Vanna Moore
CMPS 390
Program 4

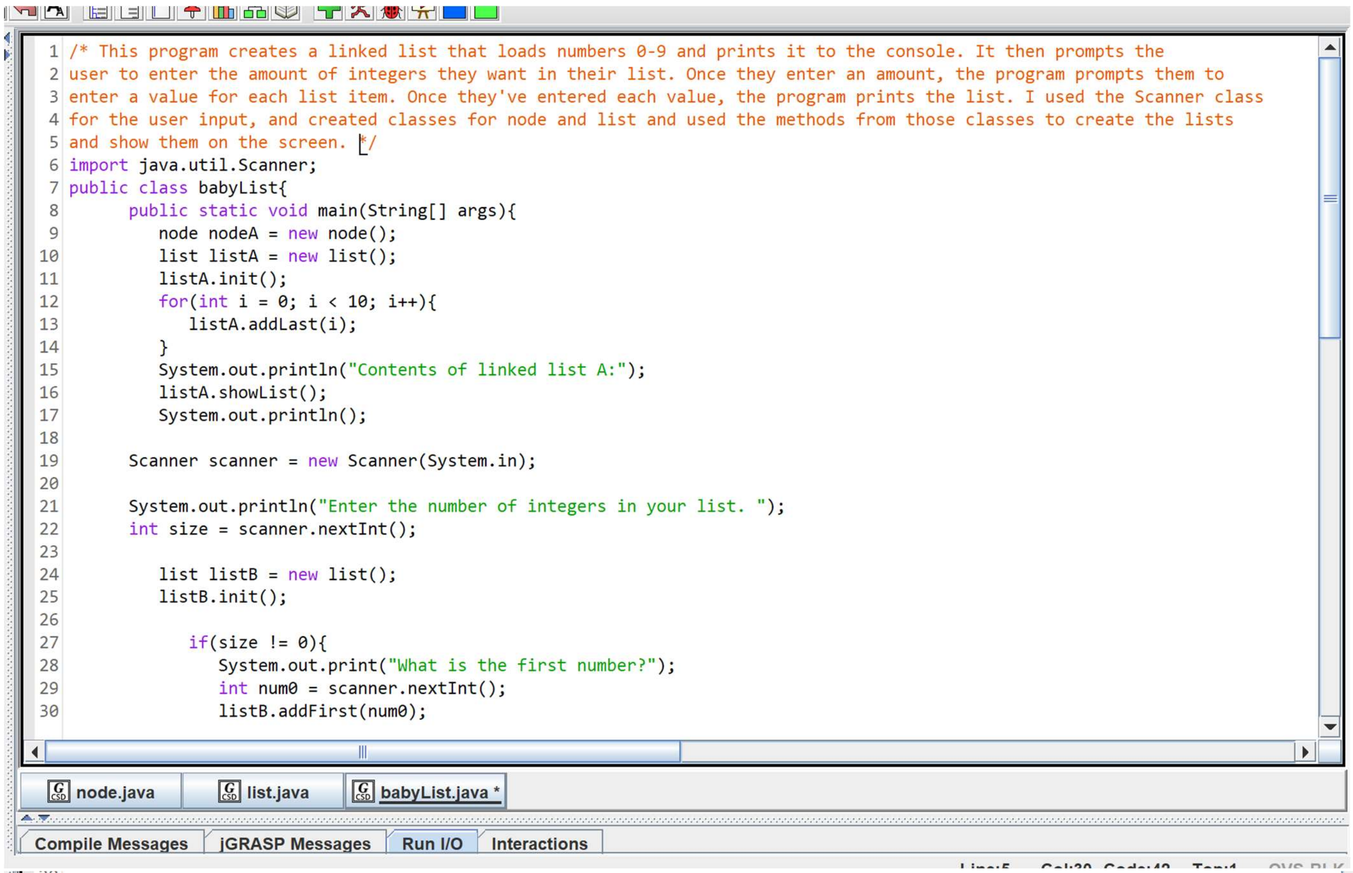
/* This program creates a linked list that loads numbers 0-9 and prints it to the console. It then prompts the user to enter the amount of integers they want in their list. Once they enter an amount, the program prompts them to enter a value for each list item. Once they've entered each value, the program prints the list. I used the Scanner class for the user input, and created classes for node and list and used the methods from those classes to create the lists and show them on the screen. */

