+1/1/60+

MCQ **Data Structures**

TD5 – December 19th

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☐2	☐2	☐2	☐2	☐2	☐2	☐2	☐2
☐3	☐3	☐3	☐3	☐3	☐3	☐3	☐3
☐4	☐4	☐4	☐4	☐4	☐4	☐4	☐4
☐5	☐5	☐5	☐5	☐5	☐5	☐5	☐5
☐6	☐6	☐6	☐6	☐6	☐6	☐6	☐6
☐7	☐7	☐7	☐7	☐7	☐7	☐7	☐7
☐8	☐8	☐8	☐8	☐8	☐8	☐8	☐8
☐9	☐9	☐9	☐9	☐9	☐9	☐9	☐9

⟵ Encode your student number and write your name and surname below :

Name and surname :

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Duration : at most 2 hours.
One A4 page allowed. The use of computers is forbidden.
Questions using the sign ♣ may have zero, one or several correct answers. Other questions have a single correct answer.

Question 1 If Q = |1,5,9| is a queue, what is the result of isEmpty(Q)?

☐ |1,5,9| ☐ True ☐ False ☐ It returns an error

Question 2 If S = ⊢ 4,5,3,8 ⊢ is a stack, what is the result of add(9,S)?

☐ ⊢ 4,5,3,9,8 ⊢ ☐ ⊢ 4,5,3,8,9 ⊢ ☐ ⊢ 4,9,5,3,8 ⊢ ☐ ⊢ 9,4,5,3,8 ⊢

Question 3 If L = ⊢ a,k,g,i,d ⊢ is a stack, what is the value of L[1]?

☐ a ☐ ⊢ a,k,g,i,d ⊢ ☐ Nothing, it returns an error ☐ k

Question 4 If D = { (‘apples’, 5), (‘cherries’, 2), (‘bananas’, 10), (‘strawberries’, 5) } is a dictionary, what is the length of D?

☐ 4 ☐ 10 ☐ It doesn’t have a length ☐ 22

Question 5 If S = ⊢ 5,2,1,6 ⊢ is a stack, what is the result of get(1, S)?

☐ 1 ☐ 5 ☐ it returns an error ☐ True

Question 6 If L = [8,6,3,4,5] is a list, what is the value of L[2]?

☐ 6 ☐ 4 ☐ 3 ☐ Nothing, it returns an error

Question 7 If D = { (‘apples’, 5), (‘cherries’, 2), (‘bananas’, 10), (‘strawberries’, 5) } is a dictionary, what is the value of D after D[‘bananas’] ← 1?

☐ { (‘apples’, 5), (‘cherries’, 2), (‘bananas’, 10), (‘strawberries’, 5), (‘bananas’, 1) }
☐ { (‘apples’, 5), (‘cherries’, 2), (‘bananas’, 1), (‘strawberries’, 5) }
☐ { (‘apples’, 5), (‘cherries’, 2), (‘bananas’, 11), (‘strawberries’, 5) }
☐ It returns an error

Question 8 If L = [4,6,8,2,9] is a list, what is the result of remove(L, 2)?

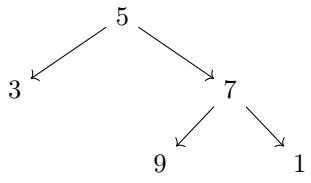
☐ $[4, 6, 2, 9]$ ☐ $[4, 6, 8, 9]$ ☐ Nothing, it returns an error ☐ $[2]$

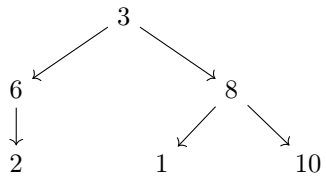
Question 9 If L = [4,6,8,2,9] is a list, what is the value of L[0:2]

☐ True ☐ $[4, 8]$ ☐ $[4, 6, 8]$ ☐ An error, this is not a legit operation

Question 10 If S = |d,k,u,g| is a queue, what is the result of remove(S)?

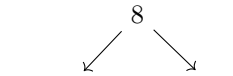
☐ |d,k,u| ☐ |k,u,g| ☐ |d,u,g| ☐ |d,k,g|

If T1 = 

and T2 = 

are trees:

Question 11 What is the value of T2['left child']?

☐ 6 ☐ 

☐ 8 ☐ 

Question 12 In T1, what is the depth of the node of value 1?

☐ It doesn't have a depth ☐ 10 ☐ 3 ☐ 2

Question 13 What is the value of T2['left child']['left child']['left child']?

☐ It is empty ☐ 10 ☐ *None* ☐ 1

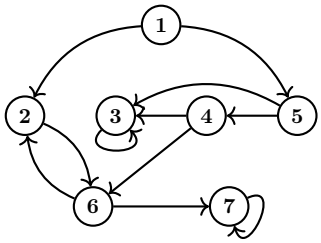
Question 14 What is the height of T2?

☐ 3 ☐ 20 ☐ 6 ☐ 2

Question 15 What is the value of T1['left child']['root']?

☐ 3 ☐ It is empty ☐ 7 ☐ 1

Consider the graph G below:



Question 16 ♣ From which nodes is 4 directly accessible?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ None

Question 17 Draw the resulting graph when we add the node 9 to G.

Do not fill these boxes! V ☐ R ☐

Question 18 Is the node 1 accessible from node 5?

☐ No ☐ Yes

Question 19 Draw the resulting graph when we remove the edge 6→7 from G.

Do not fill these boxes! V ☐ R ☐

Question 20 ♣ What are the directly accessible nodes from 5?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ None