ISTANBUL TECHNICAL UNIVERSITY

COMPUTER ENGINEERING DEPARTMENT

Analysis of Algorithms-1
BLG-335E

HOMEWORK-3
REPORT

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1.PART

In this part I tried to implement linear probing algorithm for creating a hash set. As a key I get the line number of the string in the file. After that I calculated an index using linear probing function and if I see collusion, I incremented the index number until finding a proper slot.

2.PART

In this part I tried to implement double hashing algorithm. I founded an index using h1 function which is given in the pdf. After that if a collusion occurs, I used h2 function to find another index. All in all I counted collusion numbers for reporting.

3. PART

In this part, I tried to implement universal hashing algorithm. First I checked my M number if it is prime or not. If it is not prime I took the first prime number before M. After that I made decomposition operation for key. Then I created random numbers. After that with given function I calculated an index and returned it. If a collusion occurs I used linear probing algorithm to solve it. All in all, I calculated collusions.

4. PART

In this part, I wrote 3 search functions using the algorithms in the first 3 parts. After that I counted collusions.

5. PART

	INSERTION		
	LINEAR	DOUBLE	UNIVERSAL
M=17863	0	0	0
M=21929	0	0	730

	SEARCH		
	LINEAR	DOUBLE	UNIVERSAL
M=17863	10269662	8065	8746285
M=21929	10603074	21351	10765590

In this part I can say that, collusions for universal hash occurs because of random insertion.