Contact Book Application using Doubly Linked List

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Role– Individual project in Java

Topics learnt while building the project –

- About doubly linked list –
  How to
  1. create and link nodes
  2. to traverse the linked list and
  3. update and modify related data in the linked list.
- About Bubble Sort –
  1. The algorithm
  2. Implementing sorting on doubly linked list
  3. Best Case Time Complexity – O(n)
  4. Worst Case Time Complexity – $O(n^2)$
  5. Average Case Time Complexity – $O(n^2)$
- Some string functions.

Any courses taken while working for the project? – No

Libraries installed for the project

- Java Standard Libraries – java.lang, java.io, java.util.

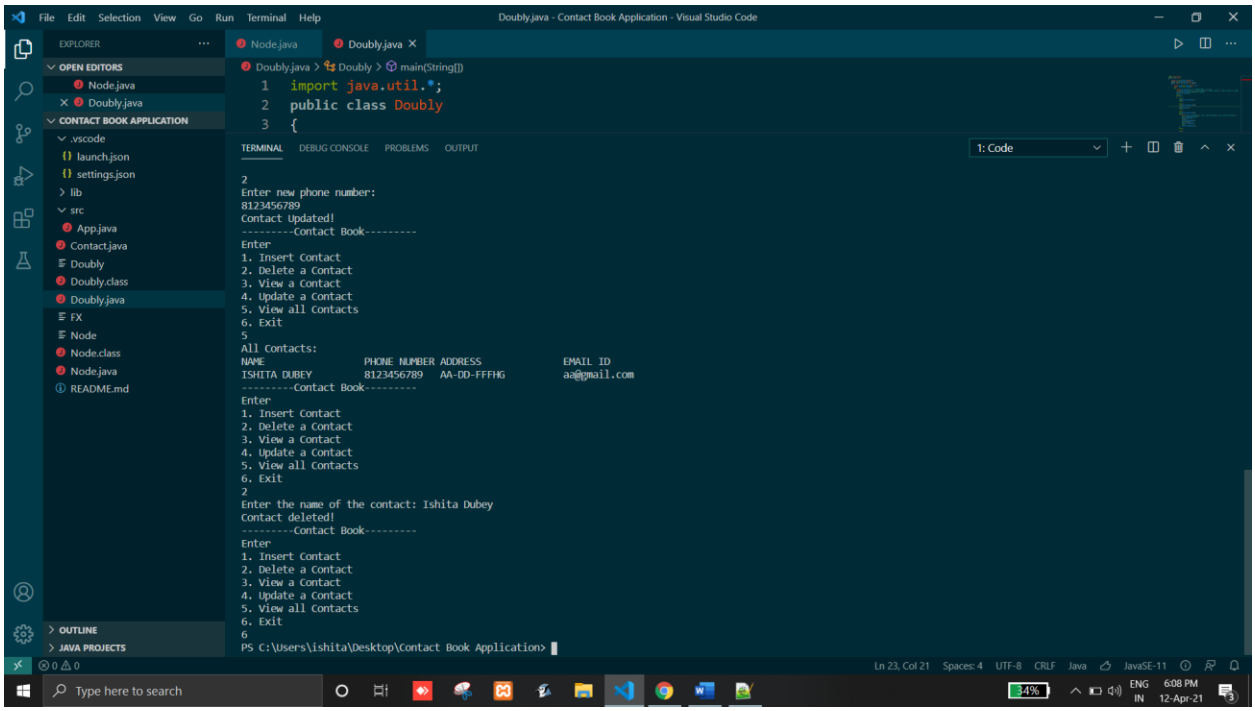
ALGIRTHM: for Node Class

1. START
2. Create class Node
3. Declare string name, phone, address and email
4. Create Node next, prev to link to next and previous node
5. STOP

ALGIRTHM: for Doubly Class which extends Node Class

1. START
2. Declare head node and count=0;
3. Print what the user can do with the contact book
4. Enter the choice - 1. Insert Contact 2. Delete a Contact 3. View a Contact 4. Update a Contact 5. View all Contacts 6. Exit in int x;
5. If case 1 then goto step 11.

