

# Data Structure and Algorithm

## Digital Assignment-1

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Slot: G2

Q. Write about any real-time implementation on any of the data structure features that you in your daily life.

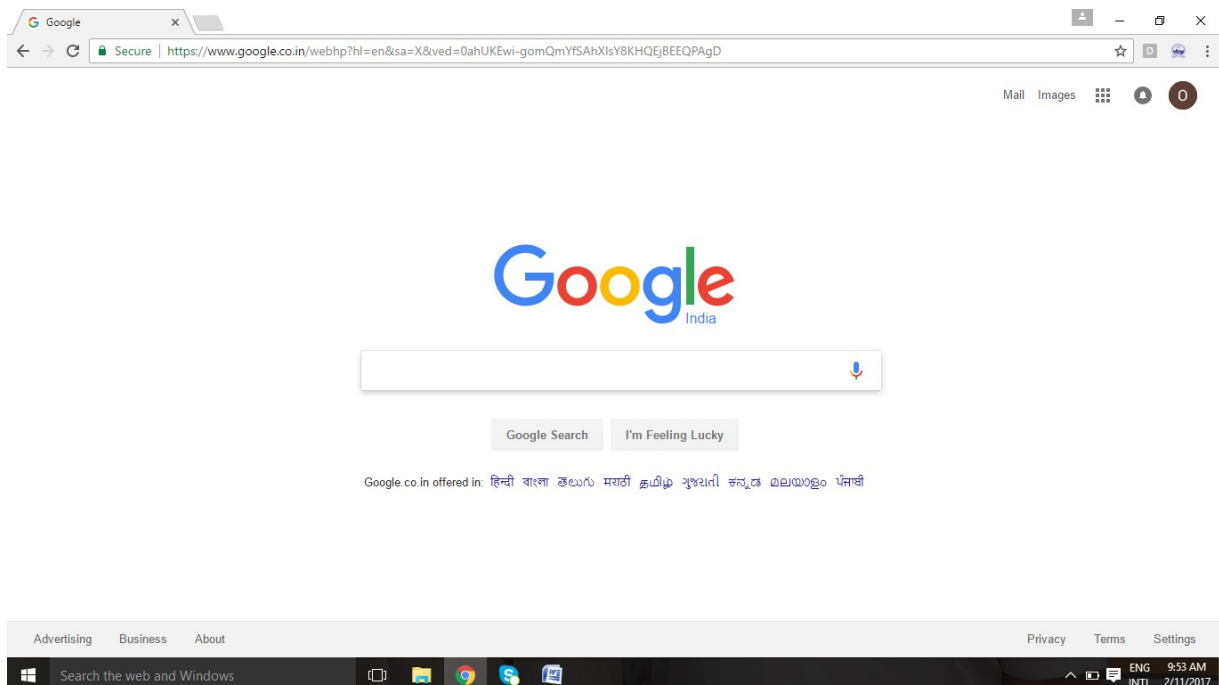
Ans:

### **Going from one page to another involves Stack**

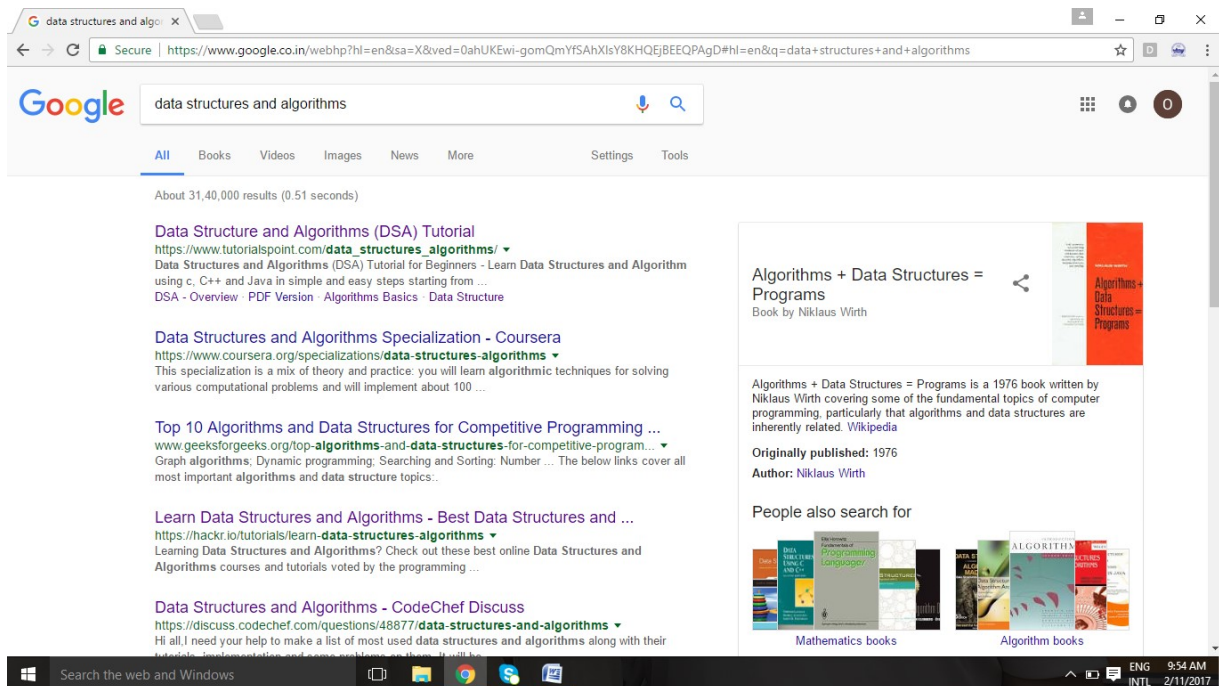
I, being a computer science student, have seen this. When we go to internet to search for some website or to get some information about a particular thing we see that we are just getting into the websites from one page to other (Just like Pushing an element into a stack). In order to come back we press 'Back' button to go back to the previous page (This is just like Pop we are not mentioning where it should go). Even if we tell in internet the number pages to go back but still the principle of stack is not disturbed. In this case, a group of elements are popped out. This feature is more see in mobile phones compared to laptops and desktops.

