9/28/2024

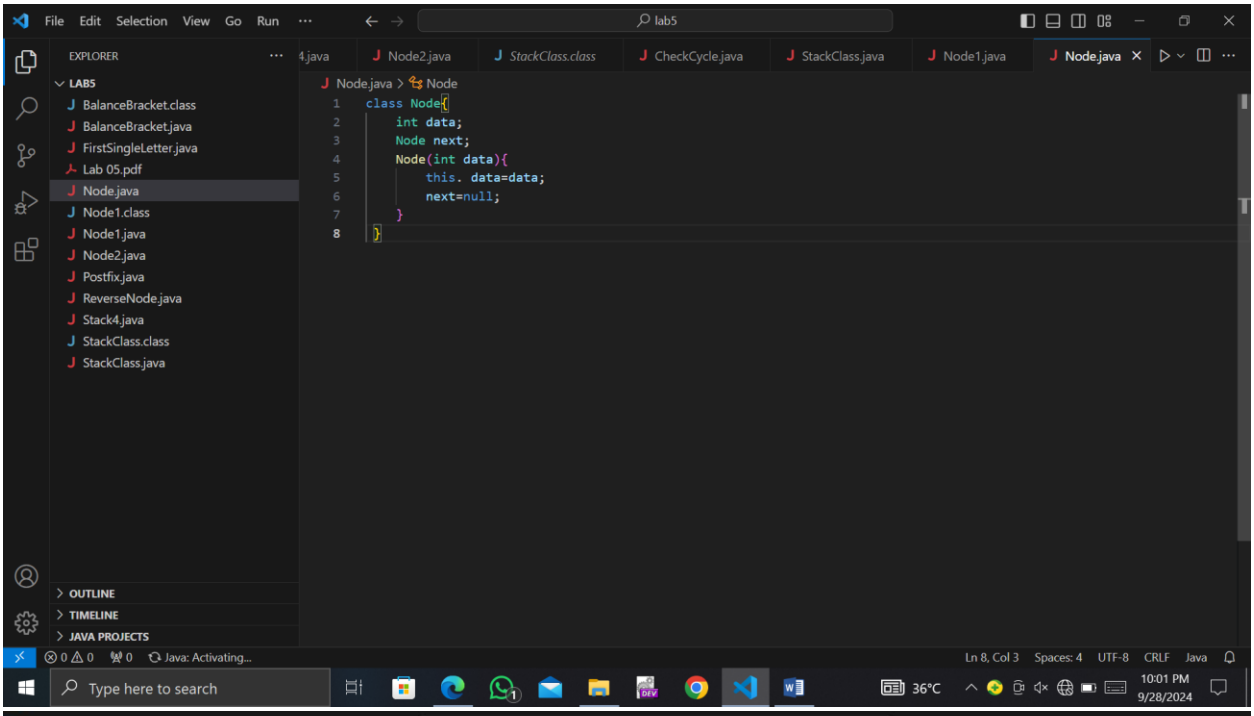
Data Structures

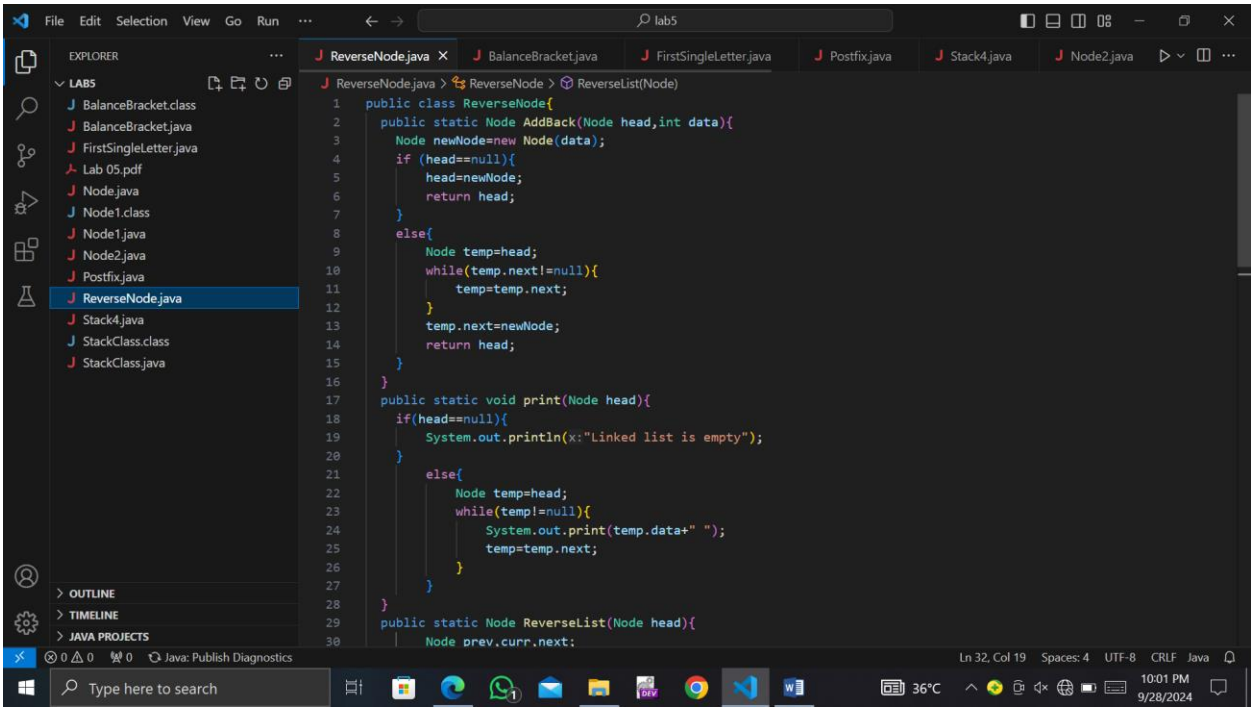
Lab 5 Exercise Solutions

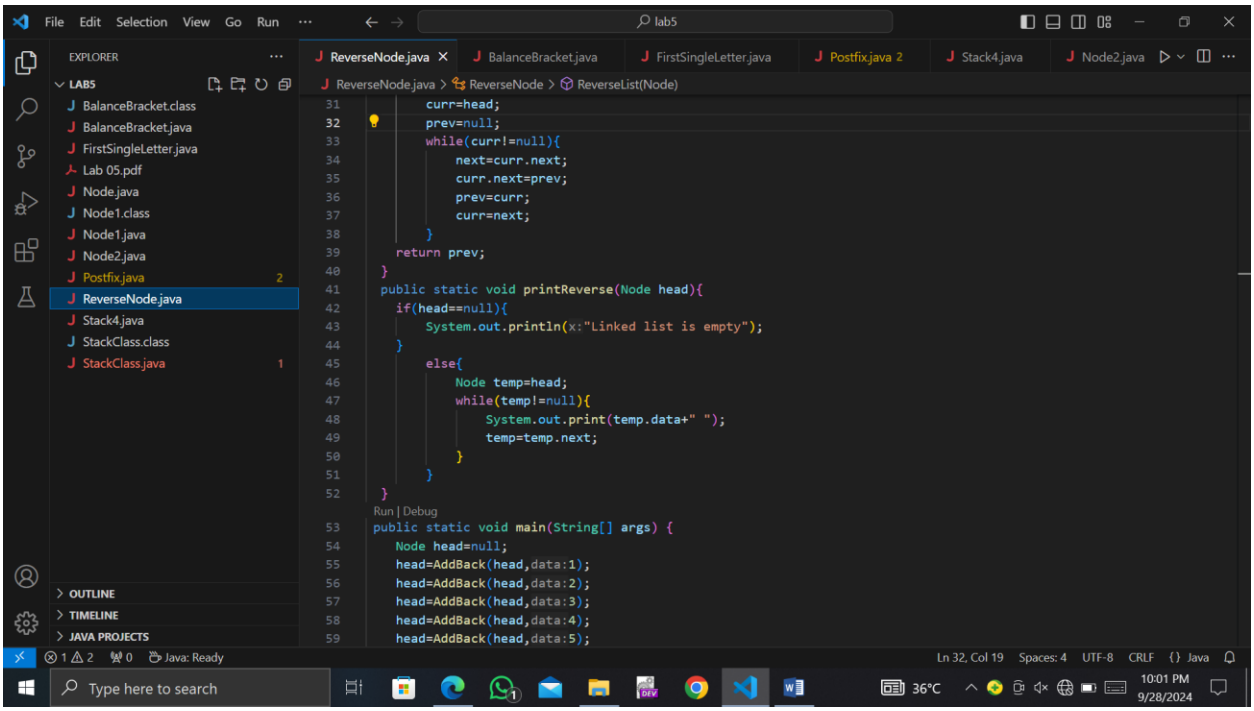
