COIS 3020H - Data Structures and Algorithms II
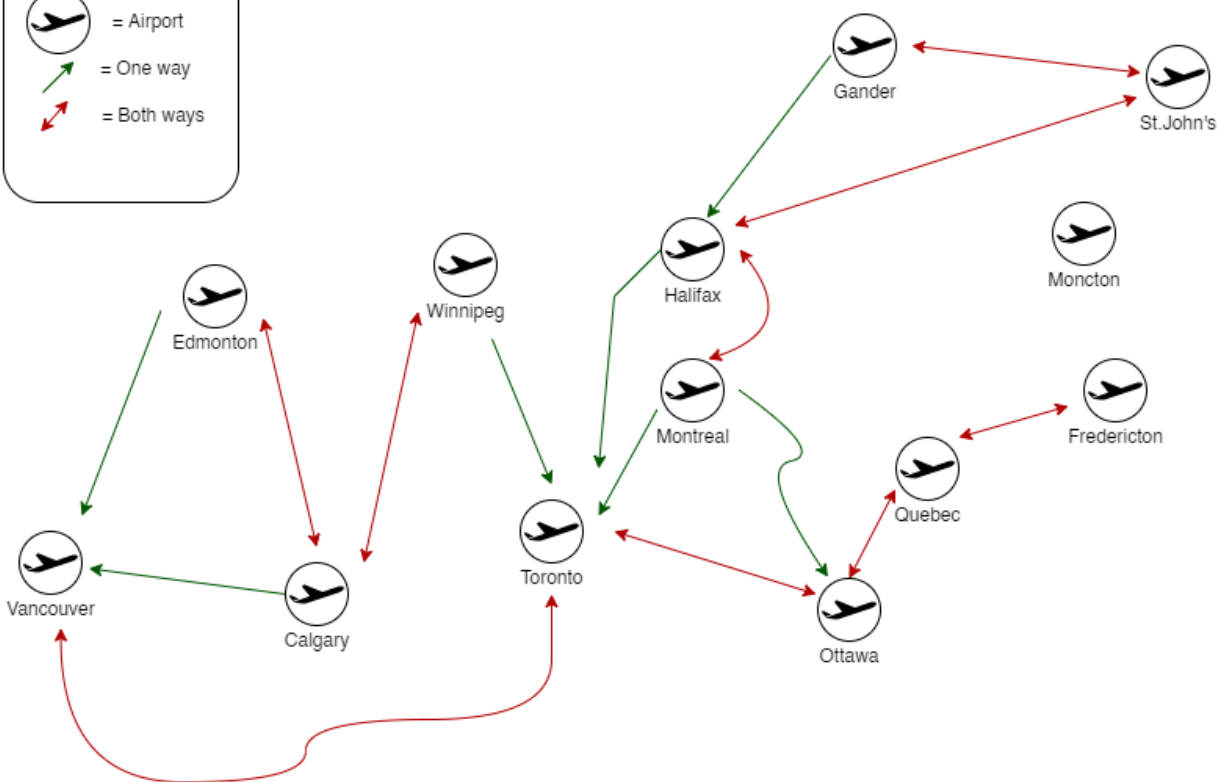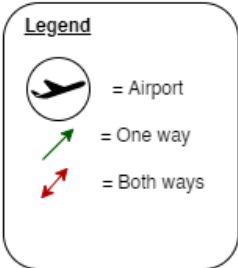
Testing Documentation: Assignment 1

Alaadin Addas

Air Canada - Winter 2022

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Route Map

Test 1	
Description	Adding a destination that already exists (Toronto, YYZ)
Expected Output	Should print out an error message. "The airport already exists"
Actual Output	Test1: Adding a destination that already exists Toronto Pearson International Airport already exists

Test 2	
Description	Find fastest route between airports that are connected (Fredericton->Ottawa) (Toronto->Vancouver) (Vancouver->Fredericton) (St.Johns->Gander)
Expected Output	The order of the airports might be wrong but should print the following airports: YFC YQB YOW YYZ YVR YVR YYZ YOW YQB YFC YYT YQX
Actual Output	Test3: Find fastest route between airports that are connected Path found from Fredericton International Airport to Ottawa Macdonald-Cartier International Airport The shortest path from Fredericton International Airport to Ottawa Macdonald-Cartier International Airport is: Fredericton International Airport(YFC) Québec/Jean Lesage International Airport(YQB) Ottawa Macdonald-Cartier International Airport(YOW) Path found from Toronto Pearson International Airport to Vancouver International Airport The shortest path from Toronto Pearson International Airport to Vancouver International Airport is: Toronto Pearson International Airport(YYZ) Vancouver International Airport(YVR) Path found from Vancouver International Airport to Fredericton International Airport The shortest path from Vancouver International Airport to Fredericton International Airport is: Vancouver International Airport(YVR) Québec/Jean Lesage International Airport(YQB) Ottawa Macdonald-Cartier International Airport(YOW) Toronto Pearson International Airport(YYZ) Fredericton International Airport(YFC) Path found from St. John's International Airport to Gander International Airport The shortest path from St. John's International Airport to Gander International Airport is: St. John's International Airport(YYT) Gander International Airport(YQX)

Test 3	
Description	Find fastest route between airports that are not connected (Moncton->Gander)
Expected Output	Should print a message that the given airports are not connected.
Actual Output	Test4: Find fastest route between airports that are not connected Greater Moncton Roméo LeBlanc International Airport and Gander International Airport are not connected.