For example:

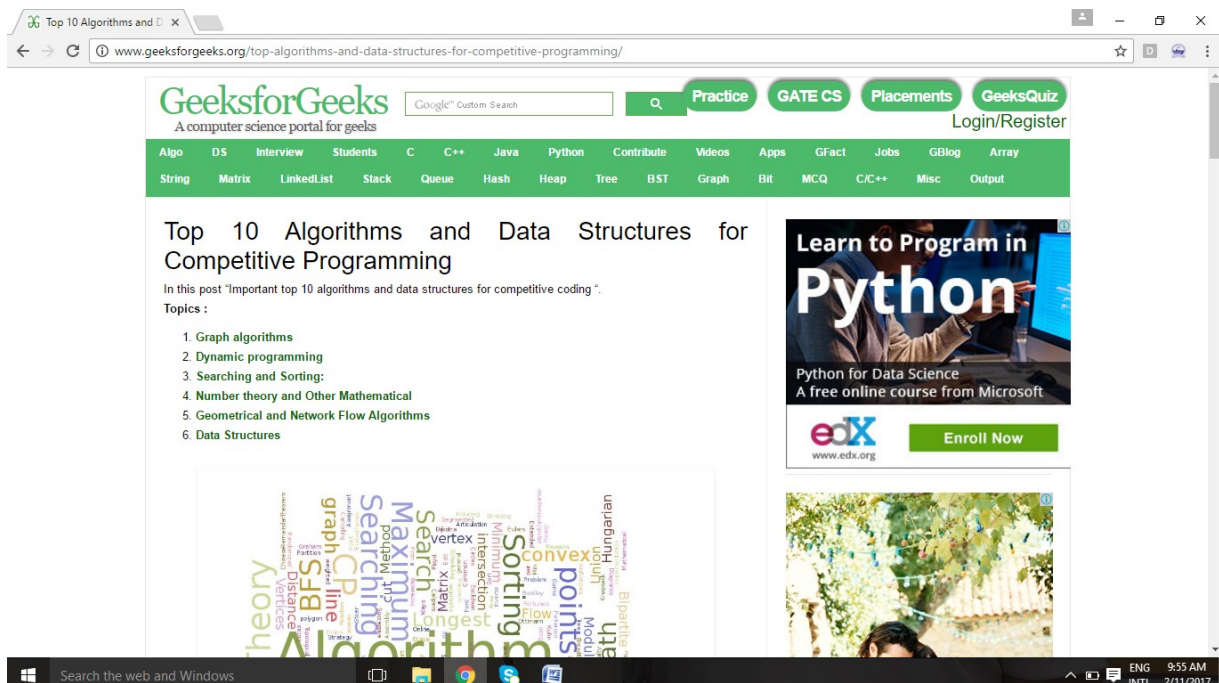
Let's take this as the starting page and we have top=-1:



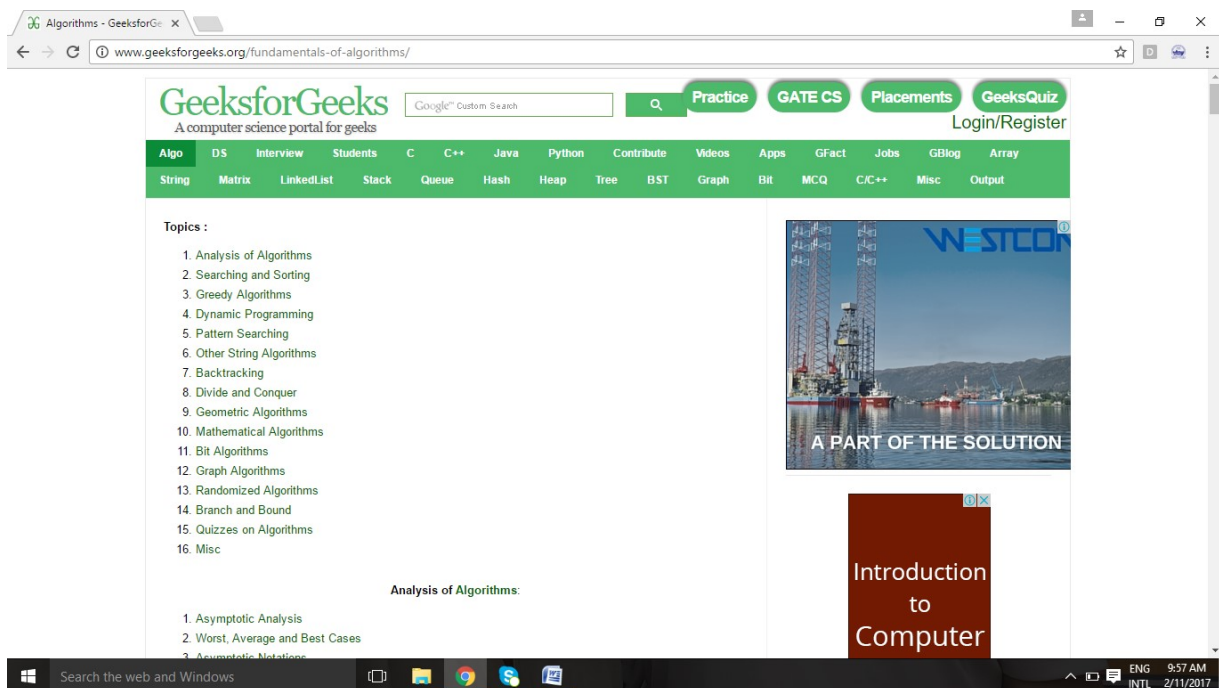
Now the top=0, since it has the first page:



Now the top=1, since it has the second page:



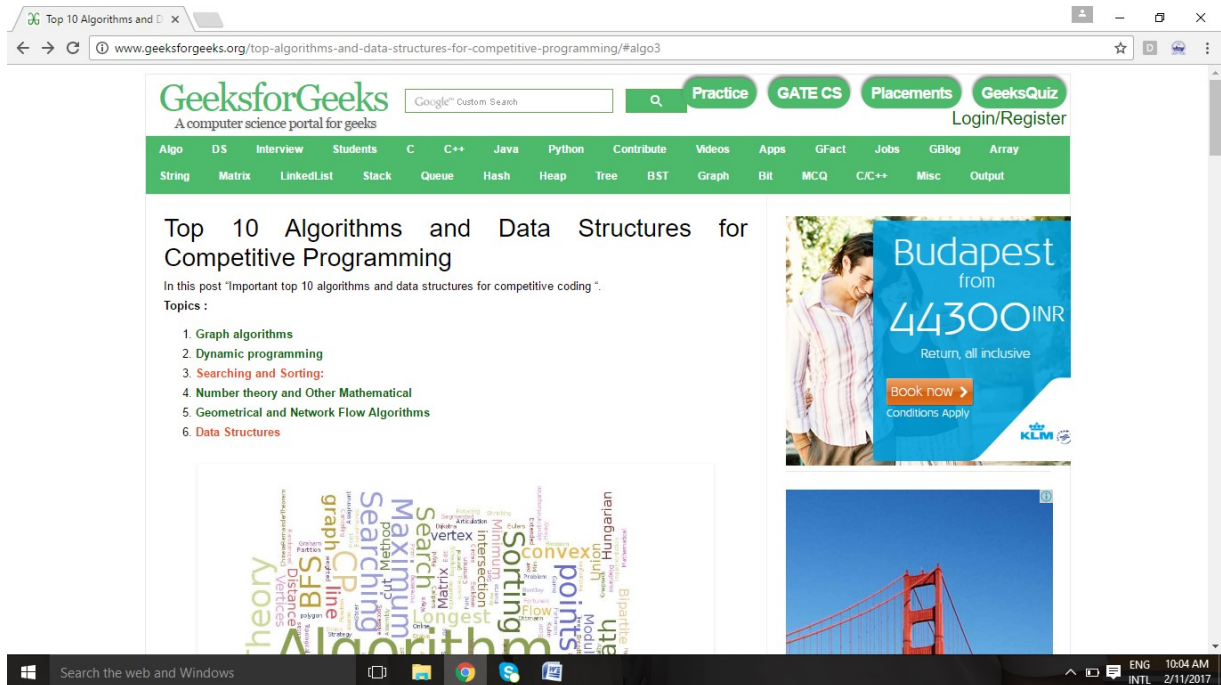
Now the top=2, since it has third page:



Now can we see the Back button above, yes it suggest to click to go back or hold to see the history, the fast one just pops the first element but the later pops some elements using recursion.

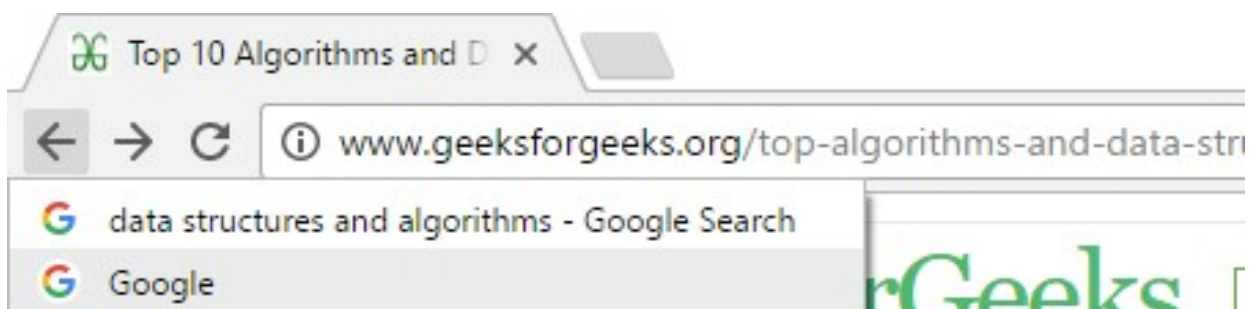


So when we click on it just once the pop operation takes place and now the top =1.

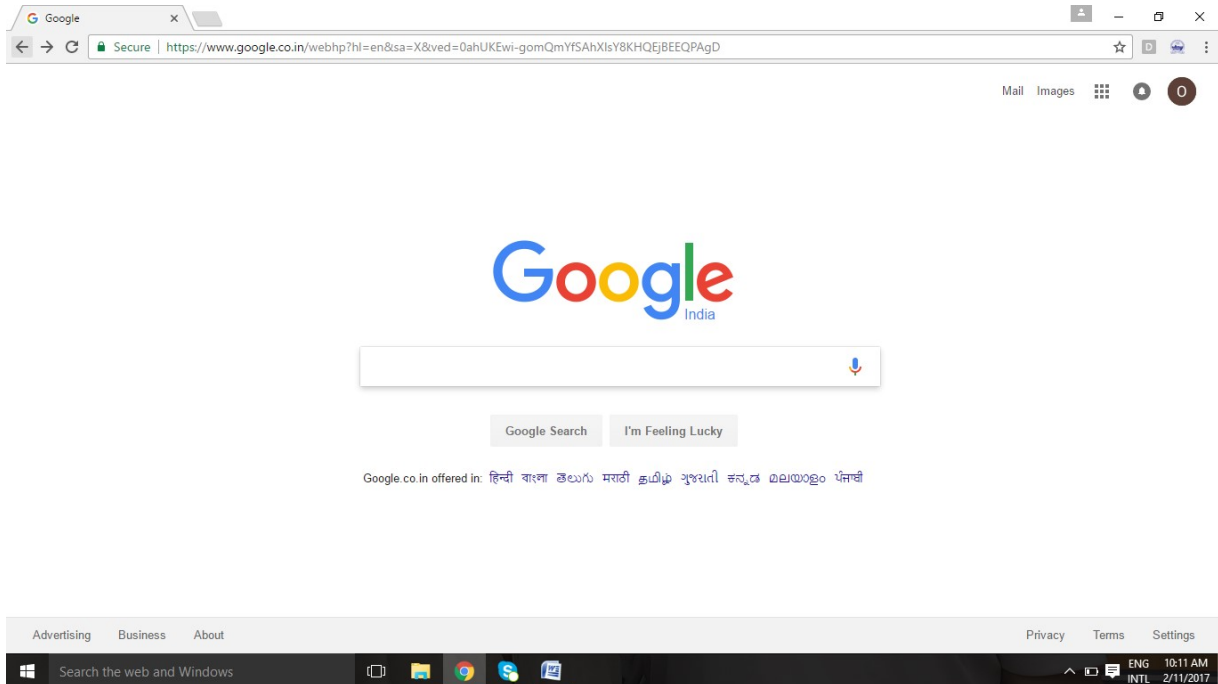


We can see to Active arrows, one pointing Back and one pointing Forward indicates whether the user wants to insert that same element again or not.

