CSD2181/2183 – Data Structure

Exercises

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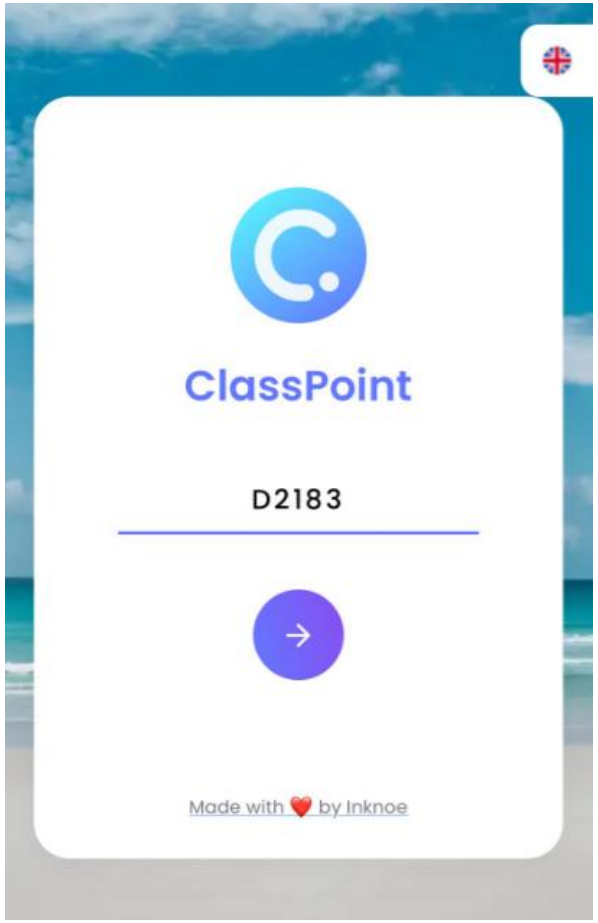
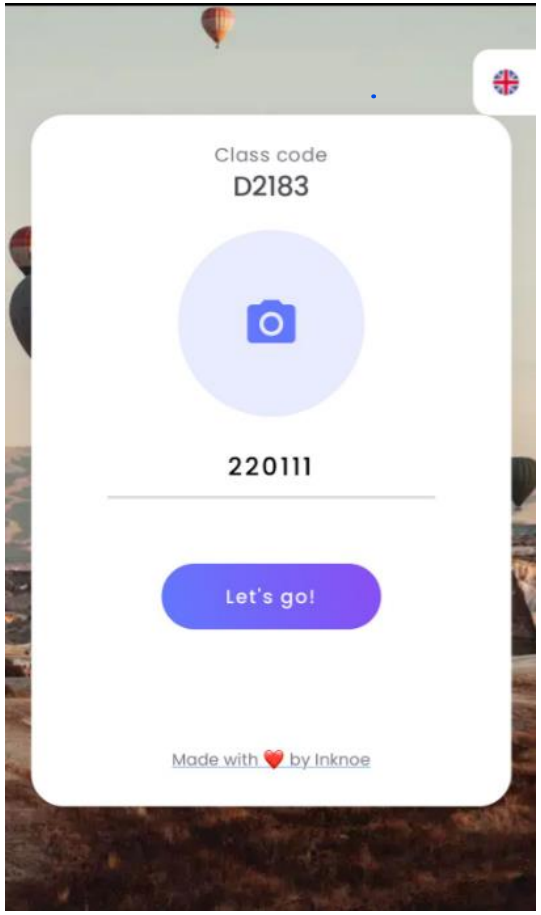
Introduction – Data Structure Exercises

https://www.classpoint.app/





OR

URL
classpoint.app

Class code
D2183

Introduction – Data Structure Exercises

- Purpose: to reinforce what you have learned and practiced in lectures.
- The exercise session is conducted face to face in class.
- It consists of a few MCQs to be solved within class.
- Limited time is given for each question (answer will be discussed afterwards).
- You are required to login to ClassPoint with your student ID.
- So, bring along your laptop or devices with Internet access.
- Attendance is compulsory and there is no make up.
- Exercises are marked considering your overall performance in the module.

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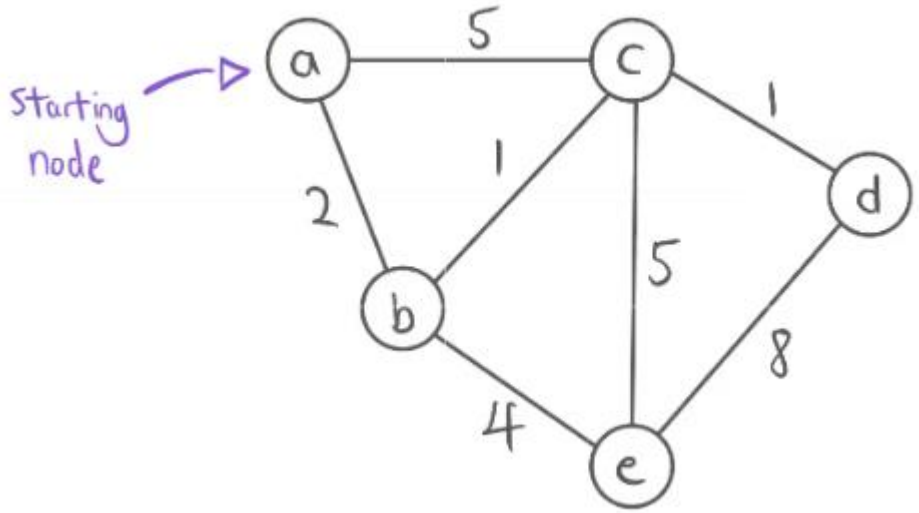
Exercise
Graphs