Test 4	
Description	Remove an airport that exists in the map (Quebec, YQB)
Expected Output	Should print a message that Quebec has been successfully removed.
Actual Output	Test5: Remove an airport that exists in the map Québec/Jean Lesage International Airport has been succesfully removed

Test 5	
Description	Remove an airport that does not exist in the map (Quebec, YQB)
Expected Output	Quebec was already deleted prior, program should print "The airport does not exist"
Actual Output	Test6: Remove an airport that does not exist in the map The airport does not exist

Test 6	
Description	Find fastest route for an airport that does not exist (deleted airport)
Expected Output	Quebec was already deleted prior, so program should print a message that "Given airports does not exist"
Actual Output	Test7: Find fastest route for an airport that does not exist (deleted airport) Given airports does not exist

Test 7

Description	Removing a route from the map from airports that does exist. (Calgary->Edmonton)
Expected Output	"The destination should be successfully removed. "
Actual Output	

```
Test9: Removing a route from the map from airports that does exist
The destination Edmonton International Airport (Code: YEG) is removed.
```

Test 8

Description	Removing a route from the map from airports that doesn't exist. (Quebec->Edmonton)
Expected Output	Since the origin is not connected to a given destination, a message that "Airport not found" should be printed.
Actual Output	

```
Test10: Removing a route from the map from airports that doesn't exist
Airport not found
```
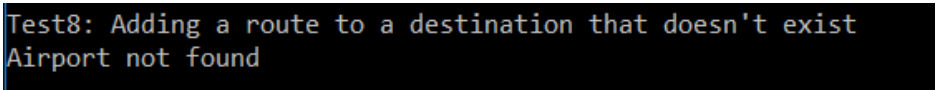
Test 9	
Description	Adding routes to and from airports that does exist in the map
Expected Output	All airport destinations should be successfully added
Actual Output	

```
Test2: Adding routes to and from airports that does exist in the map
Vancouver International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
St. John's International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Edmonton International Airport has been succesfully added
Calgary International Airport has been succesfully added
Calgary International Airport has been succesfully added
Winnipeg International Airport has been succesfully added
Vancouver International Airport has been succesfully added
Vancouver International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Halifax Stanfield International Airport has been succesfully added
Montréal-Trudeau International Airport has been succesfully added
St. John's International Airport has been succesfully added
Gander International Airport has been succesfully added
Halifax Stanfield International Airport has been succesfully added
Halifax Stanfield International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Québec/Jean Lesage International Airport has been succesfully added
Fredericton International Airport has been succesfully added
Ottawa Macdonald-Cartier International Airport has been succesfully added
Québec/Jean Lesage International Airport has been succesfully added
Ottawa Macdonald-Cartier International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Ottawa Macdonald-Cartier International Airport has been succesfully added
```
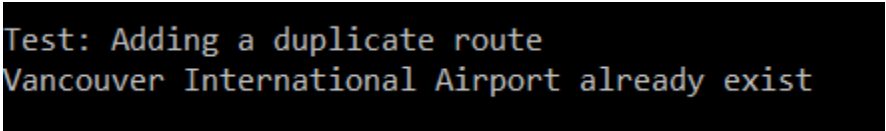
Test 10	

Description	Removing all airports
Expected Output	All airports should be successfully removed
Actual Output	

```
Test11: Removing all airports
Calgary International Airport has been successfully removed
Edmonton International Airport has been succesfully removed
Fredericton International Airport has been succesfully removed
Gander International Airport has been succesfully removed
Halifax Stanfield International Airport has been succesfully removed
Greater Moncton Roméo LeBlanc International Airport has been successfully removed
Montréal-Trudeau International Airport has been successfully removed
Ottawa Macdonald-Cartier International Airport has been successfully removed
St. John's International Airport has been succesfully removed
Toronto Pearson International Airport has been succesfully removed
Vancouver International Airport has been succesfully removed
Winnipeg International Airport has been succesfully removed
```

Test 11	
Description	Finding fastest route between airports when the map is empty
Expected Output	Since, all airports had been removed earlier, a message "Given airports does not exist" should be printed.
Actual Output	

```
Test12: Finding fastest route between airports when the map is empty
Given airports does not exist
```

Test 12

Description	Adding a route to a destination that doesn't exist. (Vancouver->Quebec)
Expected Output	"Airport not found" Since the destination airport (Quebec) was deleted prior.
Actual Output	Test8: Adding a route to a destination that doesn't exist Airport not found

