PA03

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2.1 File List

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Class Documentation

3.1 CityNodeV1 Class Reference

Represents a v1 node in the city adjacency map.

`#include <FlightMap.v1.h>`

Public Member Functions

- CityNodeV1 (const std::string &name)
  Initializes node with the given name.
- CityNodeV1 ()
  Initializes node with empty name.

Public Attributes

- std::string name
- std::vector< ConnectionV1 > connections
- bool visited

3.1.1 Detailed Description

Represents a v1 node in the city adjacency map.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 CityNodeV1::CityNodeV1 (const std::string & *name*)

Initializes node with the given name.

Parameters

name	The name of the city.

3.1.2.2 CityNodeV1::CityNodeV1 ( )

Initializes node with empty name.

Note

Required for std::map compatibility.

3.1.3 Member Data Documentation

3.1.3.1 std::vector<ConnectionV1> CityNodeV1::connections

3.1.3.2 std::string CityNodeV1::name

3.1.3.3 bool CityNodeV1::visited

The documentation for this class was generated from the following files:

- FlightMap.v1.h
- FlightMap.v1.cpp
- FlightMap.v2.cpp.cpp

3.2 CityNodeV2 Class Reference

Represents a v2 node in the city adjacency map.

`#include <FlightMap.v2.h>`

Public Member Functions

- CityNodeV2 (const std::string &name)
  Initializes node with the given name.
- CityNodeV2 ()
  Initializes node with empty name.

Public Attributes

- std::string name
- std::vector< ConnectionV2 > connections
- bool visited
- int tryNext

3.2.1 Detailed Description

Represents a v2 node in the city adjacency map.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 CityNodeV2::CityNodeV2 (const std::string & *name*)

Initializes node with the given name.

Parameters

name	The name of the city.

3.2.2.2 CityNodeV2::CityNodeV2 ( )

Initializes node with empty name.

Note

Required for std::map compatibility.

3.2.3 Member Data Documentation

3.2.3.1 std::vector<ConnectionV2> CityNodeV2::connections

3.2.3.2 std::string CityNodeV2::name

3.2.3.3 int CityNodeV2::tryNext

3.2.3.4 bool CityNodeV2::visited

The documentation for this class was generated from the following files:

- FlightMap.v2.h
- FlightMap.v2.cpp

3.3 ConnectionV1 Struct Reference

Represents a v1 connection between cities.

`#include <FlightMap.v1.h>`

Public Attributes

- std::string dest
- int cost
- int number

3.3.1 Detailed Description

Represents a v1 connection between cities.

3.3.2 Member Data Documentation

3.3.2.1 int ConnectionV1::cost

3.3.2.2 std::string ConnectionV1::dest

3.3.2.3 int ConnectionV1::number

The documentation for this struct was generated from the following file:

- FlightMap.v1.h

3.4 ConnectionV2 Struct Reference

Represents a V2 connection between cities.

`#include <FlightMap.v2.h>`

Public Attributes

- std::string dest
- int cost
- int number

3.4.1 Detailed Description

Represents a V2 connection between cities.

3.4.2 Member Data Documentation

3.4.2.1 int ConnectionV2::cost

3.4.2.2 std::string ConnectionV2::dest

3.4.2.3 int ConnectionV2::number

The documentation for this struct was generated from the following file:

- FlightMap.v2.h

3.5 FlightMapV1 Class Reference

Represents a v1 flight map.

`#include <FlightMap.v1.h>`

Public Member Functions

- FlightMapV1 (std::vector< std::string > cities, std::map< std::pair< std::string, std::string >, std::pair< int, int >> flights)

  Initializes the flight map.
- void markVisited (const std::string &city)

  Mark a city as visited.
- void unvisitAll ()

  Mark all cities as not visited.
- bool isPath (const std::string &origin, const std::string &dest, std::string &itinerary, std::ofstream &log)

  Test whether a sequence of flights exists between two cities.

3.5.1 Detailed Description

Represents a v1 flight map.

3.5.2 Constructor & Destructor Documentation

3.5.2.1 FlightMapV1::FlightMapV1 (std::vector< std::string > *cities*, std::map< std::pair< std::string, std::string >, std::pair< int, int >> *flights*)

Initializes the flight map.

Parameters

cities	A list of all cities.
flights	A list of all flights.