Exercise 10 – Shortest Path

10.1 What are the initial cost values? (source node is a)

A. a:0, b:0, c:0, d:0, e:0
B. a:inf, b:inf, c:inf, d:inf, e:inf
C. a:0, b:inf, c:inf, d:inf, e:inf
D. a:0, b:2, c:5, d:1, e:4
E. a:2, b:1, c:1, d:8, e:0

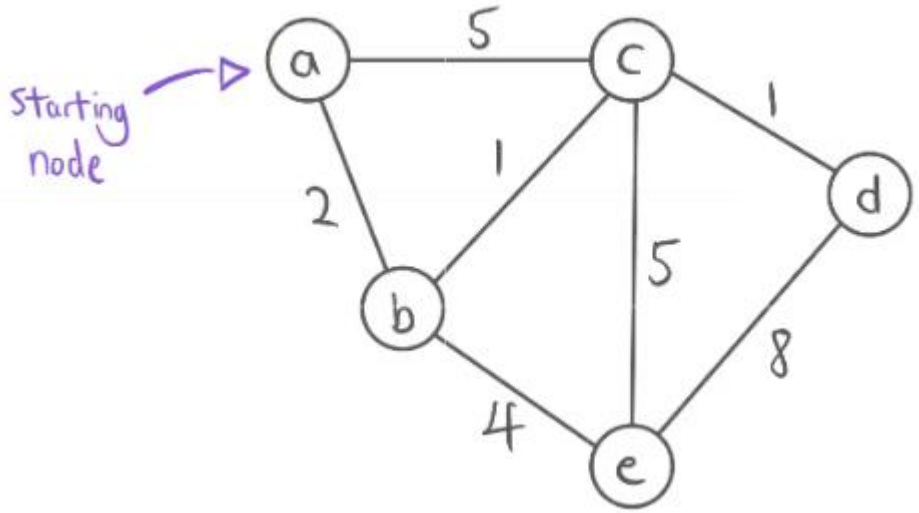


Multiple Choice

Exercise 10 – Shortest Path

10.1 What are the initial cost values? (source node is a)

A. a:0, b:0, c:0, d:0, e:0
B. a:inf, b:inf, c:inf, d:inf, e:inf
C. a:0, b:inf, c:inf, d:inf, e:inf
D. a:0, b:2, c:5, d:1, e:4
E. a:2, b:1, c:1, d:8, e:0

