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Course outline

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# Week 6 Quiz

**The due date for submitting this assignment has passed.**

**Due on 2022-09-07, 23:59 IST.**

**Score:** 10/10=100%

## Assignment submitted on 2022-09-07, 17:16 IST

All questions carry equal weightage. All Python code is assumed to be executed using Python3. You may submit as many times as you like within the deadline. Your final submission will be graded.

**Note**:

- If the question asks about a value of type `string`, remember to enclose your answer in single or double quotes.
- If the question asks about a value of type `list`, remember to enclose your answer in square brackets and use commas to separate list items.

1) Suppose u and v both have values of type set and are disjoint. Which of the following expressions evaluates to `True`? ***2.5 points***

- u == v | (u^v)
- u == (v^u)
- u == v^(u | v)
- u == u^(v | u)

Yes, the answer is correct.
Score: 2.5

Feedback:
*Check set theoretically.*

Accepted Answers:
*u == v^(u | v)*

2) Suppose u and v both denote sets in Python. What is the most general condition ***2.5 points*** that guarantees that `u|v == u^v`?

- (•) The sets u and v should be disjoint.
- ( ) The set u should be a subset of the set v.
- ( ) The set v should be a subset of the set u.
- ( ) This is true for any u and v.

Yes, the answer is correct.
Score: 2.5

Feedback:
*u^v has all elements that are in exactly one of u or v. This is the same as `u|v - u&v`. Since `u^v = u|v`, we have u&v is empty, so u and v are disjoint.*

Accepted Answers:
*The sets u and v should be disjoint.*

3) Consider the min-heap [15, 27, 33, 39, 66, 39, 47, 58, 51]. built by repeatedly inserting values into an empty heap. Which of the following *could not* have been the last element inserted into this heap? ***2.5 points***

- ( ) 27
- ( ) 15
- (•) 58
- ( ) 51

Yes, the answer is correct.
Score: 2.5

Feedback:
*The last position added was the one containing 51. The last element added must lie on the path from 51 to the root: {15, 27, 39, 51}.*

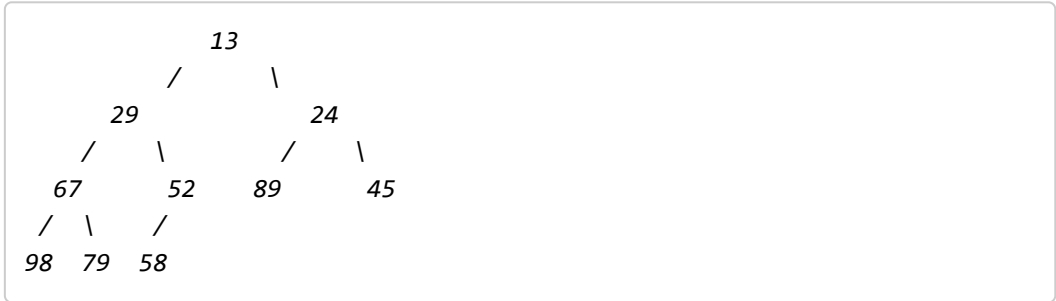
Accepted Answers:
*58*

4) Suppose we execute delete-min twice on the min-heap [13,29,24,67,52,89,45,98,79,58]. What is the resulting heap?

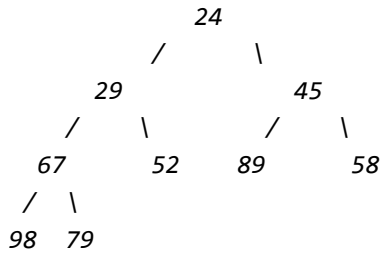
[29, 52, 45, 67, 79, 89, 58, 9

Yes, the answer is correct.
Score: 2.5

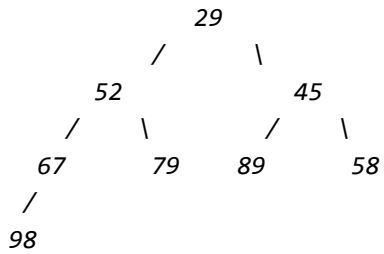
Feedback:
*The original heap is:*




*After one delete-min, we have:*




*After the second delete-min, we have:*




Accepted Answers:
*(Type: Regex Match) [ ]*[29[ ]*,[ ]*52[ ]*,[ ]*45[ ]*,[ ]*67[ ]*,[ ]*79[ ]*,[ ]*89[ ]*,[ ]*58[ ]*,[ ]*98[ ]*][ ]**

***2.5 points***