Uzair Ali Memon S/O Yar Muhammad Memon
B-S CS III Section A
023-23-0350
To: Ma’am Marina Rajpoot

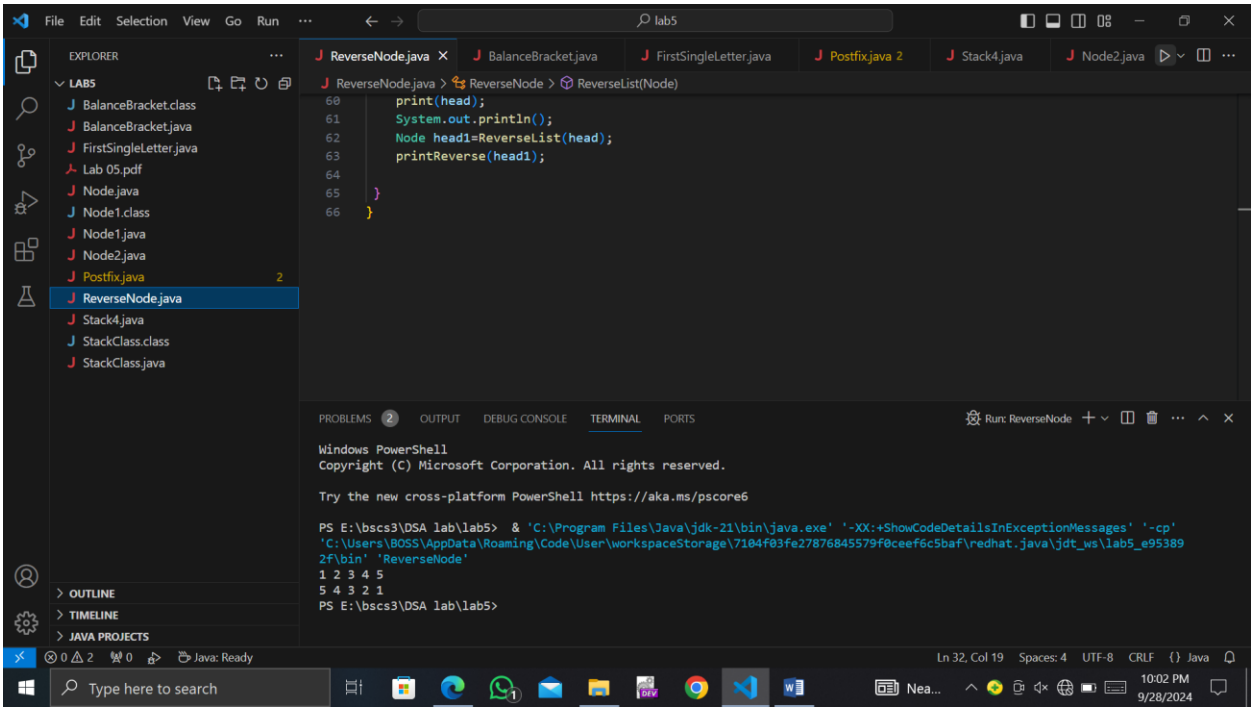
Task #1

Solution:



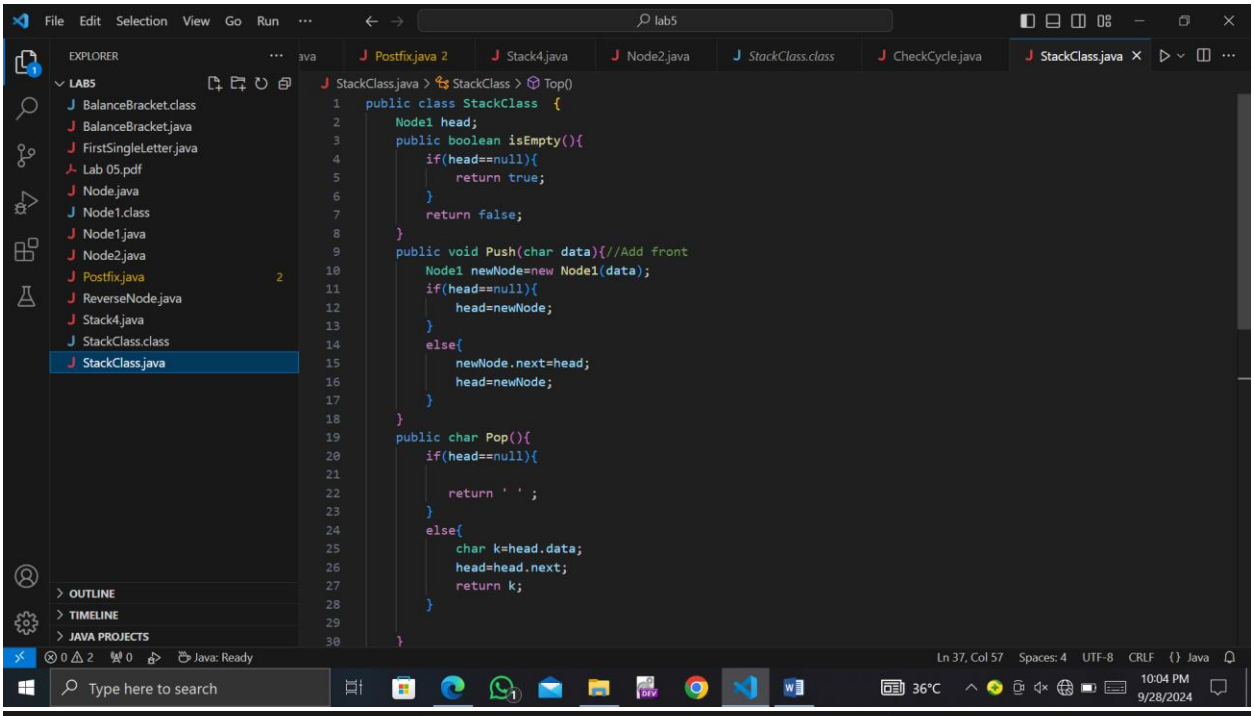


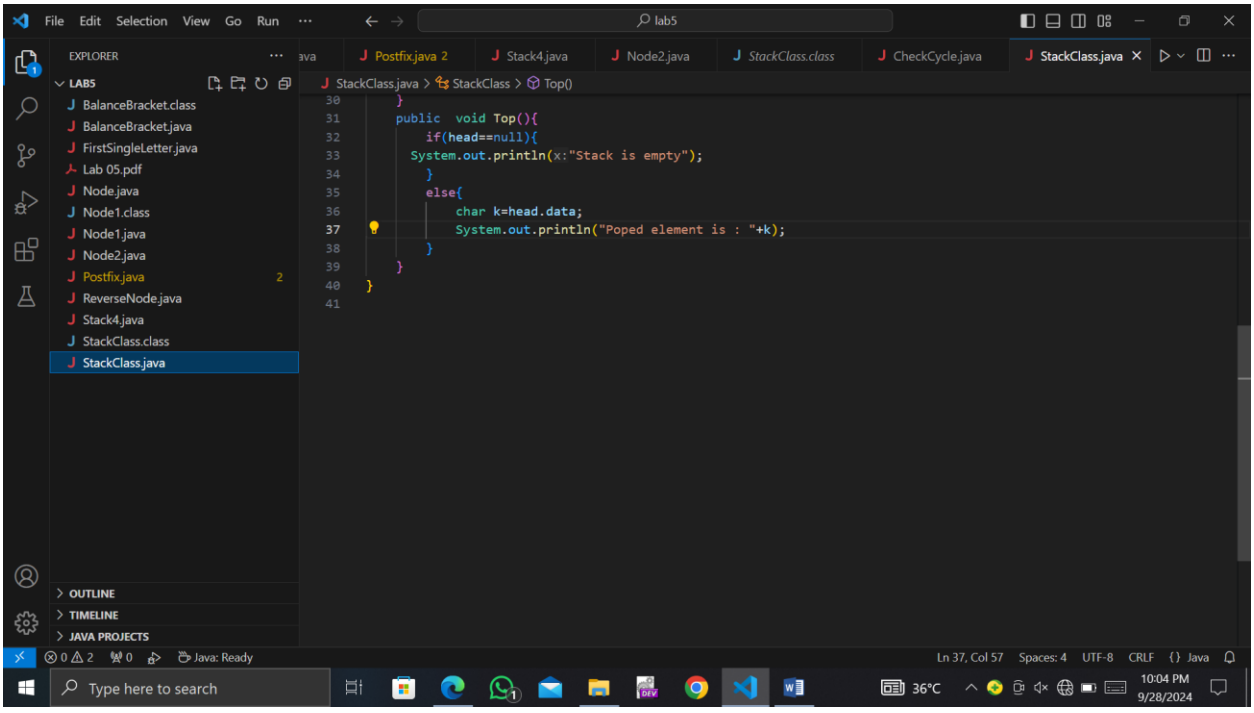

File Edit Selection View Go Run
lab5
EXPLORER
LABS
BalanceBracket.class
BalanceBracket.java
FirstSingleLetter.java
Lab 05.pdf
Node.java
Node1.class
Node1.java
Node2.java
Postfix.java 2
ReverseNode.java
Stack4.java
StackClass.class
StackClass.java 1
OUTLINE
TIMELINE
JAVA PROJECTS
ReverseNode.java
BalanceBracket.java
FirstSingleLetter.java
Postfix.java 2
Stack4.java
Node2.java
ReverseNode.java > ReverseNode > ReverseList(Node)
curr=head;
prev=null;
while(curr!=null){
next=curr.next;
curr.next=prev;
prev=curr;
curr=next;
}
return prev;
}
public static void printReverse(Node head){
if(head==null){
System.out.println(x:"Linked list is empty");
}
else{
Node temp=head;
while(temp!=null){
System.out.print(temp.data+" ");
temp=temp.next;
}
}
}
Run | Debug
public static void main(String[] args) {
Node head=null;
head=AddBack(head,data:1);
head=AddBack(head,data:2);
head=AddBack(head,data:3);
head=AddBack(head,data:4);
head=AddBack(head,data:5);
Java: Ready
Ln 32, Col 19 Spaces: 4 UTF-8 CRLF { } Java
Type here to search
36°C
10:01 PM
9/28/2024