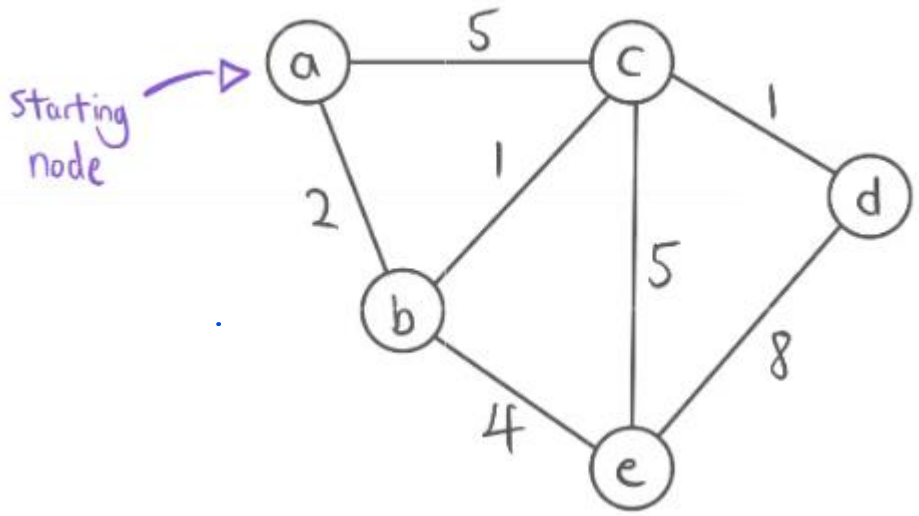


Multiple Choice

Exercise 10 – Shortest Path

10.2 Show the order of nodes processed by the end of Dijkstra's algorithm.

A. a,b,c,d,e
B. e,d,c,b,a
C. a,b,e,c,d
D. a,c,d,e,b



Multiple Choice

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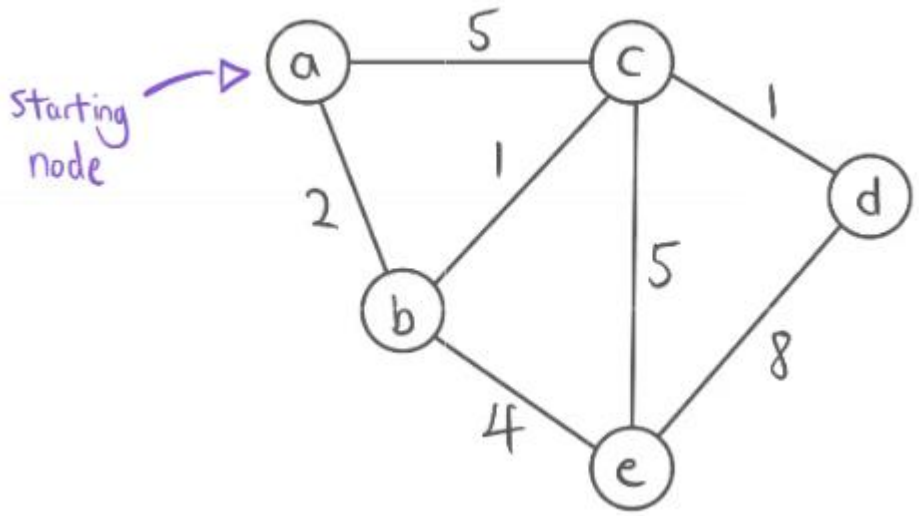
B. e,d,c,b,a
C. a,b,e,c,d
D. a,c,d,e,b