Test 13	
Description	Trying to add a route that has already been added.
Expected Output	"Airport already exists" Since the route Toronto to Vancouver was added prior.
Actual Output	Test: Adding a duplicate route Vancouver International Airport already exist

These are the screenshots with the expected outputs of all testing cases above:

```
Calgary International Airport has been succesfully added
Edmonton International Airport has been succesfully added
Fredericton International Airport has been succesfully added
Gander International Airport has been succesfully added
Halifax Stanfield International Airport has been succesfully added
Greater Moncton Roméo LeBlanc International Airport has been succesfully added
Montréal-Trudeau International Airport has been succesfully added
Ottawa Macdonald-Cartier International Airport has been succesfully added
Québec/Jean Lesage International Airport has been succesfully added
St. John's International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Vancouver International Airport has been succesfully added
Winnipeg International Airport has been succesfully added

Test1: Adding a destination that already exists
Toronto Pearson International Airport already exists

Test2: Adding routes to and from airports that does exist in the map
Vancouver International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
St. John's International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Edmonton International Airport has been succesfully added
Calgary International Airport has been succesfully added
Calgary International Airport has been succesfully added
Winnipeg International Airport has been succesfully added
Vancouver International Airport has been succesfully added
Vancouver International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Halifax Stanfield International Airport has been succesfully added
Montréal-Trudeau International Airport has been succesfully added
Gander International Airport has been succesfully added
Halifax Stanfield International Airport has been succesfully added
Halifax Stanfield International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Québec/Jean Lesage International Airport has been succesfully added
Fredericton International Airport has been succesfully added
Ottawa Macdonald-Cartier International Airport has been succesfully added
Québec/Jean Lesage International Airport has been succesfully added
Ottawa Macdonald-Cartier International Airport has been succesfully added
Toronto Pearson International Airport has been succesfully added
Ottawa Macdonald-Cartier International Airport has been succesfully added

Test3: Find fastest route between airports that are connected
Path found from Fredericton International Airport to Ottawa Macdonald-Cartier International Airport

The shortest path from Fredericton International Airport to Ottawa Macdonald-Cartier International Airport is:
Fredericton International Airport(YFC)  Québec/Jean Lesage International Airport(YQB)  Ottawa Macdonald-Cartier International Airport(YOW)
```

Ottawa Macdonald-Cartier International Airport has been succesfully added

Test3: Find fastest route between airports that are connected
Path found from Fredericton International Airport to Ottawa Macdonald-Cartier International Airport

The shortest path from Fredericton International Airport to Ottawa Macdonald-Cartier International Airport is:
Fredericton International Airport(YFC)   Québec/Jean Lesage International Airport(YQB)   Ottawa Macdonald-Cartier International Airport(YOW)

Path found from Toronto Pearson International Airport to Vancouver International Airport

The shortest path from Toronto Pearson International Airport to Vancouver International Airport is:
Toronto Pearson International Airport(YYZ)   Vancouver International Airport(YVR)

Path found from Vancouver International Airport to Fredericton International Airport

The shortest path from Vancouver International Airport to Fredericton International Airport is:
Vancouver International Airport(YVR)   Québec/Jean Lesage International Airport(YQB)   Ottawa Macdonald-Cartier International Airport(YOW)   Toronto Pearson International Airport(YYZ)   Fredericton International Air
port(YFC)

Path found from St. John's International Airport to Gander International Airport

The shortest path from St. John's International Airport to Gander International Airport is:
St. John's International Airport(YYT)   Gander International Airport(YQX)

Test4: Find fastest route between airports that are not connected
Greater Moncton Roméo LeBlanc International Airport and Gander International Airport are not connected.

Test5: Remove an airport that exists in the map
Québec/Jean Lesage International Airport has been succesfully removed

Test6: Remove an airport that does not exist in the map
The airport does not exist

Test7: Find fastest route for an airport that does not exist (deleted airport)
Given airports does not exist

Test8: Adding a route to a destination that doesn't exist
Airport not found

Test9: Removing a route from the map from airports that does exist
The destination Edmonton International Airport (Code: YEG) is removed.

Test8: Adding a route to a destination that doesn't exist
Airport not found

Test9: Removing a route from the map from airports that does exist
The destination Edmonton International Airport (Code: YEG) is removed.

Test10: Removing a route from the map from airports that doesn't exist
Airport not found

Test11: Removing all airports
Calgary International Airport has been successfully removed
Edmonton International Airport has been successfully removed
Fredericton International Airport has been successfully removed
Gander International Airport has been successfully removed
Halifax Stanfield International Airport has been successfully removed
Greater Moncton Roméo LeBlanc International Airport has been successfully removed
Montréal-Trudeau International Airport has been successfully removed
Ottawa Macdonald-Cartier International Airport has been successfully removed
St. John's International Airport has been successfully removed
Toronto Pearson International Airport has been successfully removed
Vancouver International Airport has been successfully removed
Winnipeg International Airport has been successfully removed

Test12: Finding fastest route between airports when the map is empty
Given airports does not exist