3.5.3 Member Function Documentation

3.5.3.1 bool FlightMapV1::isPath (const std::string & *origin*, const std::string & *dest*, std::string & *itinerary*, std::ofstream & *log*)

Test whether a sequence of flights exists between two cities.

Parameters

origin	The name of the origin city.
dest	The name of the destination city.
itinerary	The itenarary output of the path found.
log	The log to write log (debug) output to.

Returns

True if a sequence exists; false otherwise.

3.5.3.2 void FlightMapV1::markVisited (const std::string & *city*)

Mark a city as visited.

Parameters

city	The name of the city to mark as visited.

Precondition

The given city is registered in the map.

3.5.3.3 void FlightMapV1::unvisitAll ( )

Mark all cities as not visited.

The documentation for this class was generated from the following files:

- FlightMap.v1.h
- FlightMap.v1.cpp
- FlightMap.v2.cpp.cpp

3.6 FlightMapV2 Class Reference

Represents a v2 flight map.

`#include <FlightMap.v2.h>`

Public Member Functions

- FlightMapV2 (std::vector< std::string > cities, std::map< std::pair< std::string, std::string >, std::pair< int, int >> flights)
  Initializes the flight map.
- void markVisited (const std::string &city)
  Mark a city as visited.
- void unvisitAll ()
  Mark all cities as not visited.
- bool isPath (const std::string &origin, const std::string &dest, std::string &itinerary, std::ofstream &log)
  Test whether a sequence of flights exists between two cities.

3.6.1 Detailed Description

Represents a v2 flight map.

3.6.2 Constructor & Destructor Documentation

3.6.2.1 FlightMapV2::FlightMapV2 (std::vector< std::string > *cities*, std::map< std::pair< std::string, std::string >, std::pair< int, int >> *flights*)

Initializes the flight map.

Parameters

cities	A list of all cities.
flights	A list of all flights.

3.6.3 Member Function Documentation

3.6.3.1 bool FlightMapV2::isPath (const std::string & *origin,* const std::string & *dest,* std::string & *itinerary,* std::ofstream & *log*)

Test whether a sequence of flights exists between two cities.

Parameters

origin	The name of the origin city.
dest	The name of the destination city.
itinerary	The itenarary output of the path found.
log	The log to write log (debug) output to.

Returns

True if a sequence exists; false otherwise.

3.6.3.2 void FlightMapV2::markVisited (const std::string & *city*)

Mark a city as visited.

Parameters

city	The name of the city to mark as visited.

Precondition

The given city is registered in the map.

3.6.3.3 void FlightMapV2::unvisitAll ( )

Mark all cities as not visited.

Note

In V2, also resets tryNext counters.

The documentation for this class was generated from the following files:

- FlightMap.v2.h
- FlightMap.v2.cpp

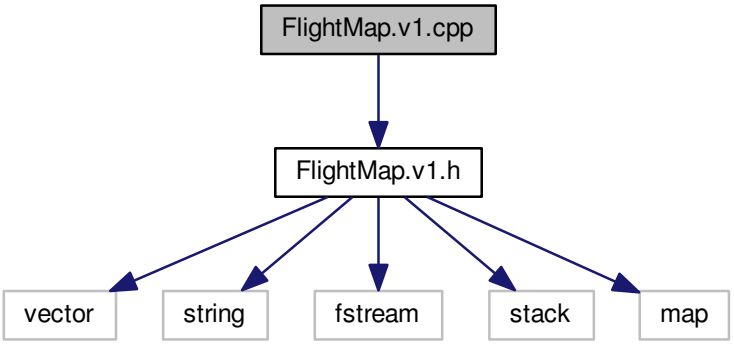
Chapter 4

File Documentation

4.1 FlightMap.v1.cpp File Reference

```
#include "FlightMap.v1.h"
```

Include dependency graph for FlightMap.v1.cpp:



Functions

- bool strInVec (const std::vector< std::string > &vec, const std::string &toFind)
- void logStackState (const std::stack< std::string > &stack, std::ofstream &log)