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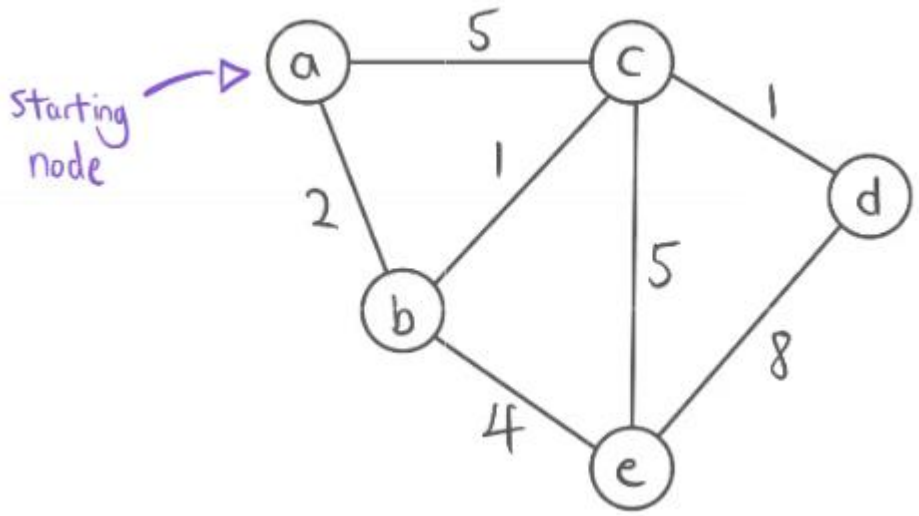
Multiple Choice

Exercise 10 – Shortest Path

10.3 What is d->prev by the end of Dijkstra's algorithm?

A. a
B. b
C. c
D. d
E. e



Multiple Choice

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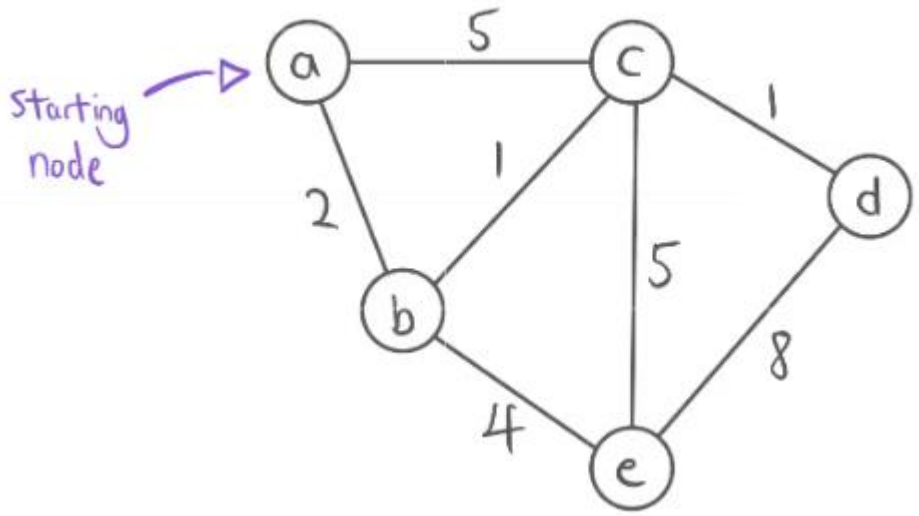
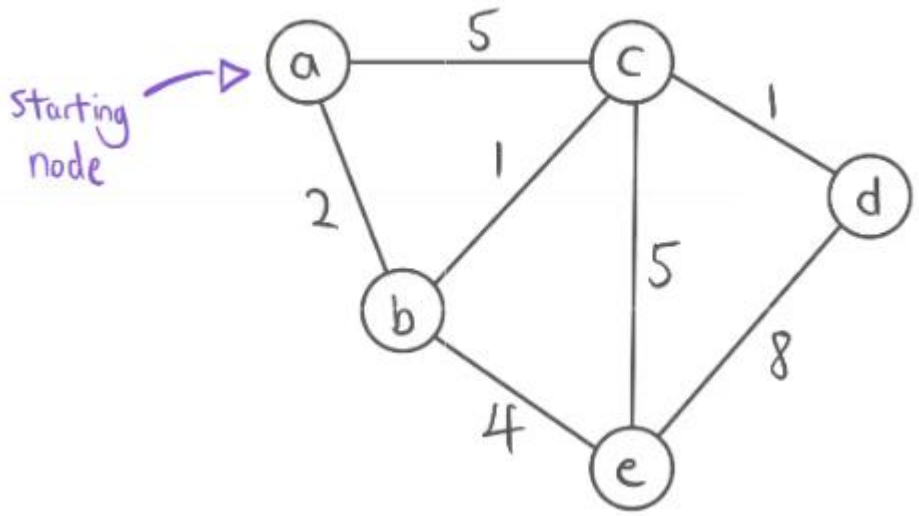