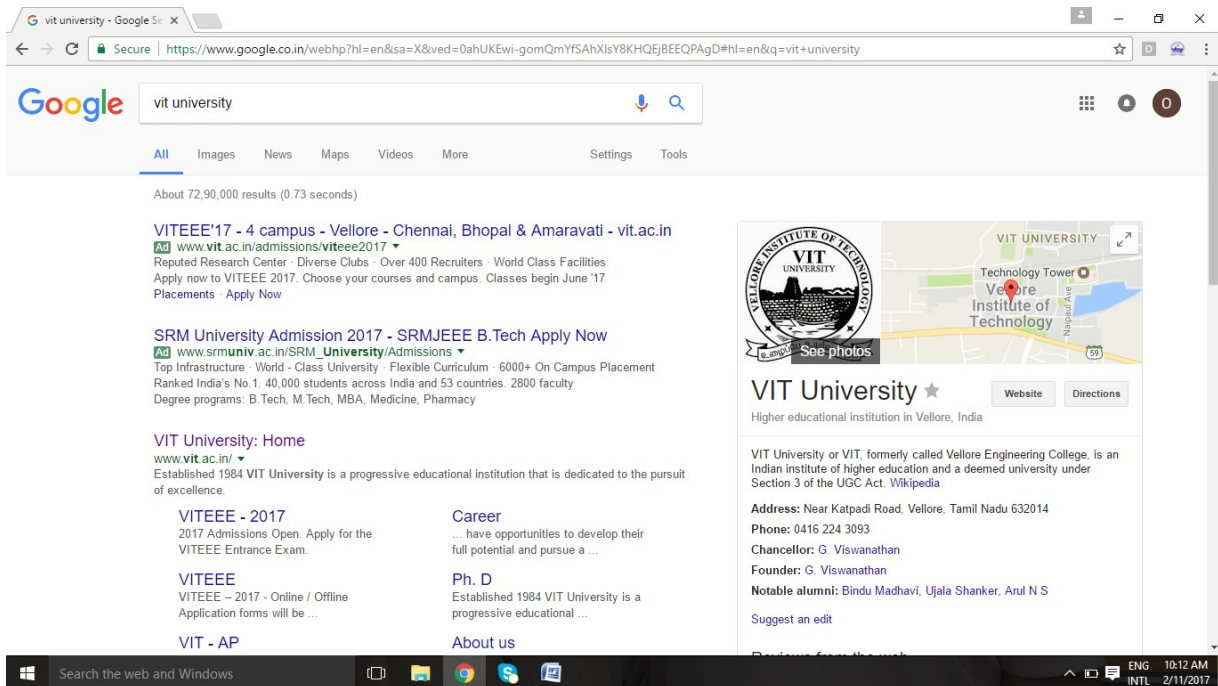
Now if we pop a group of elements like clicking on Google we go back to the first page and our top becomes -1.







Now if we insert new element into the stack and see that top is 0 now. We have our Forward arrow is inactive now. This represents that there are no new element in the stack apart from top[0]. Like this the things go on in internet and hence a lot of memory is not wasted.



Now the implementation of stack pictorially, the stack can be of large size but here for our convenience we are taking it as five:


First the stack was empty. That means  $\text{top} = -1$ . When we just opened a new tab.

Then we push the first page: Google main page

Google(Top=0)

Then we see that top has increased by 1.

Now we insert or push another page. Next page: Data Structure and Algorithm

DSA(Top=1)
Google

Then we see the top has increased by 1.

Now we insert or push another page. Next page: GeeksforGeeks(it's a website).

GeeksforGeeks(Top=2)
DSA
Google

Then we see the top has increased by 1.

Now we insert or push another page. Next page: Algo(In that website).

Algo(Top=3)
GeeksforGeeks
DSA
Google

Then we see the top has increased by 1.

Now we pop elements from stack:

GeeksforGeeks(Top=2)
DSA
Google

But this time we get a chance either to restore the popped element by forward key or put a new element into stack.

Thus the stack operations are implemented.

**---Thank You---**