4.1.1 Function Documentation

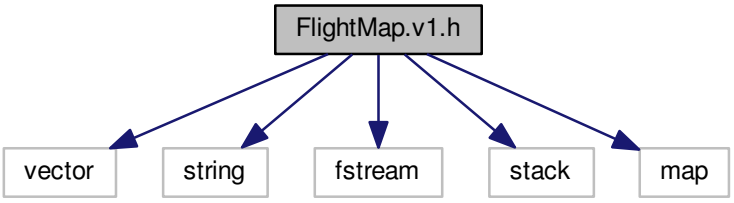
4.1.1.1 void logStackState (const std::stack< std::string > & *stack,* std::ofstream & *log*)

4.1.1.2 bool strInVec (const std::vector< std::string > & *vec,* const std::string & *toFind*)

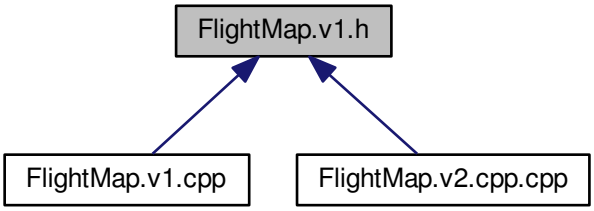
4.2 FlightMap.v1.h File Reference

```
#include <vector>
#include <string>
#include <fstream>
#include <stack>
#include <map>
```

Include dependency graph for FlightMap.v1.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct ConnectionV1

  Represents a v1 connection between cities.
- class CityNodeV1

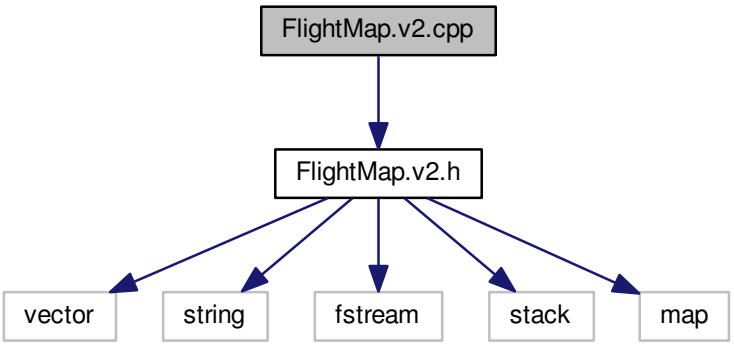
  Represents a v1 node in the city adjacency map.
- class FlightMapV1

  Represents a v1 flight map.

4.3 FlightMap.v2.cpp File Reference

```
#include "FlightMap.v2.h"
```

Include dependency graph for FlightMap.v2.cpp:



Functions

- bool strInVec (const std::vector< std::string > &vec, const std::string &toFind)
- void logStackState (const std::stack< std::string > &stack, std::ofstream &log)

4.3.1 Function Documentation

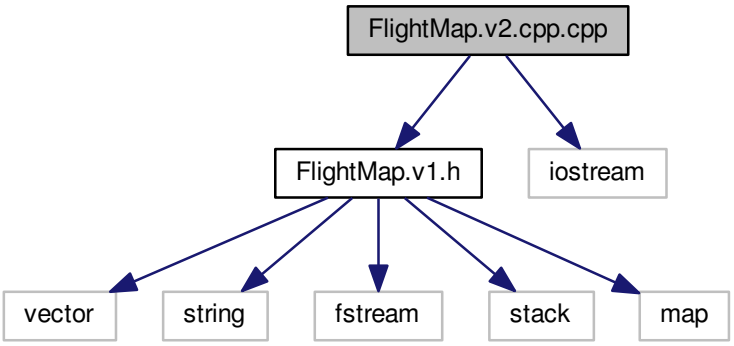
4.3.1.1 void logStackState (const std::stack< std::string > & *stack*, std::ofstream & *log*)

4.3.1.2 bool strInVec (const std::vector< std::string > & *vec*, const std::string & *toFind*)

4.4 FlightMap.v2.cpp.cpp File Reference

```
#include "FlightMap.v1.h"
#include <iostream>
```

Include dependency graph for FlightMap.v2.cpp.cpp:



Functions

- bool strInVec (const std::vector< std::string > &vec, const std::string &toFind)
- void logStackState (const std::stack< std::string > &stack, std::ofstream &log)