Multiple Choice

Exercise 10 – Shortest Path

10.4 What is c->prev by the end of Dijkstra's algorithm?

A. a
B. b
C. c
D. d
E. e



Multiple Choice

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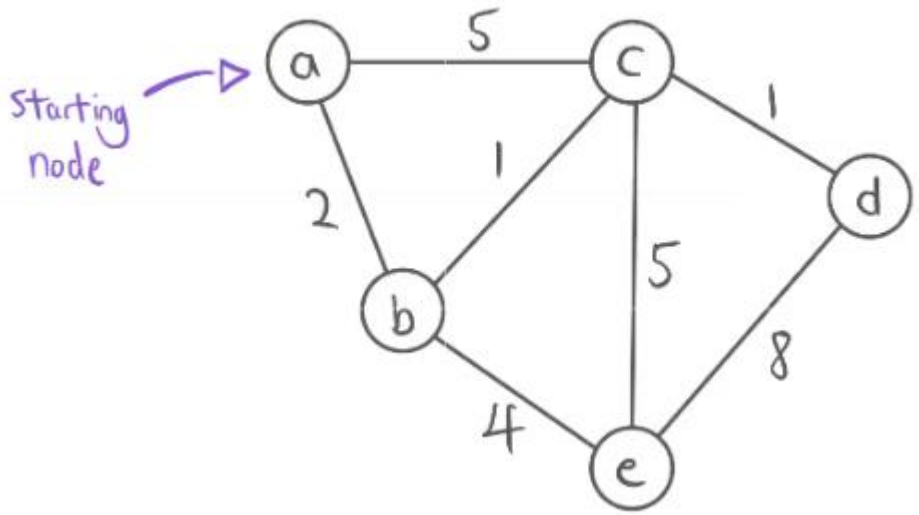
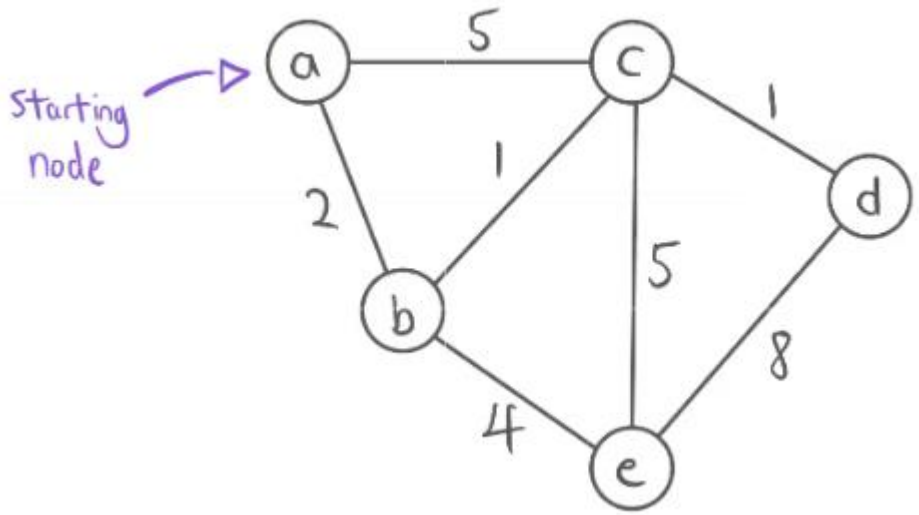