6. If case 2 then check if the list is empty. If empty then print “No list” else goto step 15.
7. If case 3 then check if the list is empty. If empty then print “No list” else if 1. View by name, goto step 19, if 2. View by number else 3. View by email.
8. If case 4 then check if the list is empty. If empty then print “No list” else goto step 23.
9. If case 5 then goto step 26.
10. If case 6 then goto step 32.
11. Enter name, phone, address and email of the contact then goto the next step.
12. Validate name, phone and email using regex. If correct then goto next step else goto step 11.
13. Create Node node and set the respective details in step 11. If the contact is the first one set head=node else goto next step.
14. Set a pointer ptr =head and traverse while(ptr.next!=null). Add the node to the end of the list ptr.next=node and node.prev=ptr then goto step 27. Goto step 4.
15. Enter name of the contact. Set a pointer to head as ptr=head.
16. Set count=0.
17. Traverse the contact list by ptr=ptr.next and check if the contact with the name exists. If it exists increment count by 1 then create a link between the previous node and next node by (ptr.prev).next=ptr.next; (ptr.next).prev=ptr.prev; goto step 17 else goto next step.
18. If count=0 print “No such contact” else print “Contact deleted.” Goto step 4.
19. Set count =0.
20. Enter name. Traverse the list. If the name found display the name and increment count by 1 then repeat step 20 else goto next step.
21. If count=0 print “No such contact”. Goto step 4.
22. Similarly, for 2. View by number and 3. View by email.
23. Set count=0;
24. Enter name of the contact. Traverse the list and check if name is found. If found ask the user which detail is needed to be updated and update. Increment count by 1. Else goto next step.
25. If count=0 print “No such contact”. Goto step 4.
26. If the list is empty print “No list” else traverse the list and print the details of each contact. Goto step 4.
27. Set i=head. If i!=null then goto next step.
28. Traverse the list by i=i.next. Goto next step
29. Set j=i.next. If j!=null then goto next step else goto step 28.
30. Traverse the list by j=j.next. Goto next step
31. If the string (i.name) is greater (j.name) swap the contacts else goto step 30.
32. END.


