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Welcome to the DNA Profiling Application.
Enter command or # to exit: load_db /Users/veenahalleppanavar/downloads/small.txt
Loading database...
Enter command or # to exit: load_dna /Users/veenahalleppanavar/downloads/1.txt
Loading DNA...
Enter command or # to exit: process
Processing DNA...
Enter command or # to exit: display
Database loaded:
Alice 2 8 3
Bob 4 1 5
Charlie 3 2 5

DNA loaded:
AAGGTAAGTTTAGAATATAAAAGGTGAGTTAAATAGAATAGGTTAAAATTAAAGGAGATCAGATCAGATCAGATC
TATCTATCTATCTATCTATCAGAAAAGAGTAAATAGTTAAAGAGTAAGATATTGAATTAATGGAAAATATTGTTGGG
GAAAGGAGGGATAGAAGG

DNA processed, STR counts:
AGATC: 4
AATG: 1
TATC: 5

Enter command or # to exit: search
Searching database...
Found in database! DNA matches: Bob
Enter command or # to exit: #
**********************************************************
ourvector<NSt3__112basic_stringIcNS_11char_traitsIcEENS_9allocatorIcEEEE> stats:
 # of vectors created:   1
 # of elements inserted: 1
 # of elements accessed: 1
**********************************************************
**********************************************************
ourvector<c> stats:
 # of vectors created:   15
 # of elements inserted: 209
 # of elements accessed: 1719
**********************************************************
**********************************************************
ourvector<9ourvectorIcE> stats:
 # of vectors created:   1
 # of elements inserted: 3
 # of elements accessed: 6
**********************************************************
**********************************************************
ourvector<i> stats:
 # of vectors created:   8
 # of elements inserted: 30
 # of elements accessed: 48
**********************************************************
**********************************************************
ourvector<6Person> stats:
 # of vectors created:   1
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# of elements inserted: 3
# of elements accessed: 13
*******************************************************
Program ended with exit code: 0
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The ourvector<string> was created once on line 435 to store the name of the person found during “search”. Only one element was inserted (push_back to the ourvector inserts one element each time unless capacity is reached) during the search method, as it only adds one name. Only one element was accessed, when I displayed the name of the match after finding it in the search. The ourvector<ourvector> was created one time on line 432 to store the STRs. 3 elements were inserted, as there was an ourvector to store the STR data for 3 people in the database. This was done during the load_db method (3 elements push_back to ourvector). 6 elements were accessed, 3 times in the process method to loop through the ourvector, and 3 times again in the displayProcess function to loop through the ourvector. The ourvector<Person> was created one time on line 431 to store the data for the person structs. 3 elements were inserted in load_db, one for every person in the database(3 elements push_back to ourvector). 3 elements were accessed in the display function to print the people’s data, one for each person. The rest were accessed in the process function, when comparing letters in the DNA sequence to different people’s STRs to find matches. 2 ourvector<char> instances were created in the main on lines 432,433 one in the ourvector of ourvectors to store STRs and one to store the DNA sequence. More instances are created on lines 69,71, and 73 in sequenceData. Here ourvector<char> is made for each person in the database, so 3 are created. Elements are pushed back to the ourvectors, but once the size reaches 4 it is doubled and 1 more instance is created for a new vector with the new size. This happens once for each of the STRs so 3 more instances are created. The rest are created in load_dna on line 230. Here chars are pushed back to the DNA sequence. Since it is very long the size is doubled a few times so the rest of the instances are created here. 209 elements are inserted from a few functions: load_db(when loading STRs 13 elements are inserted) and load_dna (one element inserted from each letter in the sequence). 1719 elements are accessed from several functions: display (loops through whole DNA sequence and STR data), and process (also loops through DNA sequence and STR data a few times). Lastly, 16 ourvector<int> ‘s are created. 2 of them are made in main on lines 434 and 436. One of them stores the consecutive STR counts for process and one is for my creative component. 3 of them are also created in load_db (line 47), as a Person struct contains an ourvector<int> for the STR data and 3 people are created. 3 more are made on line 53 in the same function, as the ourvector reaches max capacity and size is doubled for push_back. 30 elements are inserted, in the load_db function where STR counts are stored for each person, and in process, where consecutive STR counts are pushed back. 48 elements are accessed, during the display function, where the STR counts found in process are printed out, and in search where the STR sequences of people are compared to those in the database.