Multiple Choice

Exercise 10 – Shortest Path

10.5 How many times was c->cost updated after initialization to the end of Dijkstra's algorithm?

A. 0
B. 1
C. 2
D. 3
E. 4



Multiple Choice

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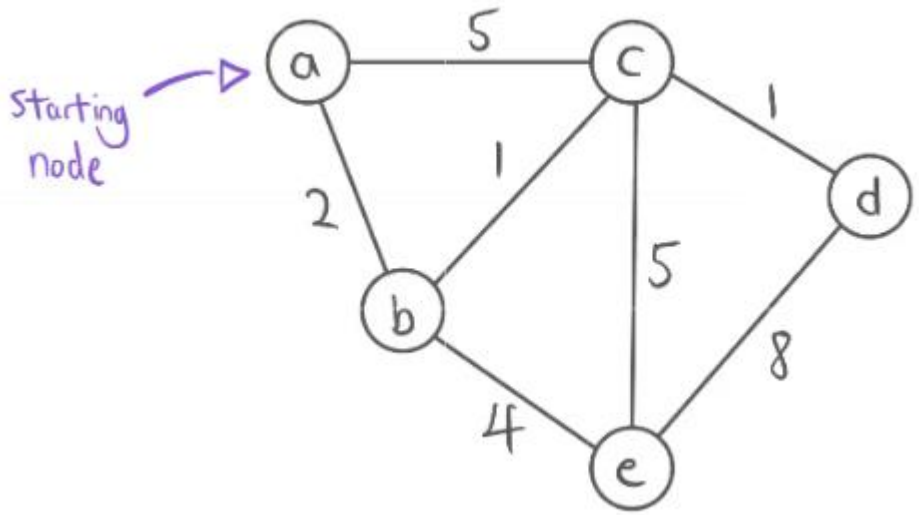
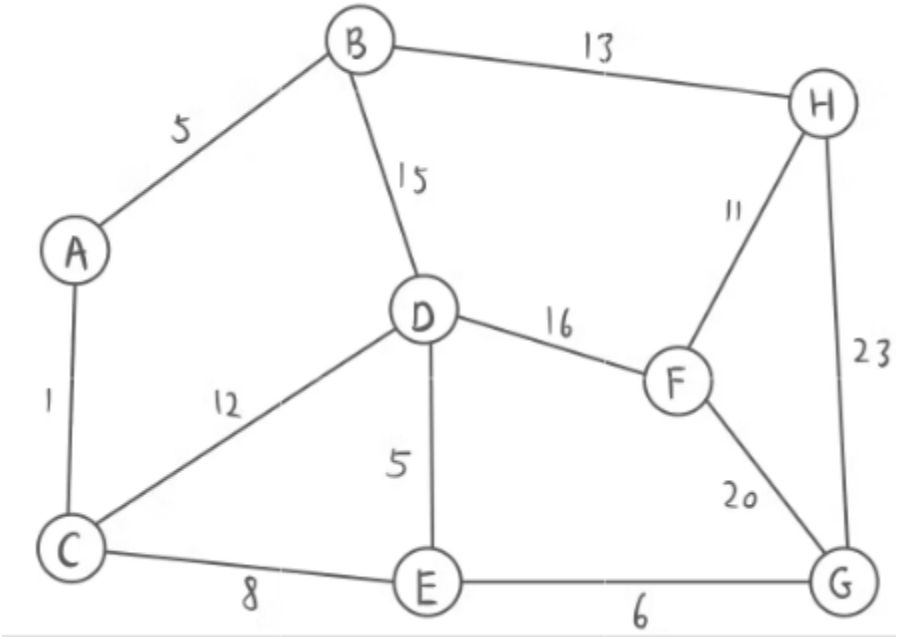


Multiple Choice

Exercise 10 – Minimum Spanning Tree

10.6 Show the order of nodes processed using Prim's algorithm starting at G

A. A, C, B, E, D, G, H, F
B. G, A, C, B, E, D, H, F
C. G, E, D, C, A, B, H, F
D. G, E, D, C, A, F, B, H
E. G, E, F, H, C, D, A, B

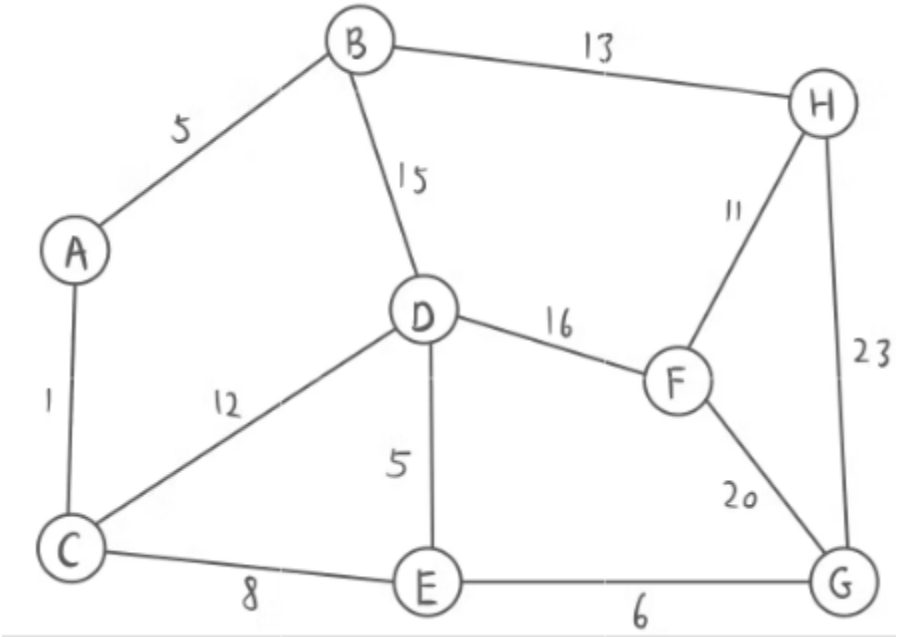


Multiple Choice

Exercise 10 – Minimum Spanning Tree

10.6 Show the order of nodes processed using Prim's algorithm starting at G

A. A, C, B, E, D, G, H, F
B. G, A, C, B, E, D, H, F
C. G, E, D, C, A, B, H, F
D. G, E, D, C, A, F, B, H
E. G, E, F, H, C, D, A, B