File Edit Selection View Go Run Terminal Help
Doubly.java - Contact Book Application - Visual Studio Code
EXPLORER
OPEN EDITORS
Node.java
Doubly.java
CONTACT BOOK APPLICATION
.vscode
launch.json
settings.json
lib
src
App.java
Contact.java
Doubly
Doubly.class
Doubly.java
FX
Node
Node.class
Node.java
README.md
OUTLINE
JAVA PROJECTS
Doubly.java > Doubly > main(String[])
1 import java.util.*;
2 public class Doubly
3 {
TERMINAL DEBUG CONSOLE PROBLEMS OUTPUT
1: Code
2
Enter new phone number:
8123456789
Contact Updated!
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
5
All Contacts:
NAME PHONE NUMBER ADDRESS EMAIL ID
ISHITA DUBEY 8123456789 AA-DD-FFFHG aa@gmail.com
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
2
Enter the name of the contact: Ishita Dubey
Contact deleted!
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
6
PS C:\Users\ishita\Desktop\Contact Book Application>
Ln 23, Col 21 Spaces: 4 UTF-8 CRLF Java JavaSE-11
Type here to search
34%
ENG IN
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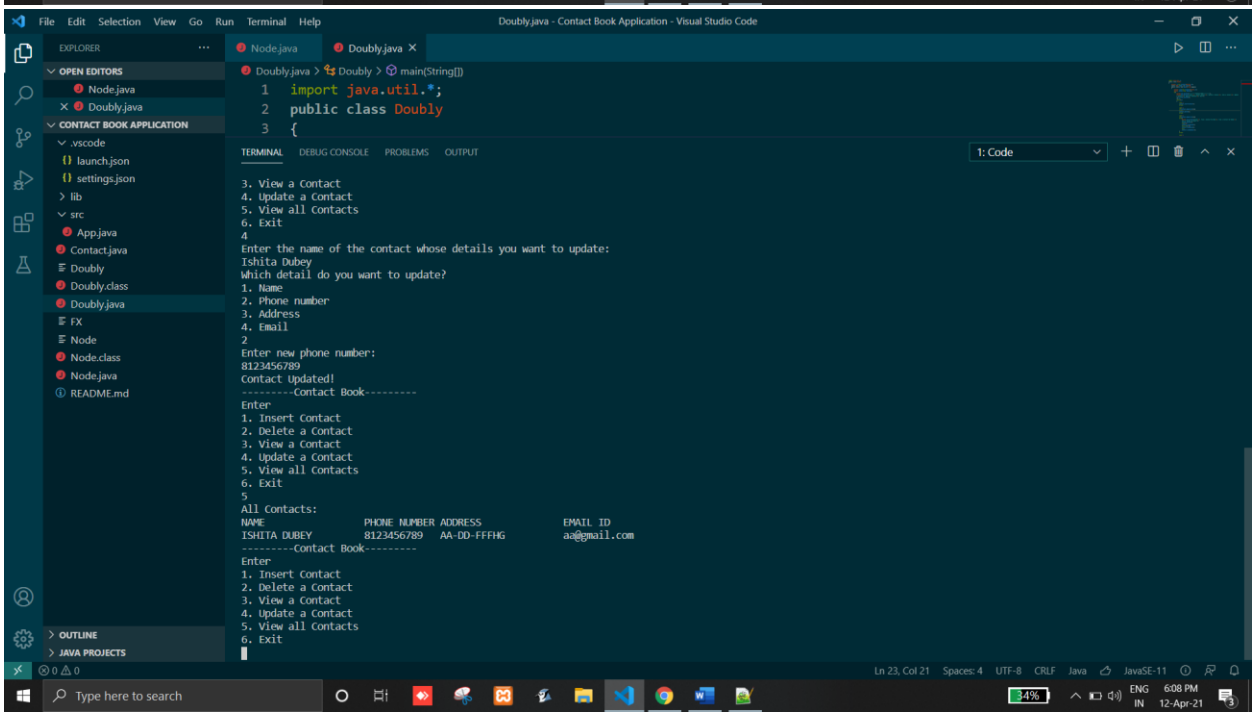
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1 import java.util.*;
2 public class Doubly
3 {
TERMINAL DEBUG CONSOLE PROBLEMS OUTPUT
1: Code
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
4
Enter the name of the contact whose details you want to update:
Ishita Dubey
Which detail do you want to update?
1. Name
2. Phone number
3. Address
4. Email
2
Enter new phone number:
8123456789
Contact Updated!
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
5
All Contacts:
NAME PHONE NUMBER ADDRESS EMAIL ID
ISHITA DUBEY 8123456789 AA-DD-FFFHG aa@gmail.com
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
