Graph Exercises

1. Does the following graph have an Euler circuit? Why or why not?

|  |
| --- |
| A |

|  |
| --- |
| B |

|  |
| --- |
| C |

|  |
| --- |
| D |

|  |
| --- |
| E |

Give your answer in terms of graph theory, not “Yes because I can trace it” or “No because I can’t trace it”

2. List the node in order when traversing the graph breadth first

3. Trace a minimum spanning tree with the graph below:

|  |
| --- |
| A |

|  |
| --- |
| B |

|  |
| --- |
| C |

|  |
| --- |
| D |

|  |
| --- |
| E |

|  |
| --- |
| 3 |

|  |
| --- |
| 4 |

|  |
| --- |
| 2 |

|  |
| --- |
| 5 |

|  |
| --- |
| 7 |

|  |
| --- |
| 6 |

4. Give an example of what the graph could represent and what could the minimum spanning tree be used for?

5. Given a graph G that is implemented with linked lists, write pseudocode for an internal graph ADT algorithm that will print all nodes that are connected to a target node

algorithm PrintConnectedNodes ( val graph <ptr to head node> , val target <key> )

Pre: graph G exists and has data

Post: connected nodes to target are printed

Return: nothing