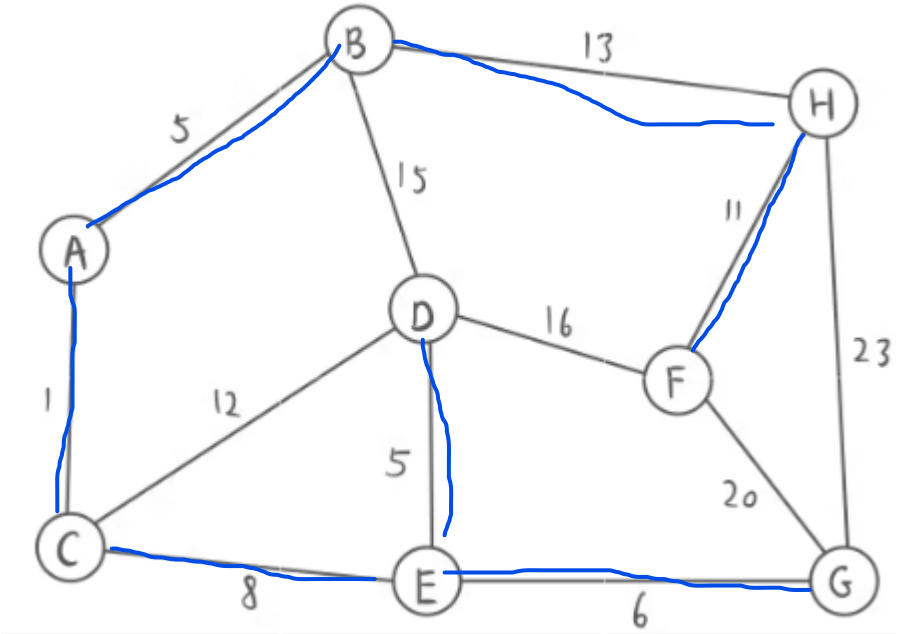


Multiple Choice

Exercise 10 – Minimum Spanning Tree

10.7 What are the edges spanned using Kruskal's algorithm

A. BD, DE, FH, BH, AC, CE, EG
B. AB, DE, FH, BH, AC, CE, EG
C. AB, CD, FH, BH, AC, CE, EG
D. AB, CD, DE, FH, BH, AC, EG

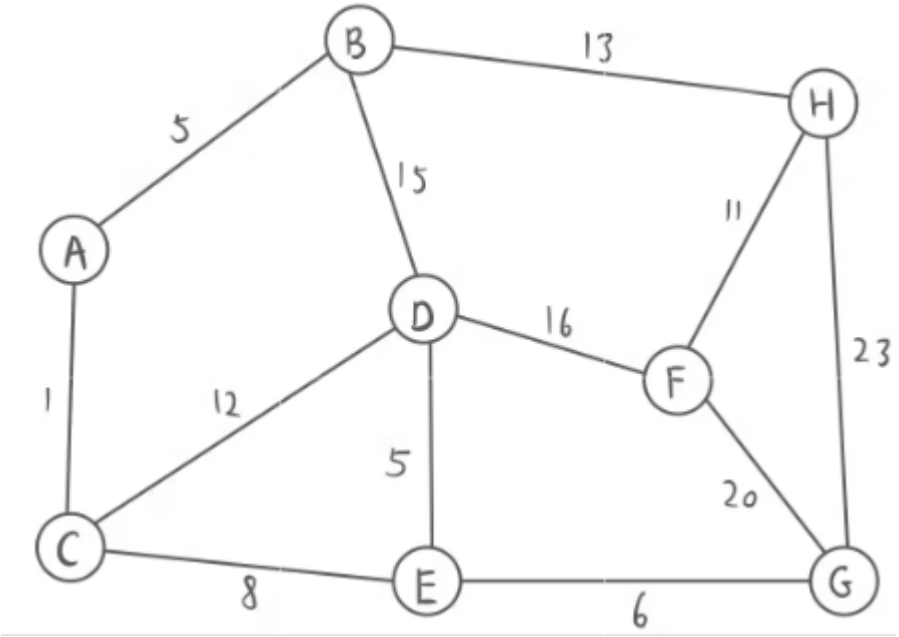


Multiple Choice

Exercise 10 – Minimum Spanning Tree

10.7 What are the edges spanned using Kruskal's algorithm

A. BD, DE, FH, BH, AC, CE, EG
B. AB, DE, FH, BH, AC, CE, EG
C. AB, CD, FH, BH, AC, CE, EG
D. AB, CD, DE, FH, BH, AC, EG



Multiple Choice

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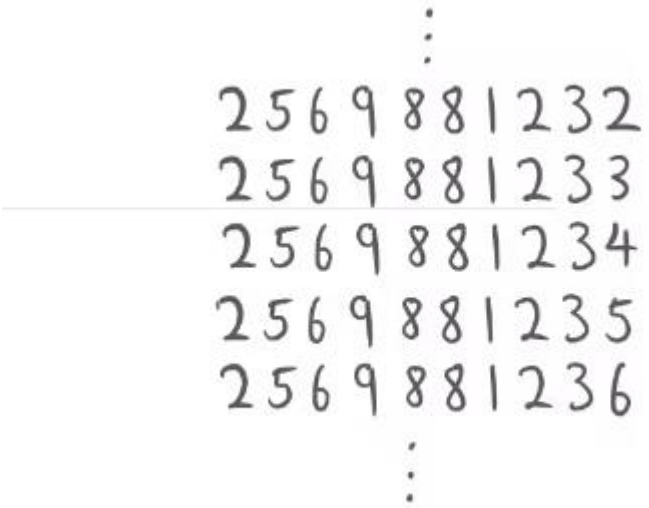
Exercise
Hashing

Exercise 10 – Hashing

10.8 Which hash function results in lesser collisions for a set of data of the following numbers?

A. h(k) = (int) k/10000
B. h(k) = k%10000



Multiple Choice

Exercise 10 – Hashing

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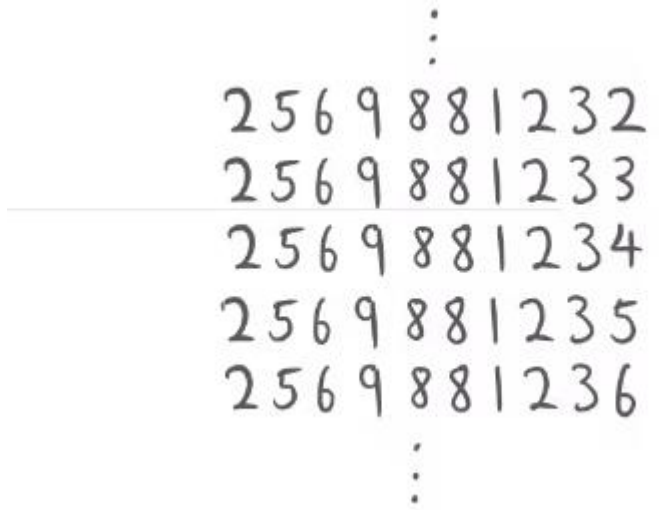
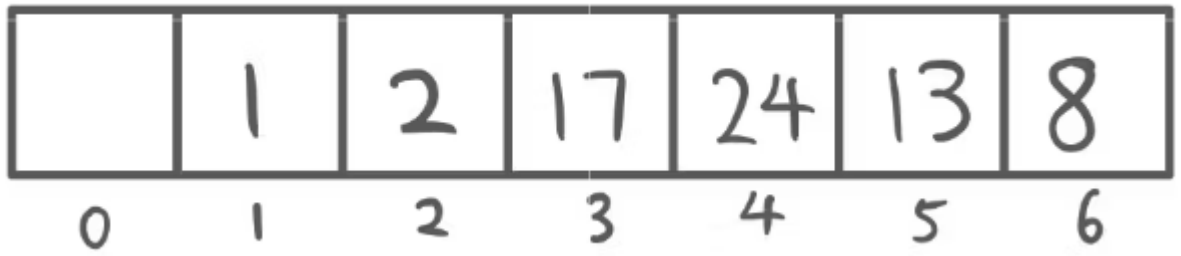