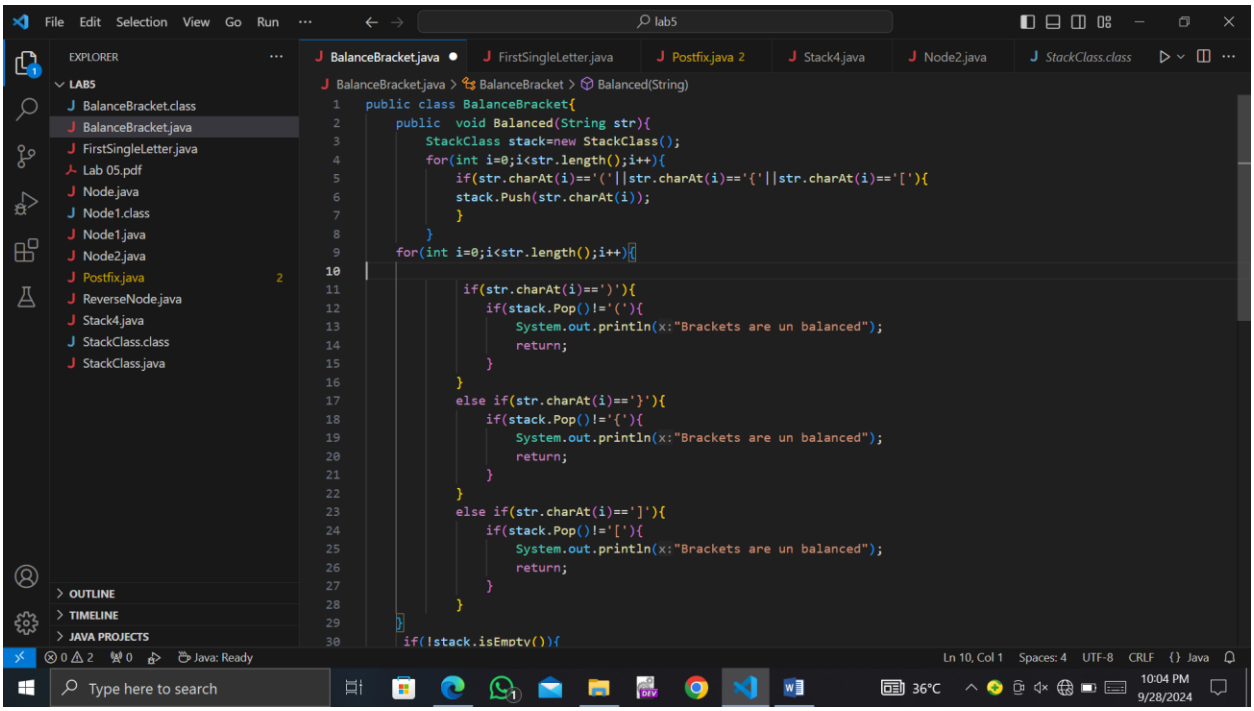

File Edit Selection View Go Run
lab5
EXPLORER
LABS
BalanceBracket.class
BalanceBracket.java
FirstSingleLetter.java
Lab 05.pdf
Node.java
Node1.class
Node1.java
Node2.java
Postfix.java 2
ReverseNode.java
Stack4.java
StackClass.class
StackClass.java
OUTLINE
TIMELINE
JAVA PROJECTS
ReverseNode.java
BalanceBracket.java
FirstSingleLetter.java
Postfix.java 2
Stack4.java
Node2.java
ReverseNode.java > ReverseNode > ReverseList(Node)
print(head);
System.out.println();
Node head1=ReverseList(head);
printReverse(head1);
}
}
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL PORTS
Run: ReverseNode
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS E:\bscs3\DSA lab\lab5> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\BOSS\AppData\Roaming\Code\User\workspaceStorage\7104f03fe27876845579f0ceef6c5baf\redhat.java\jdt_ws\lab5_e953892f\bin' 'ReverseNode'
1 2 3 4 5
5 4 3 2 1
PS E:\bscs3\DSA lab\lab5>
Java: Ready
Ln 32, Col 19 Spaces: 4 UTF-8 CRLF { } Java
Type here to search
Nea...
10:02 PM
9/28/2024

