Exercise 1, Discrete Mathematics and Its Applications, 4th Edition

Solved by experts

NEXT QUESTION

Part (a) Part (b) Part (c) Part (d) Part (e)

Part (a) Answer

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Step by step explanation

HIDE ALL

Tip

A Graph is a non-direct information structure comprising of hubs and edges. The hubs are now and then likewise alluded to as vertices and the edges are lines or curves that associate any two hubs in the chart.

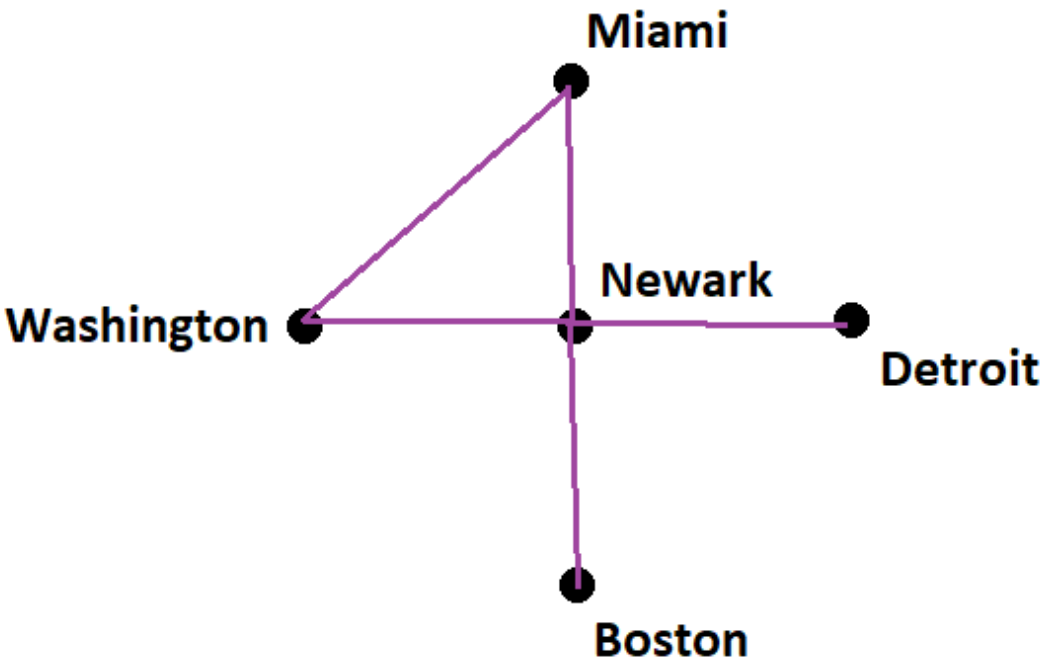
Explanation

Given:

- Boston to Newark have four flights
- Newark to Boston have two flights
- Newark to Miami have three flights
- Miami to Newark have two flights
- Newark to Detroit have one flight

- Detroit to Newark have two flights
- Newark to Washington have three flights
- Washington to Newark have two flights
- Washington to Miami have one flight
- Frame a graph model with an edge between vertices representing cities.

Step 1 of 1



- To draw a single edge between any two cities that contain a flight between them.
- The edges can be in either direction, thus we can use undirected edges
- Multiple edges are not allowed, because a pair of cities either have a flight between them (1 edge) or no flights between them (0 edges)

Final Answer

Hence the obtained graph is a simple graph.

Did you find what you were looking for?

Part (b) Answer

Step by step explanation

HIDE ALL

Tip

A Graph is a non-direct information structure comprising of hubs and edges. The hubs are now and then likewise alluded to as vertices and the edges are lines or curves that associate any two hubs in the chart.