<u>Main Method</u>

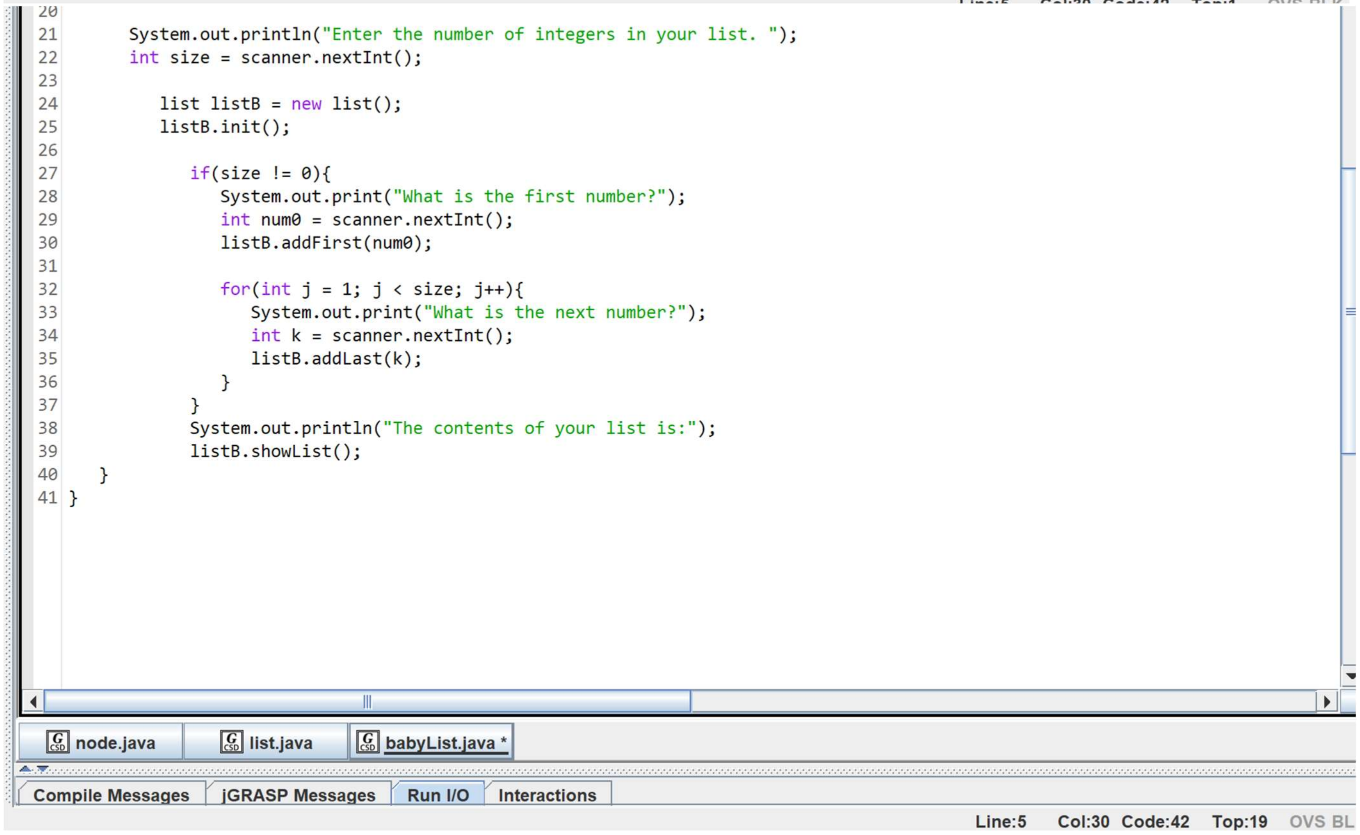
```
import java.util.Scanner;
public class babyList{
    public static void main(String[] args){
      node nodeA = new node();
      list listA = new list();
      listA.init();
      for(int i = 0; i < 10; i++){
        listA.addLast(i);
      }
      System.out.println("Contents of linked list A:");
      listA.showList();
      System.out.println();

    Scanner scanner = new Scanner(System.in);

    System.out.println("Enter the number of integers in your list. ");
    int size = scanner.nextInt();

      list listB = new list();
      listB.init();

        if(size != 0){
          System.out.print("What is the first number?");
          int num0 = scanner.nextInt();
          listB.addFirst(num0);

          for(int j = 1; j < size; j++){
            System.out.print("What is the next number?");
            int k = scanner.nextInt();
            listB.addLast(k);
          }
        }
        System.out.println("The contents of your list is:");
        listB.showList();
```

```
   }
}
```

