

Assignment 12

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Problem 12.2

a) The main idea of the algorithm is using a hash function on the pattern that we want to search for. Say that this function on the pattern return 7 and the length of the pattern is m (and n of the text). Then we find the hash function of the first m characters in the text and if it equals 7 we compare these chars to the pattern and if they are the same then we say we found a match. An example to illustrate this:

text = "BDRLDCCDABABD"
pattern = "BD"

the hash for the pattern is $66 + 68 = 134$

then we go to the first 2 characters of the text, "BD" the hash of these characters is 134 and since is equal to that of our pattern then we compare it to the pattern and since it is equal we have a match. Then we move to the the second group of 2 characters that is "DR" whose hash value is not 134 so we go forward and so on till we reach "CC" which has again a hash of 134 and since it is equal to that of our pattern we compare the characters with each other and find out there is no match. So we keep going forward again till reaching again "BD" in the end with 134 as a hash so we have another match after the comparison.

Reference for the implementation: <https://www.youtube.com/watch?v=qQ8vS2btsxI>