

# BBM408 Algorithm Analysis

2023 Spring - Final Exam

13/06/2023

Student	Grades	Q1	Q2	Q3	Q4	Total
Full Name	_____	25	25	25	25	100
ID	_____	Given				

## Question 1

In the lecture video 7\_2, at 8:55, I made a mistake and then corrected it.

- What was the mistake?
- Why was it important to fix it?
- How would the  $\Theta$  values on the left side be affected, if it wasn't fixed?

Explain in DETAIL.

Answer

Place your answer here

## Question 2

In the lecture video 8\_1, at 13:40, I talk about two cases for the analysis of an algorithm.

- Why are these called *lucky* and *unlucky*?
- Why is the lucky case divided as 9/10 to 1/10? What happens if we assume a different ratio?
- What does it mean that the unlucky case is worst than sorting?

Explain in DETAIL.

Answer

Place your answer here

## Question 3

In the lecture video 10\_3, at 10:18, we talk about the amortized cost calculation.

- Explain each term of the equation shown on the slide.
- Why are there two cases in the analysis? What do they represent?

Explain in DETAIL.

Answer

Place your answer here

#### Question 4

Considering the explanation made in lecture video 12\_2, starting around 13:20:

- Is it possible that A and D are both empty? If so, can we say that  $\Phi(L_{i-1})$  will be maximal?
- What are the conditions that minimize the value of  $\Phi(L_{i-1})$ ?
- If at some point  $\Phi(L_{i-1})$  is 0, can it become negative at  $\Phi(L_i)$ ?

Explain in DETAIL.

**Answer**

*Place your answer here*