Main Method Screenshots



```
/* This program creates a linked list that loads numbers 0-9 and prints it to the console. It then prompts the
user to enter the amount of integers they want in their list. Once they enter an amount, the program prompts them to
enter a value for each list item. Once they've entered each value, the program prints the list. I used the Scanner class
for the user input, and created classes for node and list and used the methods from those classes to create the lists
and show them on the screen. */
import java.util.Scanner;
public class babyList{
  public static void main(String[] args){
   node nodeA = new node();
   list listA = new list();
   listA.init();
   for(int i = 0; i < 10; i++){
    listA.addLast(i);
   }
   System.out.println("Contents of linked list A:");
   listA.showList();
   System.out.println();

  Scanner scanner = new Scanner(System.in);

  System.out.println("Enter the number of integers in your list. ");
  int size = scanner.nextInt();

   list listB = new list();
   listB.init();

    if(size != 0){
     System.out.print("What is the first number?");
     int num0 = scanner.nextInt();
     listB.addFirst(num0);
```

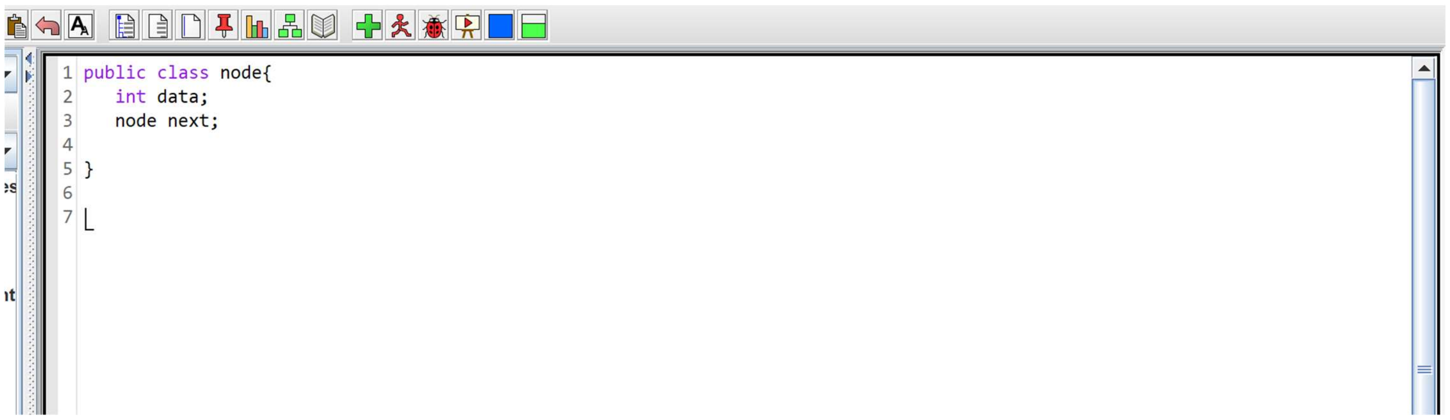


```
  System.out.println("Enter the number of integers in your list. ");
  int size = scanner.nextInt();

   list listB = new list();
   listB.init();

    if(size != 0){
     System.out.print("What is the first number?");
     int num0 = scanner.nextInt();
     listB.addFirst(num0);

     for(int j = 1; j < size; j++){
      System.out.print("What is the next number?");
      int k = scanner.nextInt();
      listB.addLast(k);
     }
    }
    System.out.println("The contents of your list is:");
    listB.showList();
 }
}
```