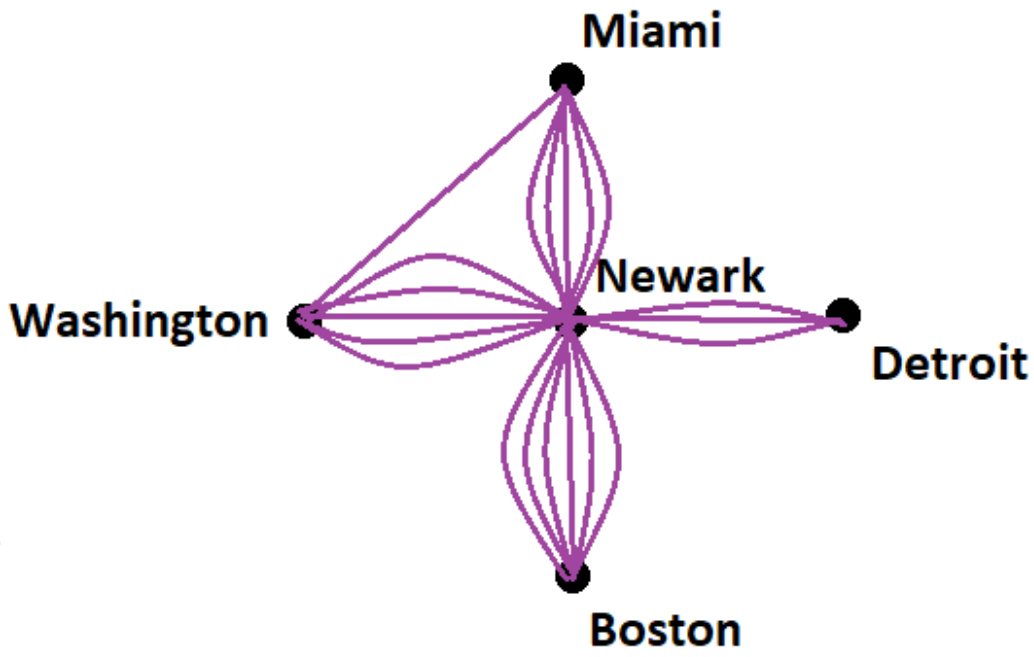
Explanation

Given:

- Boston to Newark have four flights
- Newark to Boston have two flights
- Newark to Miami have three flights
- Miami to Newark have two flights
- Newark to Detroit have one flight
- Detroit to Newark have two flights
- Newark to Washington have three flights
- Washington to Newark have two flights
- Washington to Miami have one flight
- Frame a graph model with an edge between vertices representing cities.

Step 1 of 1

- Draw an edge between any two cities per flight between them.
- The edges can be in either direction, thus we can use undirected edges.
- Multiple edges are allowed because a pair of cities can have multiple flights between them.
- Loops are not allowed, because there are no flights between a city and itself.



Hence the obtained graph is a Multigraph.

Did you find what you were looking for?

Part (c) Answer

Step by step explanation HIDE ALL

Tip

A Graph is a non-direct information structure comprising of hubs and edges. The hubs are now and then likewise alluded to as vertices and the edges are lines or curves that associate any two hubs in the chart.

Explanation

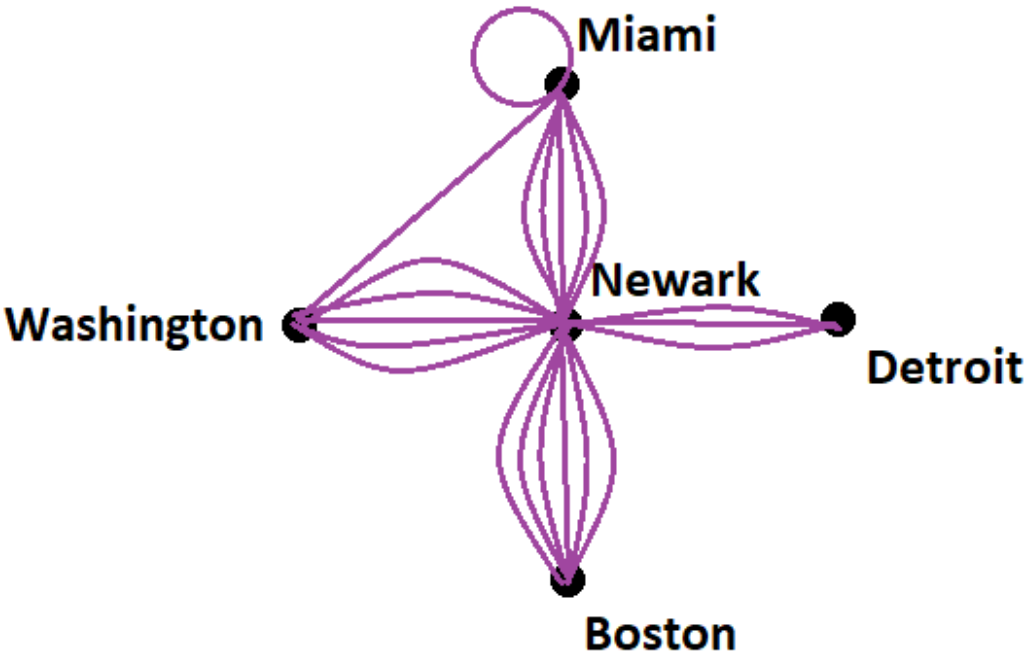
Given:

- Boston to Newark have four flights
- Newark to Boston have two flights

- Newark to Miami have three flights
- Miami to Newark have two flights
- Newark to Detroit have one flight
- Detroit to Newark have two flights
- Newark to Washington have three flights
- Washington to Newark have two flights
- Washington to Miami have one flight
- Frame a graph model with an edge between vertices representing cities.

Step 1 of 1

- We need to draw an edge between any two cities per flight between them.
- The edges can be in either direction, thus we can use undirected edges.
- Multiple edges are allowed because a pair of cities can have multiple flights between them.
- Loops are allowed because there is a loop added at Miami.



Final Answer

Hence the obtained graph is a Pseudograph.

Did you find what you were looking for?

Part (d) Answer

Step by step explanation

HIDE ALL

Tip

A Graph is a non-direct information structure comprising of hubs and edges. The hubs are now and then likewise alluded to as vertices and the edges are lines or curves that associate any two hubs in the chart.

Explanation

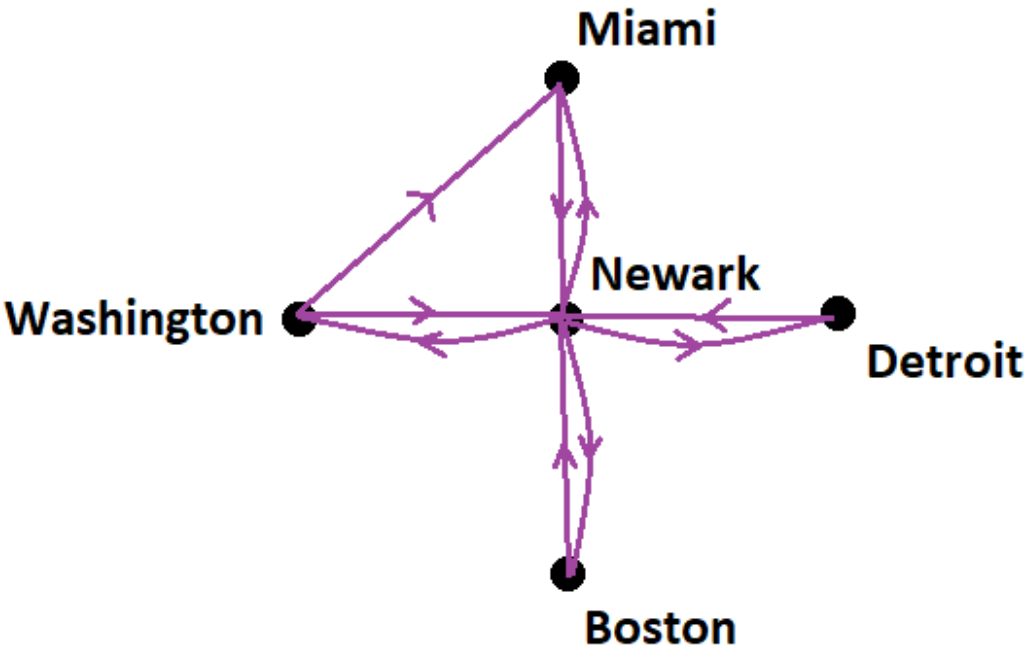
Given:

- Boston to Newark have four flights
- Newark to Boston have two flights
- Newark to Miami have three flights
- Miami to Newark have two flights
- Newark to Detroit have one flight
- Detroit to Newark have two flights
- Newark to Washington have three flights
- Washington to Newark have two flights
- Washington to Miami have one flight
- Frame a graph model with an edge between vertices representing cities.

Step 1 of 1

- Draw a single edge between a city to another city if there is a flight from the city to the other city.

- The edges have a direction associated with them, thus we need to use directed edges.
- Multiple edges are not allowed, because a pair of cities either have a fight between them or no flight between them.



Final Answer

Hence the obtained graph is a Simple directed graph.

Did you find what you were looking for?

Part (e) Answer

Step by step explanation HIDE ALL

Tip

A Graph is a non-direct information structure comprising of hubs and edges. The hubs are now and then likewise alluded to as vertices and the edges are lines or

curves that associate any two hubs in the chart.

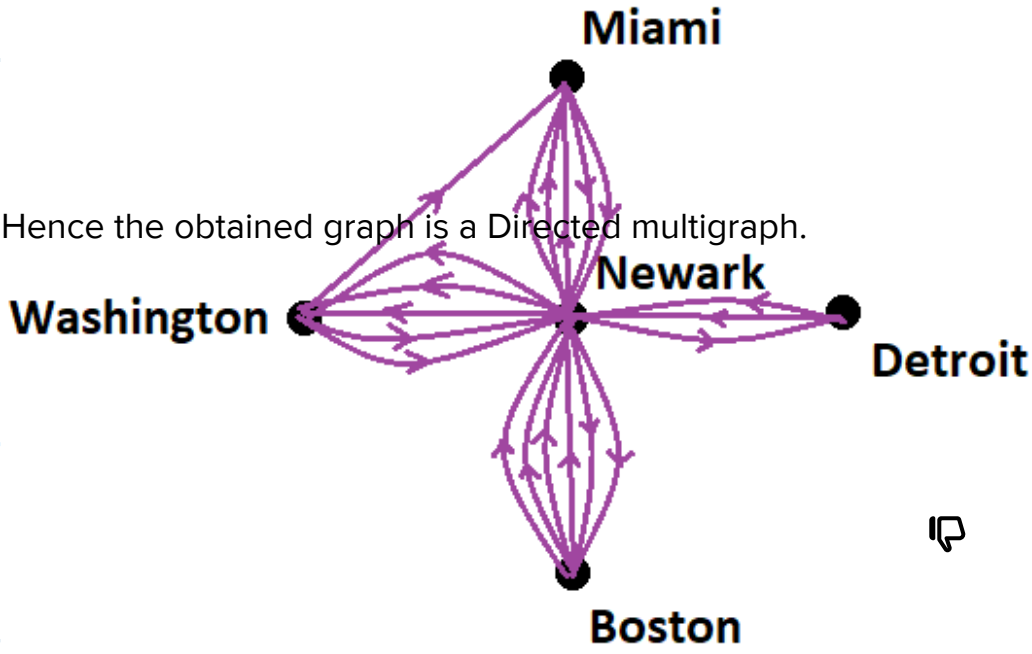
Explanation

Given:

- Boston to Newark have four flights
- Newark to Boston have two flights
- Newark to Miami have three flights
- Miami to Newark have two flights
- Newark to Detroit have one flight
- Detroit to Newark have two flights
- Newark to Washington have three flights
- Washington to Newark have two flights
- Washington to Miami have one flight
- Frame a graph model with an edge between vertices representing cities.

Step 1 of 1

- Draw an edge per flight from a city to another city.
- The edges have a direction associated with them, thus directed edges. need to use
- Multiple edges are allowed because there are multiple flights between some pairs of cities.
- Loops are not allowed, because there are no flights between a city and itself.



Hence the obtained graph is a Directed multigraph.

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