Multiple Choice

Exercise 10 – Hashing

10.9 Determine the load factor of the given open addressing hash table.

A. 1
B. 1/7
C. 1/6
D. 6/7
E. 2



Multiple Choice

Exercise 10 – Hashing

10.9 Determine the load factor of the given open addressing hash table.

A. 1
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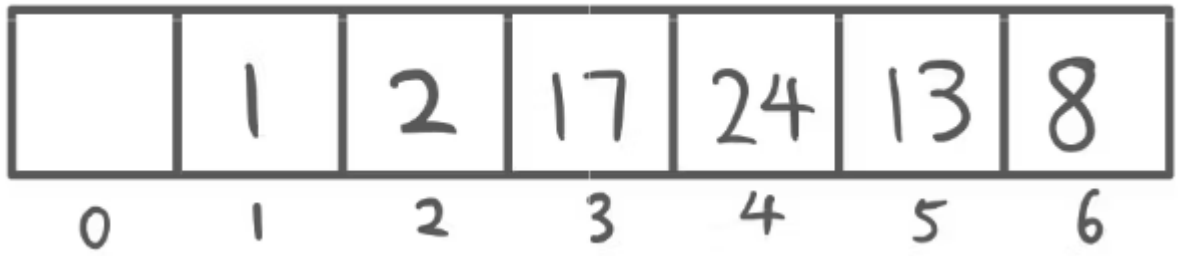


Multiple Choice

Exercise 10 – Hashing

10.10 Determine the load factor of the given open addressing hash table.

A. 7/9
B. 3/9
C. 1/9
D. 1
E. 4/9

Multiple Choice

Exercise 10 – Hashing

10.10 Determine the load factor of the given open addressing hash table.

A. 7/9
B. 3/9
C. 1/9
D. 1
E. 4/9

Multiple Choice

Exercise 10 – Hashing

10.11 Consider the hash function below in an open addressing hash table

h(k) = k %7

Assuming linear probing. Determine number of probes after inserting 24

A. 0
B. 1
C. 2
D. 3
E. 4
F. 5

Multiple Choice

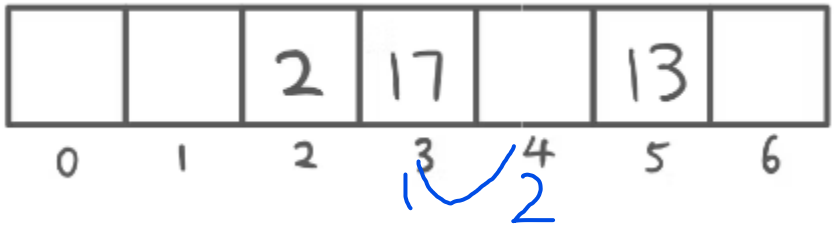
Exercise 10 – Hashing

10.11 Consider the hash function below in an open addressing hash table

h(k) = k %7

Assuming linear probing. Determine number of probes after inserting 24

A. 0
B. 1
C. 2
D. 3
E. 4
F. 5



Multiple Choice

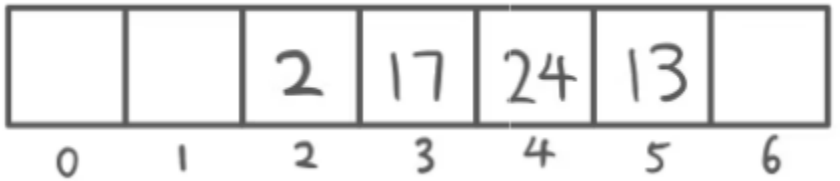
Exercise 10 – Hashing

10.12 Consider the hash function below in an open addressing hash table

h(k) = k %7

Assuming linear probing. Determine number of probes after inserting 72

A. 0
B. 1
C. 2
D. 3
E. 4
F. 5



Multiple Choice

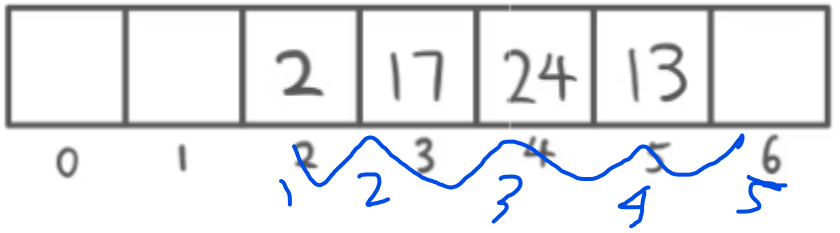
Exercise 10 – Hashing

10.12 Consider the hash function below in an open addressing hash table

h(k) = k %7

Assuming linear probing. Determine number of probes after inserting 72

A. 0
B. 1
C. 2
D. 3
E. 4
F. 5



Multiple Choice

Exercise 10 – Hashing

10.13 Consider the hash function below in an open addressing hash table

h(k) = k %9

Assuming quadratic probing. Where will 18 be stored?

A. 4
B. 1
C. 5
D. 6
E. 7

Multiple Choice

Exercise 10 – Hashing

10.13 Consider the hash function below in an open addressing hash table

h(k) = k %9

Assuming quadratic probing. Where will 18 be stored?

A. 4
B. 1
C. 5
D. 6
E. 7

Multiple Choice

Exercise 10 – Hashing

10.14 Consider the hash function below in an open addressing hash table

h(k) = k %9

Assuming quadratic probing. Determine number of probes after inserting 3

A. 0
B. 1
C. 2
D. 3
E. 4
F. 5

Multiple Choice

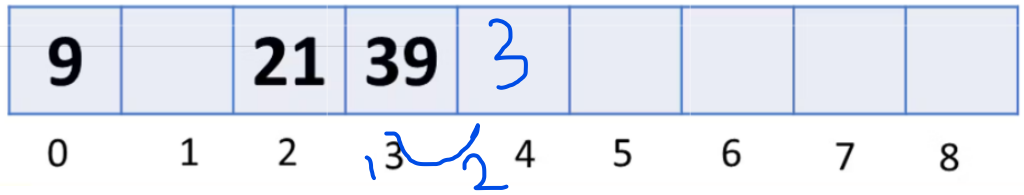
Exercise 10 – Hashing

10.14 Consider the hash function below in an open addressing hash table

h(k) = k %9

Assuming quadratic probing. Determine number of probes after inserting 3

A. 0
B. 1
C. 2
D. 3
E. 4
F. 5



Multiple Choice

The End