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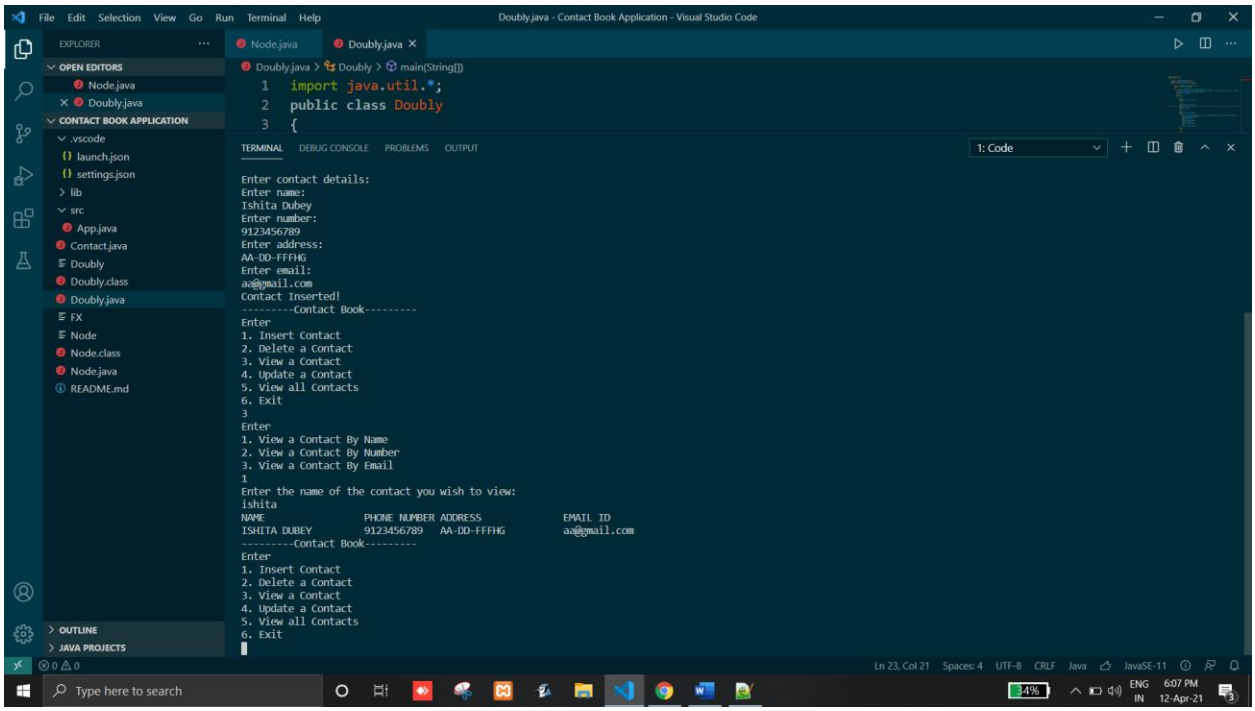
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Doubly.java
Doubly.java > Doubly > main(String[])
1 import java.util.*;
2 public class Doubly
3 {
TERMINAL DEBUG CONSOLE PROBLEMS OUTPUT
1: Code
Enter contact details:
Enter name:
Ishita Dubey
Enter number:
9123456789
Enter address:
AA-DD-FFFHG
Enter email:
aa@gmail.com
Contact Inserted!
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
3
Enter
1. View a Contact By Name
2. View a Contact By Number
3. View a Contact By Email
1
Enter the name of the contact you wish to view:
ishita
NAME PHONE NUMBER ADDRESS EMAIL ID
ISHITA DUBEY 9123456789 AA-DD-FFFHG aa@gmail.com
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
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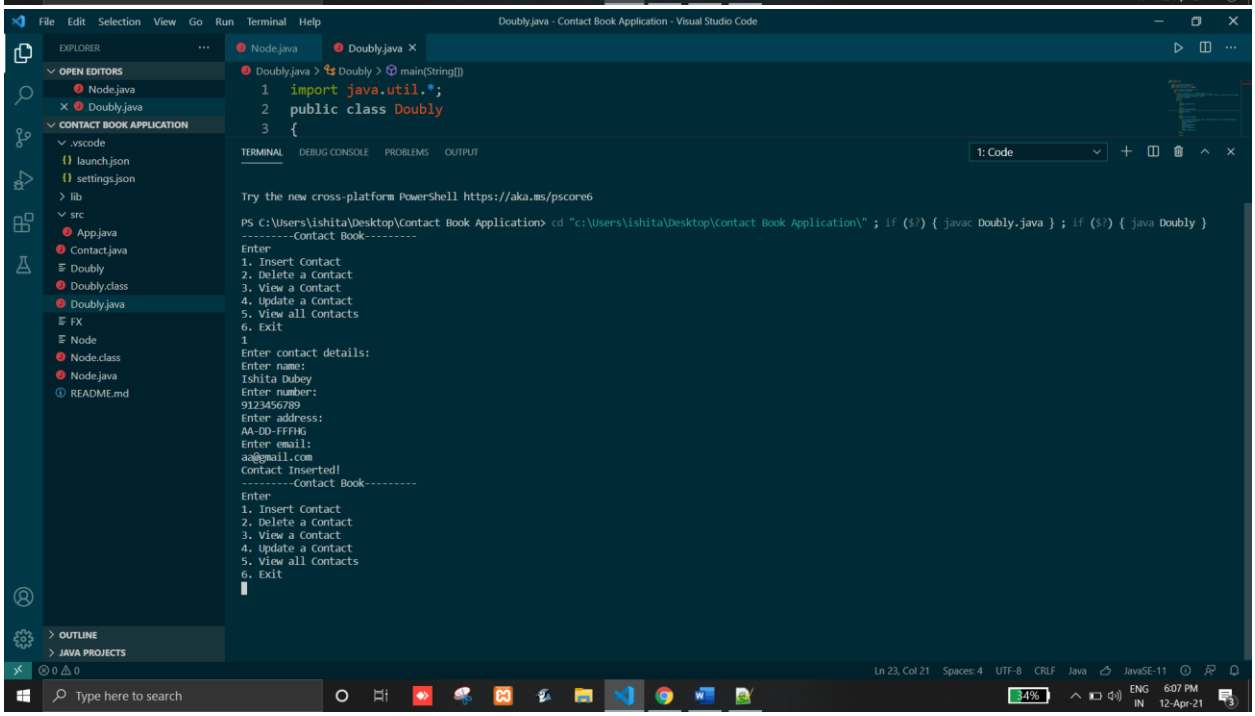
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Doubly.java > Doubly > main(String[])
1 import java.util.*;
2 public class Doubly
3 {
TERMINAL DEBUG CONSOLE PROBLEMS OUTPUT
1: Code
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS C:\Users\ishita\Desktop\Contact Book Application> cd "c:\Users\ishita\Desktop\Contact Book Application\" ; if ($?) { javac Doubly.java } ; if ($?) { java Doubly }
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
1
Enter contact details:
Enter name:
Ishita Dubey
Enter number:
9123456789
Enter address:
AA-DD-FFFHG
Enter email:
aa@gmail.com
Contact Inserted!
---------Contact Book---------
Enter
1. Insert Contact
2. Delete a Contact
3. View a Contact
4. Update a Contact
5. View all Contacts
6. Exit
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