4.4.1 Function Documentation

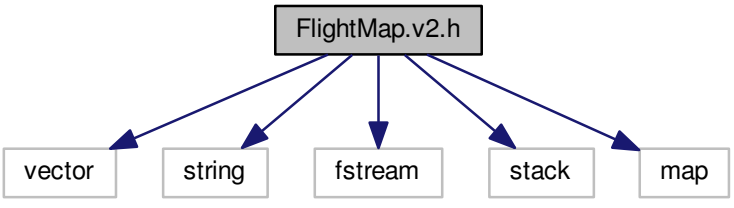
4.4.1.1 void logStackState (const std::stack< std::string > & *stack*, std::ofstream & *log*)

4.4.1.2 bool strInVec (const std::vector< std::string > & *vec*, const std::string & *toFind*)

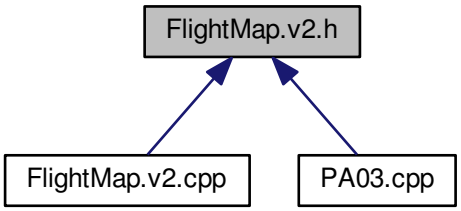
4.5 FlightMap.v2.h File Reference

```
#include <vector>
#include <string>
#include <fstream>
#include <stack>
#include <map>
```

Include dependency graph for FlightMap.v2.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct ConnectionV2

  Represents a V2 connection between cities.
- class CityNodeV2

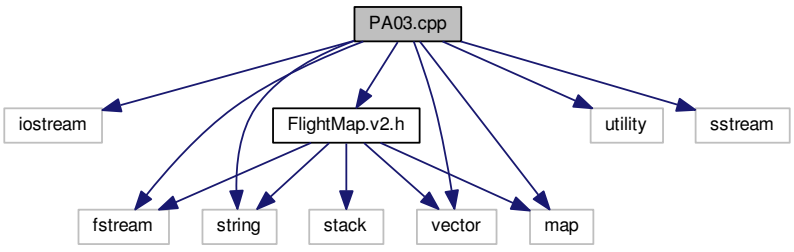
  Represents a v2 node in the city adjacency map.
- class FlightMapV2

  Represents a v2 flight map.

4.6 PA03.cpp File Reference

```
#include <iostream>
#include <fstream>
#include <string>
#include <vector>
#include <map>
#include <utility>
#include <sstream>
#include "FlightMap.v2.h"
```

Include dependency graph for PA03.cpp:



Functions

- std::vector< std::string > splitString (const std::string &toSplit, char delim)

  Split the given string into parts by the given delimeter.
- int stringToInt (const std::string &toConvert)

  Convert the given string into an int.
- std::vector< std::string > loadCities (const std::string &path)

  Load the file containing the list of cities.
- std::map< std::pair< std::string, std::string >, std::pair< int, int > > loadFlights (const std::string &path)

  Load the file containing the flight paths.
- std::vector< std::pair< std::string, std::string > > loadRequests (const std::string &path)

  Load the file containing the flight requests.
- int main (int argc, char **argv)

  Entry point.

4.6.1 Function Documentation

4.6.1.1 std::vector<std::string> loadCities (const std::string & *path*)

Load the file containing the list of cities.

Parameters

path	The path to the file.

Precondition

The given path points to a readable and correctly formatted file.

Returns

A vector of all the city names read from the file.

4.6.1.2 std::map<std::pair<std::string, std::string>, std::pair<int, int>> loadFlights (const std::string & *path*)

Load the file containing the flight paths.

Parameters

path	The path to the file.

Precondition

The given path points to a readable and correctly formatted file.

Returns

A map linking string pairs (i.e. ("Origin", "Destination")) to std::pairs of (flight number, flight cost).

4.6.1.3 std::vector<std::pair<std::string, std::string> > loadRequests (const std::string & *path*)

Load the file containing the flight requests.

Parameters

path	The path to the file.

Precondition

The given path points to a readable and correctly formatted file.

Returns

A vector containing ("Origin", "Destination") pairs.

4.6.1.4 int main (int *argc,* char ** *argv*)

Entry point.

4.6.1.5 std::vector<std::string> splitString (const std::string & *toSplit,* char *delim*)

Split the given string into parts by the given delimeter.

Parameters

toSplit	The string to split.
delim	The delimeter.

Returns

A vector containing the parts of the string.

4.6.1.6 int stringToInt (const std::string & *toConvert*)

Convert the given string into an int.

Parameters

toConvert	The string to convert.

Precondition

The given string can be converted into an integer.

Returns

The int value read fromt the given string.

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