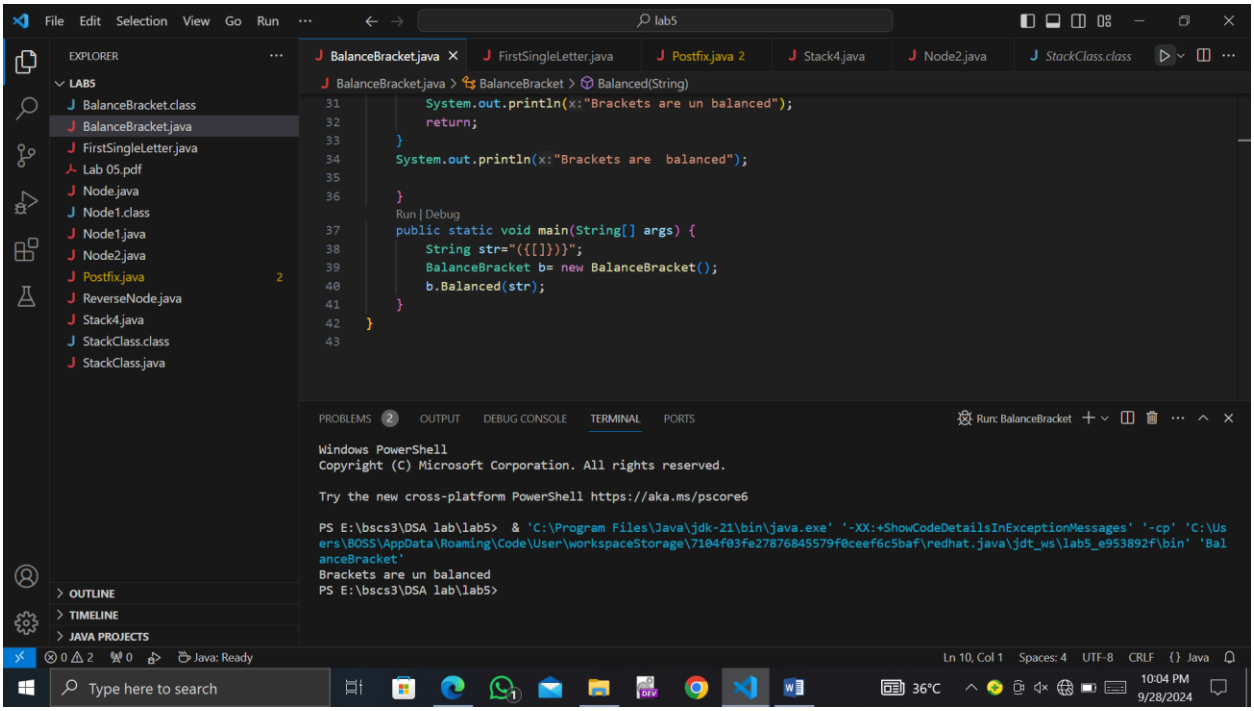
Task #2

Solution:



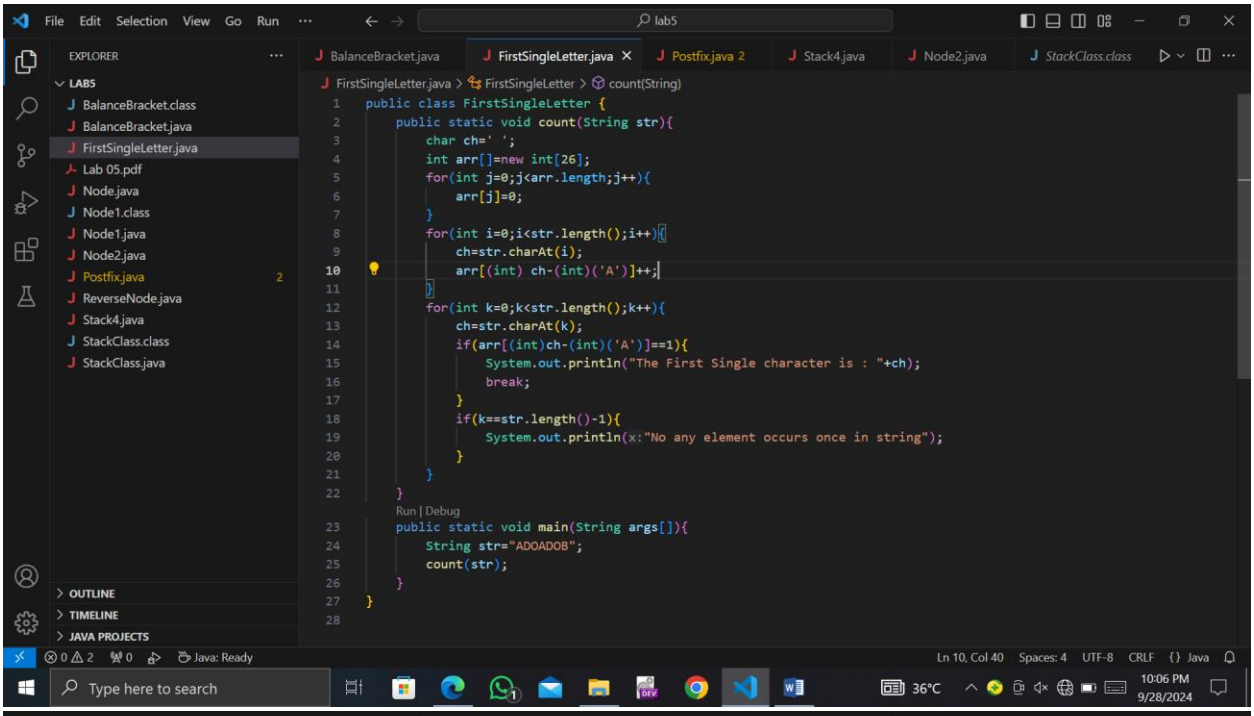


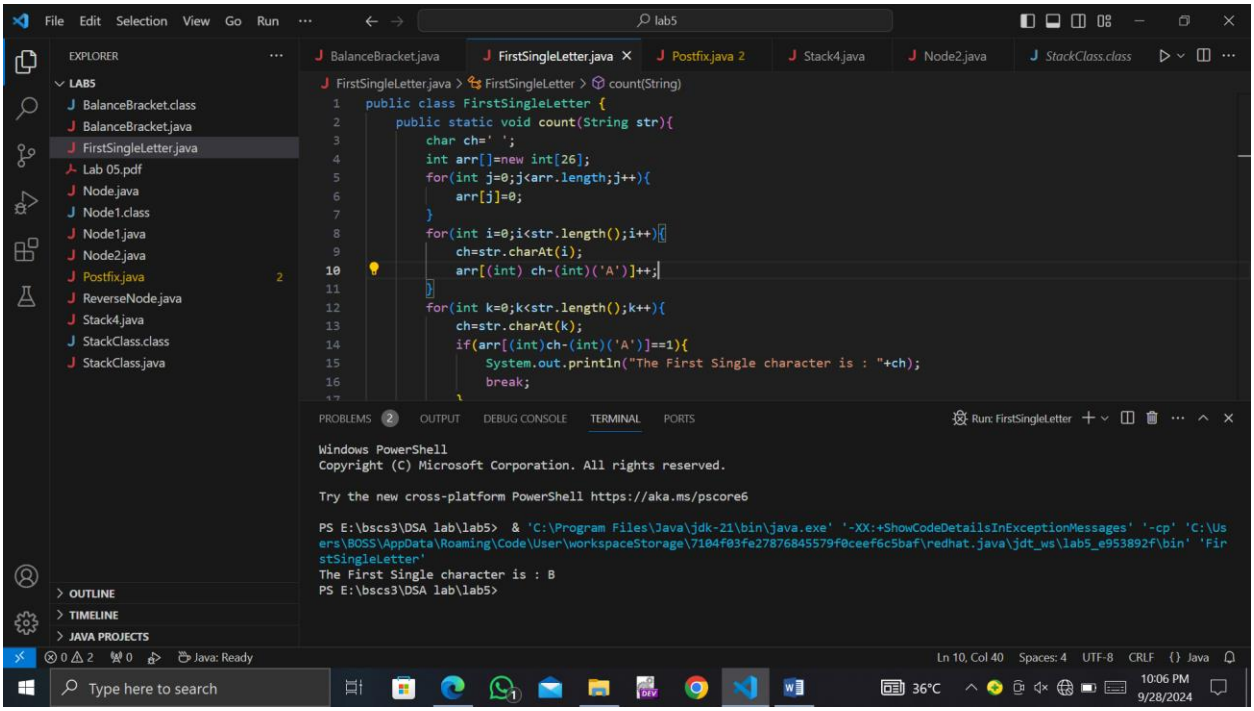

File Edit Selection View Go Run
lab5
EXPLORER
LABS
BalanceBracket.class
BalanceBracket.java
FirstSingleLetter.java
Lab 05.pdf
Node.java
Node1.class
Node1.java
Node2.java
Postfix.java 2
ReverseNode.java
Stack4.java
StackClass.class
StackClass.java
OUTLINE
TIMELINE
JAVA PROJECTS
BalanceBracket.java
FirstSingleLetter.java
Postfix.java 2
Stack4.java
Node2.java
StackClass.class
BalanceBracket.java > BalanceBracket > Balanced(String)
1 public class BalanceBracket{
2 public void Balanced(String str){
3 StackClass stack=new StackClass();
4 for(int i=0;i<str.length();i++){
5 if(str.charAt(i)=='('||str.charAt(i)=='{'||str.charAt(i)=='['){
6 stack.Push(str.charAt(i));
7 }
8 }
9 for(int i=0;i<str.length();i++){
10
11 if(str.charAt(i)==')'){
12 if(stack.Pop()!='('){
13 System.out.println(x:"Brackets are un balanced");
14 return;
15 }
16 }
17 else if(str.charAt(i)=='}'){
18 if(stack.Pop()!='{'){
19 System.out.println(x:"Brackets are un balanced");
20 return;
21 }
22 }
23 else if(str.charAt(i)==']'){
24 if(stack.Pop()!='['){
25 System.out.println(x:"Brackets are un balanced");
26 return;
27 }
28 }
29 }
30 if(!stack.isEmpty()){
Ln 10, Col 1 Spaces: 4 UTF-8 CRLF { } Java
Java: Ready
Type here to search
36°C
10:04 PM
9/28/2024


File Edit Selection View Go Run
lab5
EXPLORER
LABS
BalanceBracket.class
BalanceBracket.java
FirstSingleLetter.java
Lab 05.pdf
Node.java
Node1.class
Node1.java
Node2.java
Postfix.java 2
ReverseNode.java
Stack4.java
StackClass.class
StackClass.java
OUTLINE
TIMELINE
JAVA PROJECTS
BalanceBracket.java
FirstSingleLetter.java
Postfix.java 2
Stack4.java
Node2.java
StackClass.class
BalanceBracket.java > BalanceBracket > Balanced(String)
31 System.out.println(x:"Brackets are un balanced");
32 return;
33 }
34 System.out.println(x:"Brackets are balanced");
35
36 }
Run | Debug
37 public static void main(String[] args) {
38 String str="{{[]})}";
39 BalanceBracket b= new BalanceBracket();
40 b.Balanced(str);
41 }
42 }
43
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL PORTS
Run: BalanceBracket
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS E:\bscs3\DSA lab\lab5> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\BOSS\AppData\Roaming\Code\User\workspaceStorage\7104f03fe27876845579f0ceef6c5baf\redhat.java\jdt_ws\lab5_e953892f\bin' 'BalanceBracket'
Brackets are un balanced
PS E:\bscs3\DSA lab\lab5>
Ln 10, Col 1 Spaces: 4 UTF-8 CRLF { } Java
Java: Ready
Type here to search
36°C
10:04 PM
9/28/2024

Task #3

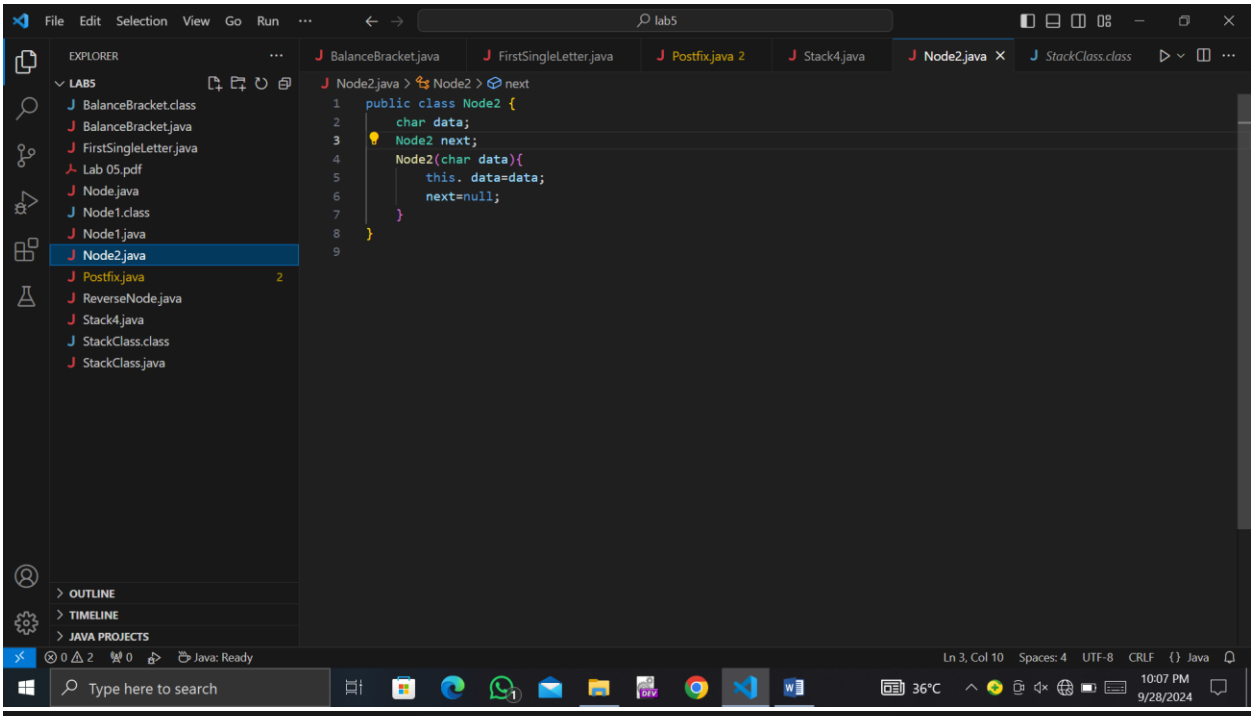
Solution:

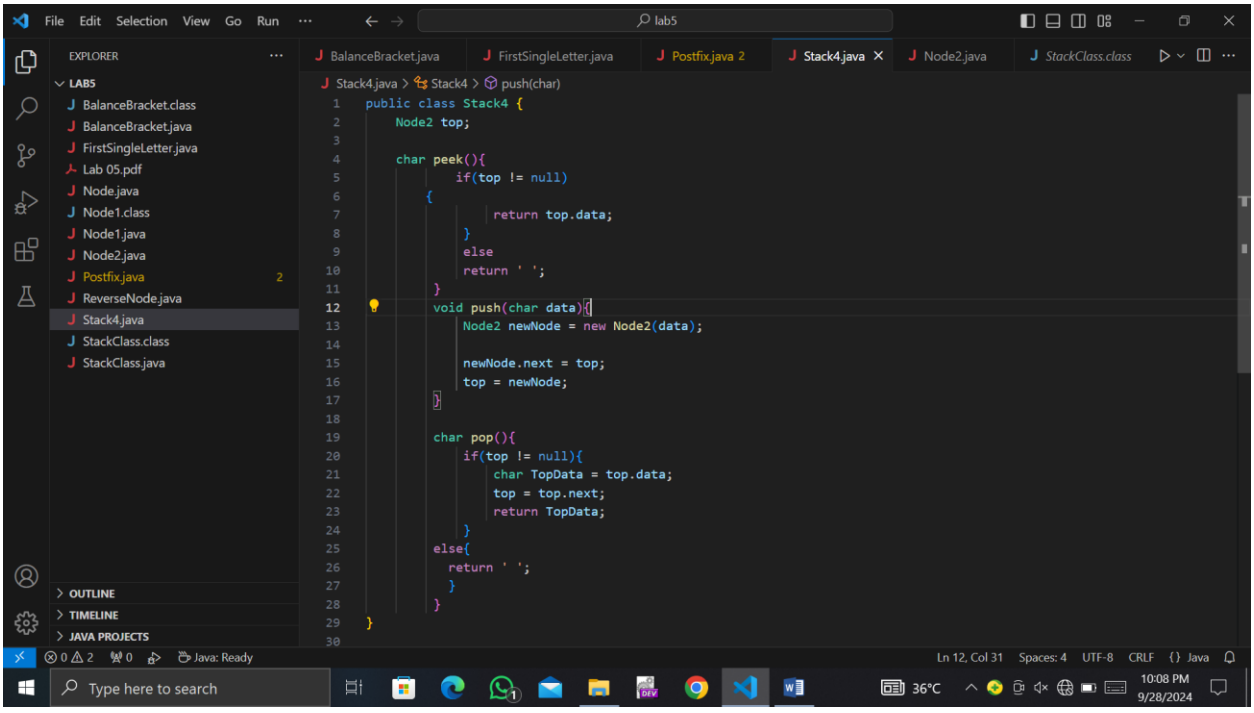


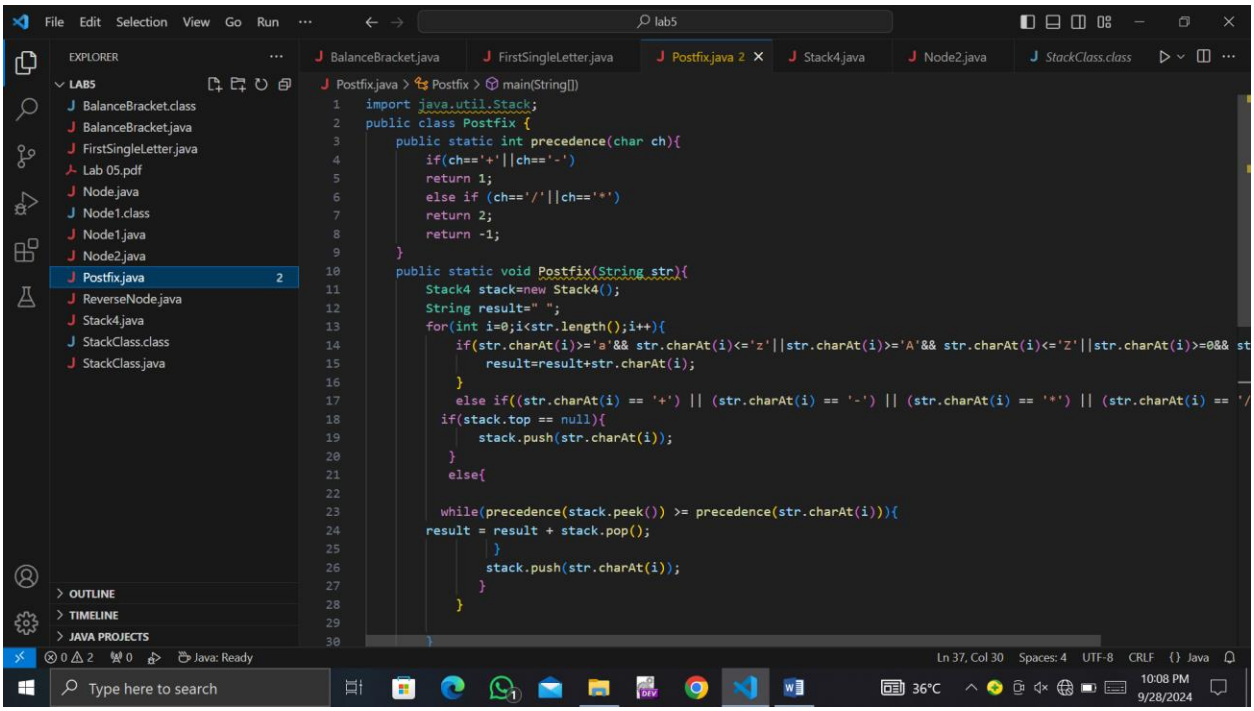


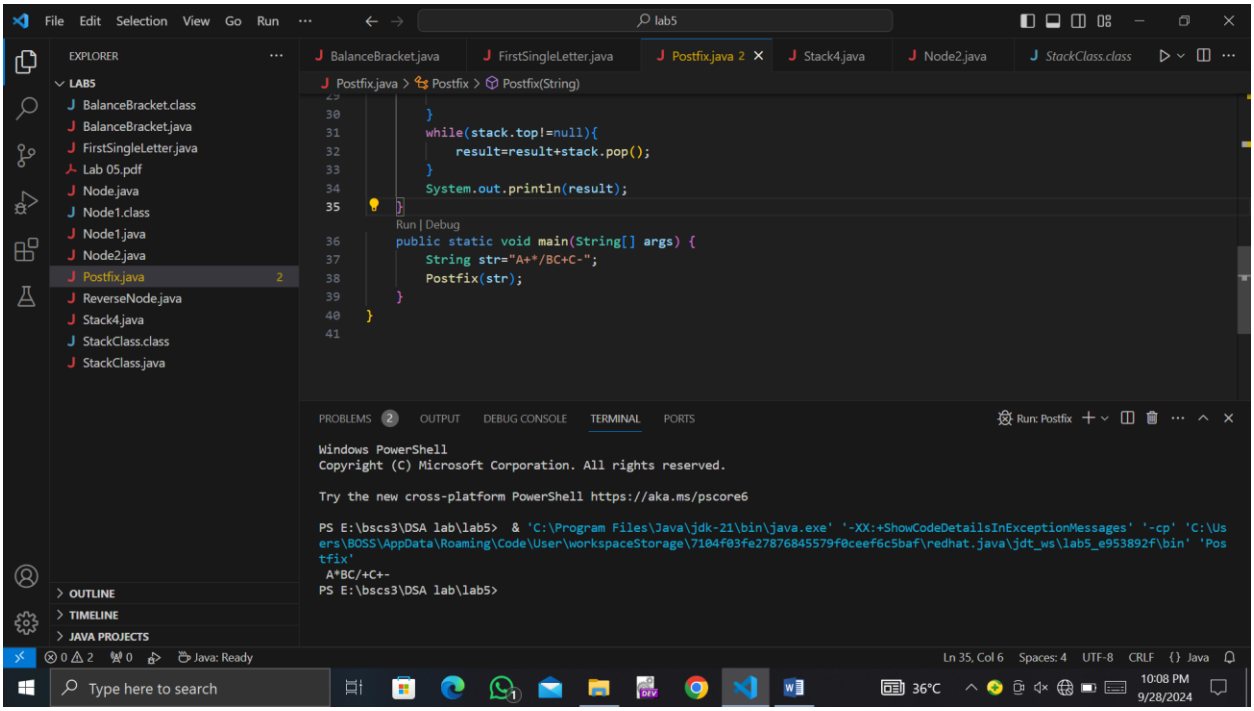
Task #4

Solution:






File Edit Selection View Go Run
lab5
EXPLORER
LABS
BalanceBracket.class
BalanceBracket.java
FirstSingleLetter.java
Lab 05.pdf
Node.java
Node1.class
Node1.java
Node2.java
Postfix.java 2
ReverseNode.java
Stack4.java
StackClass.class
StackClass.java
BalanceBracket.java
FirstSingleLetter.java
Postfix.java 2
Stack4.java
Node2.java
StackClass.class
Postfix.java > Postfix > main(String[])
import java.util.Stack;
public class Postfix {
public static int precedence(char ch){
if(ch=='+'||ch=='-')
return 1;
else if (ch=='/'||ch=='*')
return 2;
return -1;
}
public static void Postfix(String str){
Stack4 stack=new Stack4();
String result=" ";
for(int i=0;i<str.length();i++){
if(str.charAt(i)>='a'&& str.charAt(i)<='z'||str.charAt(i)>='A'&& str.charAt(i)<='Z'||str.charAt(i)>=0&& st
result=result+str.charAt(i);
}
else if((str.charAt(i) == '+') || (str.charAt(i) == '-') || (str.charAt(i) == '*') || (str.charAt(i) == '/
if(stack.top == null){
stack.push(str.charAt(i));
}
else{
while(precedence(stack.peek()) >= precedence(str.charAt(i))){
result = result + stack.pop();
}
stack.push(str.charAt(i));
}
}
OUTLINE
TIMELINE
JAVA PROJECTS
Java: Ready
Ln 37, Col 30 Spaces: 4 UTF-8 CRLF {} Java
Type here to search
36°C
10:08 PM
9/28/2024


File Edit Selection View Go Run
lab5
EXPLORER
LABS
BalanceBracket.class
BalanceBracket.java
FirstSingleLetter.java
Lab 05.pdf
Node.java
Node1.class
Node1.java
Node2.java
Postfix.java 2
ReverseNode.java
Stack4.java
StackClass.class
StackClass.java
BalanceBracket.java
FirstSingleLetter.java
Postfix.java 2
Stack4.java
Node2.java
StackClass.class
Postfix.java > Postfix > Postfix(String)
}
while(stack.top!=null){
result=result+stack.pop();
}
System.out.println(result);
}
Run | Debug
public static void main(String[] args) {
String str="A+*/BC+C-";
Postfix(str);
}
}
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL PORTS
Run: Postfix
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS E:\bscs3\DSA lab\lab5> & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\BOSS\AppData\Roaming\Code\User\workspaceStorage\7104f03fe27876845579f0ceef6c5baf\redhat.java\jdt_ws\lab5_e953892f\bin' 'Postfix'
A*BC/+C+-
PS E:\bscs3\DSA lab\lab5>
OUTLINE
TIMELINE
JAVA PROJECTS
Java: Ready
Ln 35, Col 6 Spaces: 4 UTF-8 CRLF {} Java
Type here to search
36°C
10:08 PM
9/28/2024

THE END