

051024 Algorithms and data structures 1

Test for the Extendible Hashing data structure

Exam starts: April 26, 2022, 9:00 a.m. Exam ends: April 29, 2022, 6:00 p.m.

Name:

Registration number:

Regulate

- You must have the exam paper that matches your chosen topic use.
- By taking part in this test, you declare under oath that you will take this test independently, without the help of third parties and without any unauthorized aids.
- Your test can be checked for plagiarism.
- The examiner can also make oral questions about the subject matter of the examination until the end of the course and beyond within the assessment period of four weeks. This can also be done on a random basis.
- If unauthorized aids are used and/or the test is not carried out Written independently, the entire course will not be assessed and will be documented with an X in the collective certificate.
- If the test is not uploaded to CEWebS in the intended form within the specified period of time, the test will be given 0 points.
- If you encounter unexpected technical problems, you can use the course's official forum (CEWebS) to ask for help.
Do not post questions and/or (partial) solutions to the tasks in the test in the forum.

Filling variants A1 and A3:

I have read and accepted the rules

Signature:

Filling option A2:

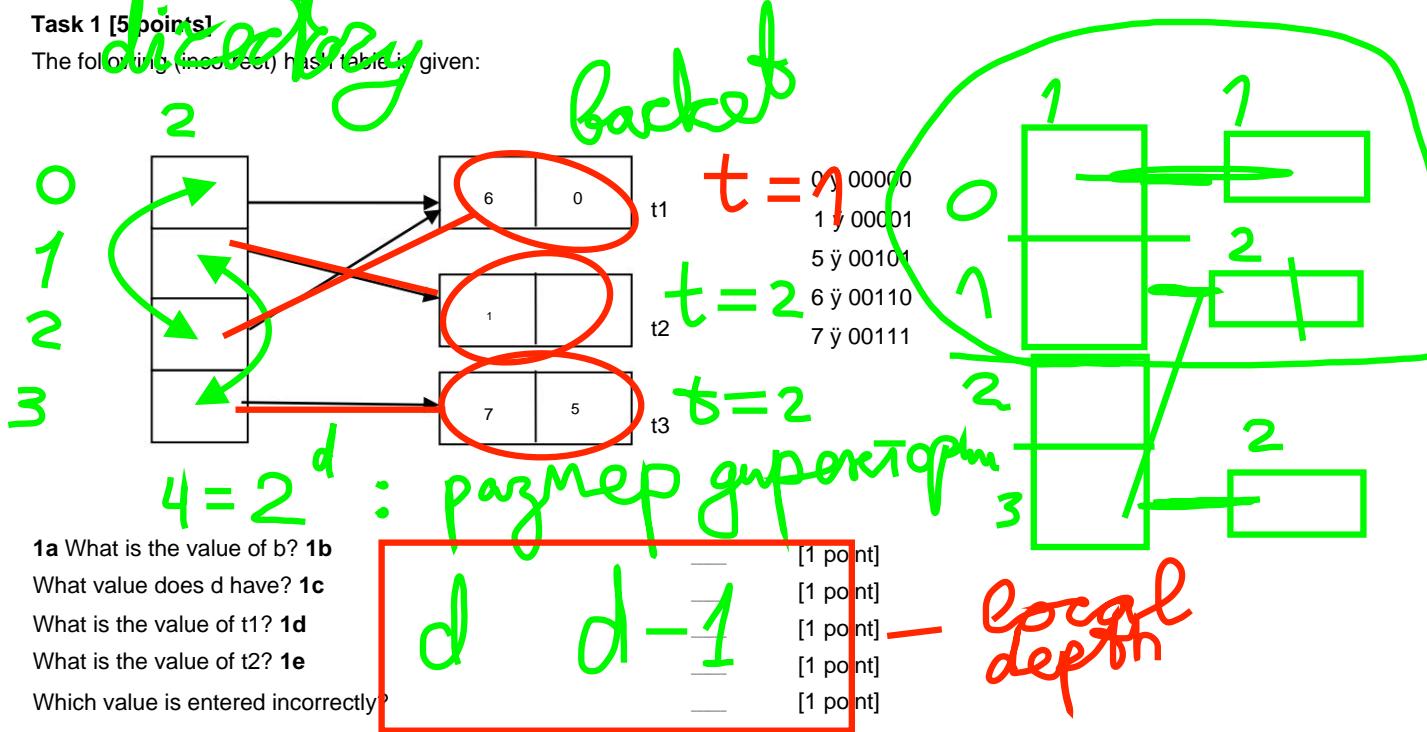
Please write “I have read and understood the rules” on the first page of your solution and sign there.

Good luck!

The terminology used in the lecture is assumed: b is the
Bucket size, d is the global depth and t is the local depth of a block

Task 1 [5 points]

The following (incorrect) hash table is given:



1a What is the value of b? 1b

What value does d have? 1c

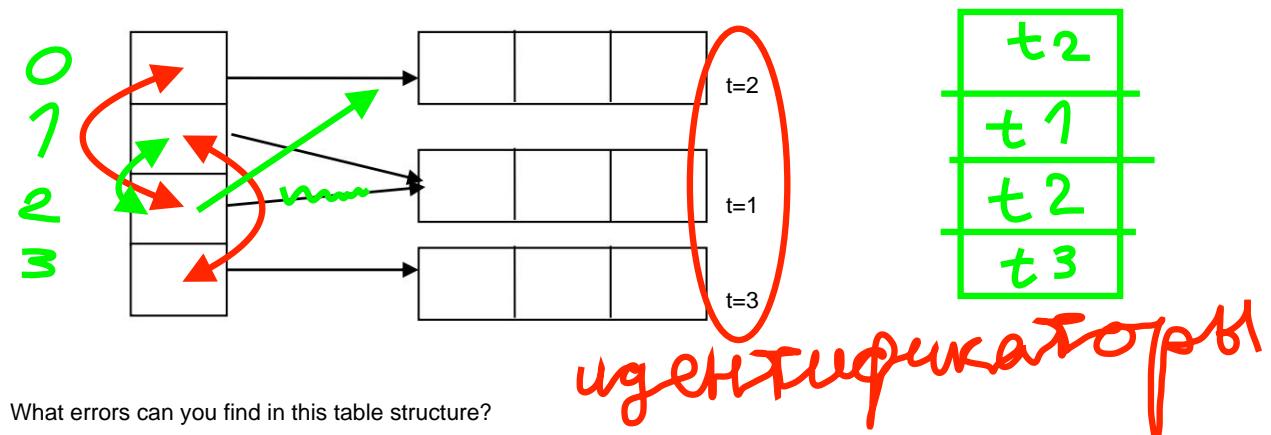
What is the value of t1? 1d

What is the value of t2? 1e

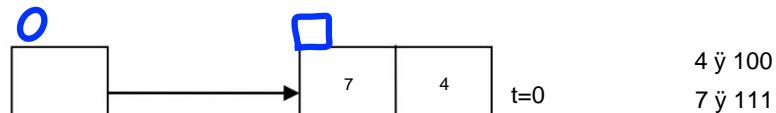
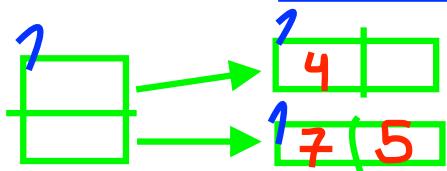
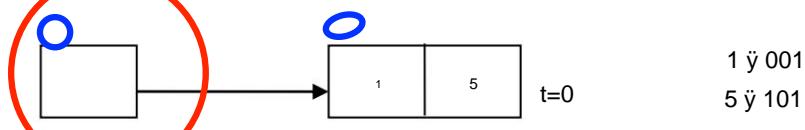
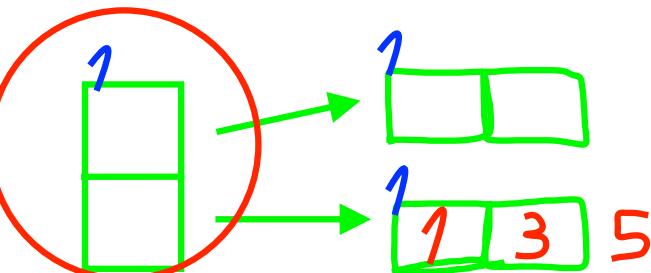
Which value is entered incorrectly?

Task 2 [5 points]

The following (incorrect) hash table is given ($b=3$ and $d=2$):



What errors can you find in this table structure?

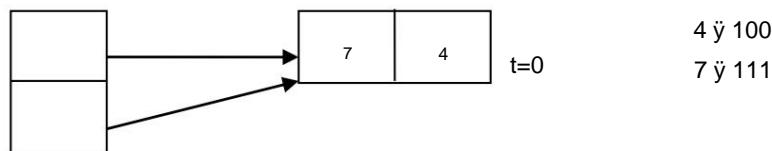
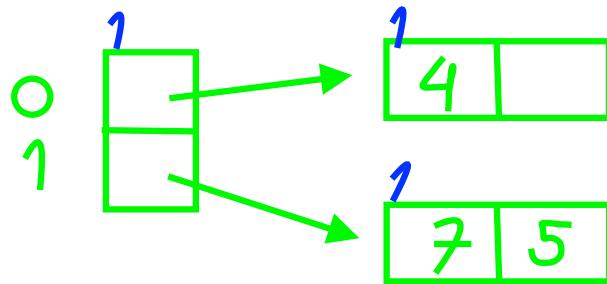
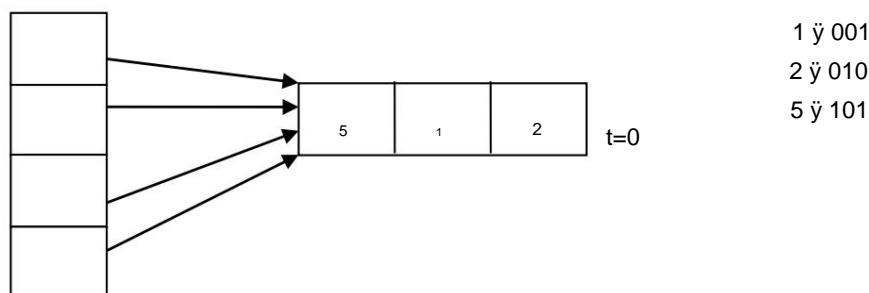
Task 3 [2 points]The following hash table is given ($b=2$, $d=0$)Sketch the state of the table (including global and local depths) after additionally storing the value 5 ($\ddot{y} 101$). $h \% 2$ **Task 4 [3 points]**The following hash table is given ($b=2$, $d=0$)Sketch the state of the table (including global and local depths) after additionally storing the value 3 ($\ddot{y} 011$). $h(x)$

рольнеп гуректорин
 $2^2 = 4$

смуджна гуректорин
 2

1 2 3 4 5 ...

 $h \% 4$

Task 5 [2 points]The following hash table is given ($b=2$, $d=1$)Sketch the state of the table (including global and local depths) after additionally storing the value 5 ($\ddot{y} 101$).**Task 6 [3 points]**The following hash table is given ($b=3$, $d=2$)Sketch the state of the table (including global and local depths) after additionally storing the value 4 ($\ddot{y} 100$).