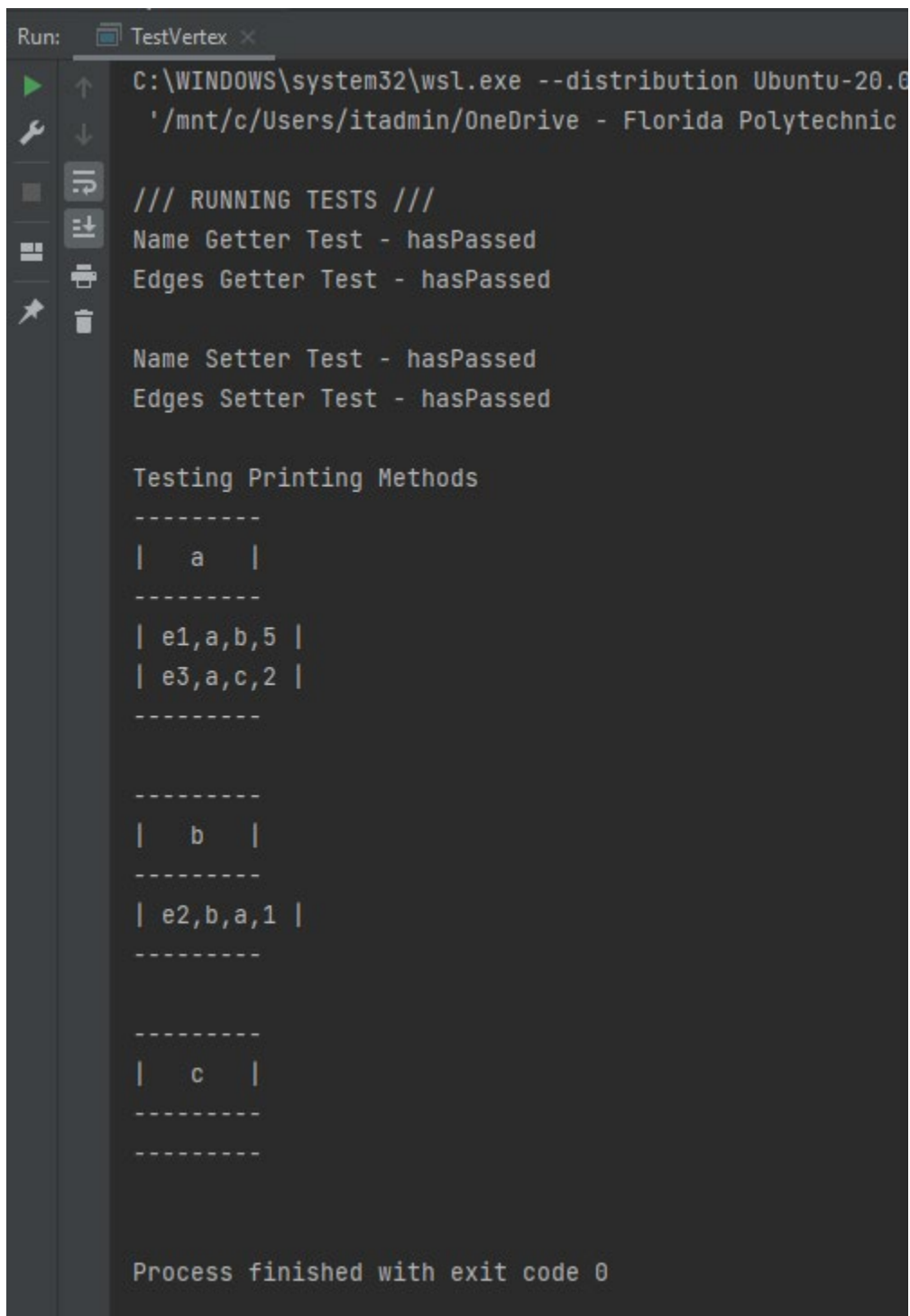
Figure 6 - Tests using testBuilder method in class

Vertex Class Tests

```
Run:        TestVertex  ×

     ▶         C:\WINDOWS\system32\wsl.exe --distribution Ubuntu-20.0
                '/mnt/c/Users/itadmin/OneDrive - Florida Polytechnic

     ■          /// RUNNING TESTS ///
                Name Getter Test - hasPassed
                Edges Getter Test - hasPassed

                Name Setter Test - hasPassed
                Edges Setter Test - hasPassed

                Testing Printing Methods
                ---------
                |   a   |
                ---------
                | e1,a,b,5 |
                | e3,a,c,2 |
                ---------


                ---------
                |   b   |
                ---------
                | e2,b,a,1 |
                ---------


                ---------
                |   c   |
                ---------
                ---------



                Process finished with exit code 0
```
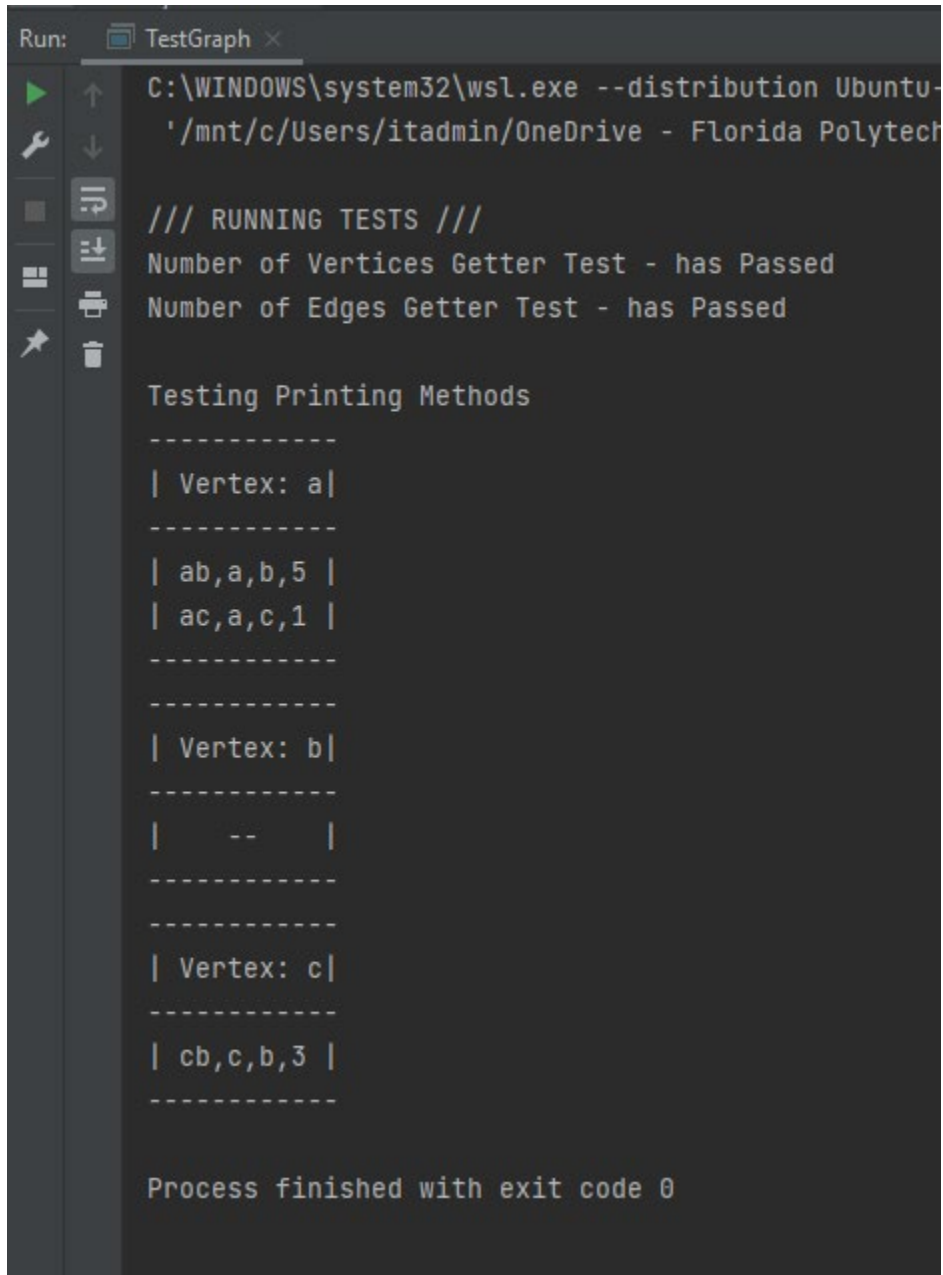
Figure 7 - Tests using testBuilder method in class

Graph Class Tests

```
Run:     TestGraph ×

    C:\WINDOWS\system32\wsl.exe --distribution Ubuntu-
     '/mnt/c/Users/itadmin/OneDrive - Florida Polytech

    /// RUNNING TESTS ///
    Number of Vertices Getter Test - has Passed
    Number of Edges Getter Test - has Passed

    Testing Printing Methods
    -----------
    | Vertex: a|
    -----------
    | ab,a,b,5 |
    | ac,a,c,1 |
    -----------

    -----------
    | Vertex: b|
    -----------
    |    --    |
    -----------

    -----------
    | Vertex: c|
    -----------
    | cb,c,b,3 |
    -----------

    Process finished with exit code 0
```

Figure 8 - Tests using testBuilder method in class