Node Class

```
public class node{
  int data;
  node next;

}
```

Node Class Screenshot



```
public class node{
   int data;
   node next;

}

```

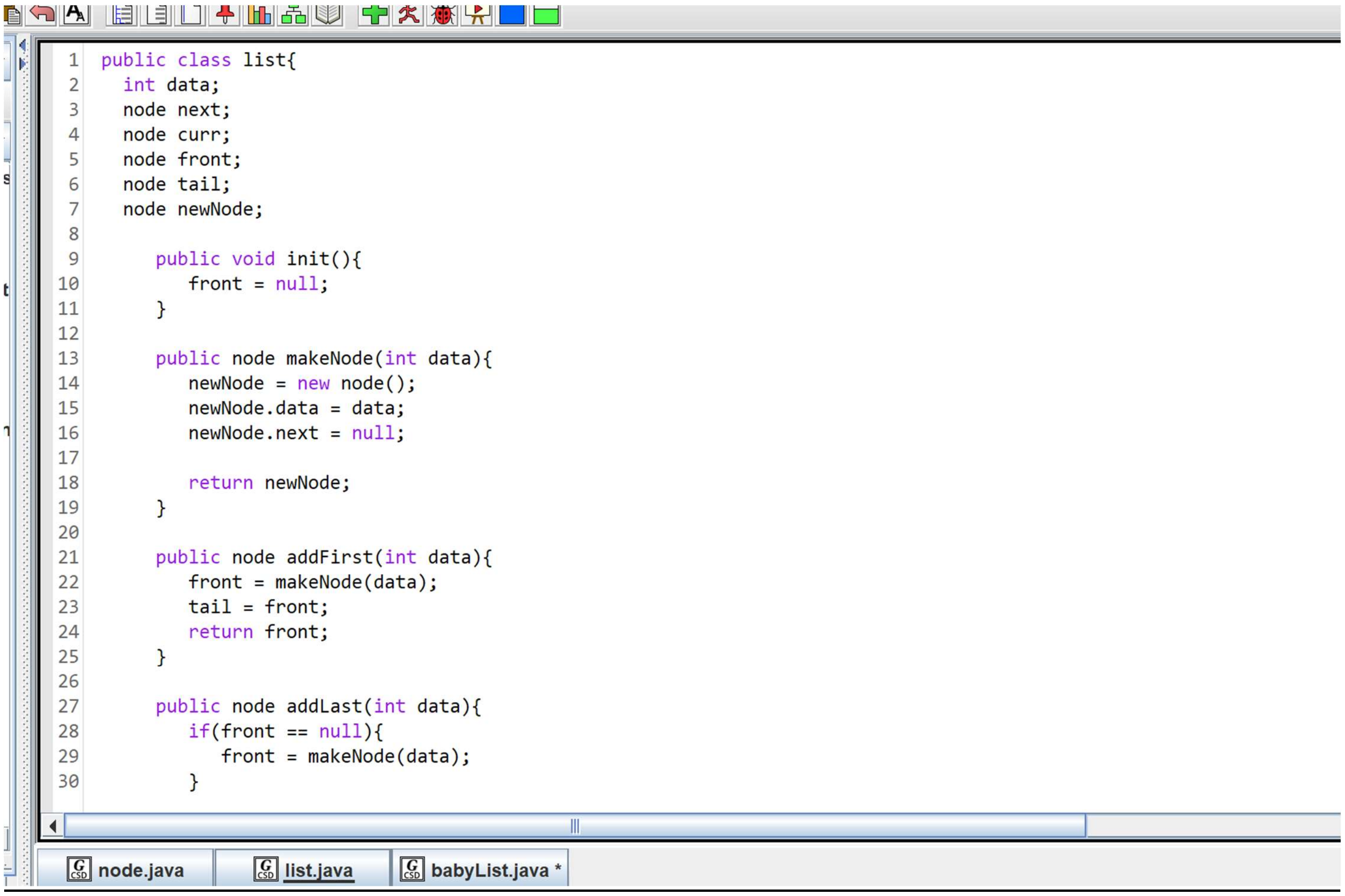
List Class Code

```
public class list{
  int data;
  node next;
  node curr;
  node front;
  node tail;
  node newNode;

    public void init(){
      front = null;
    }

    public node makeNode(int data){
      newNode = new node();
      newNode.data = data;
      newNode.next = null;

      return newNode;
    }

    public node addFirst(int data){
      front = makeNode(data);
      tail = front;
      return front;
```

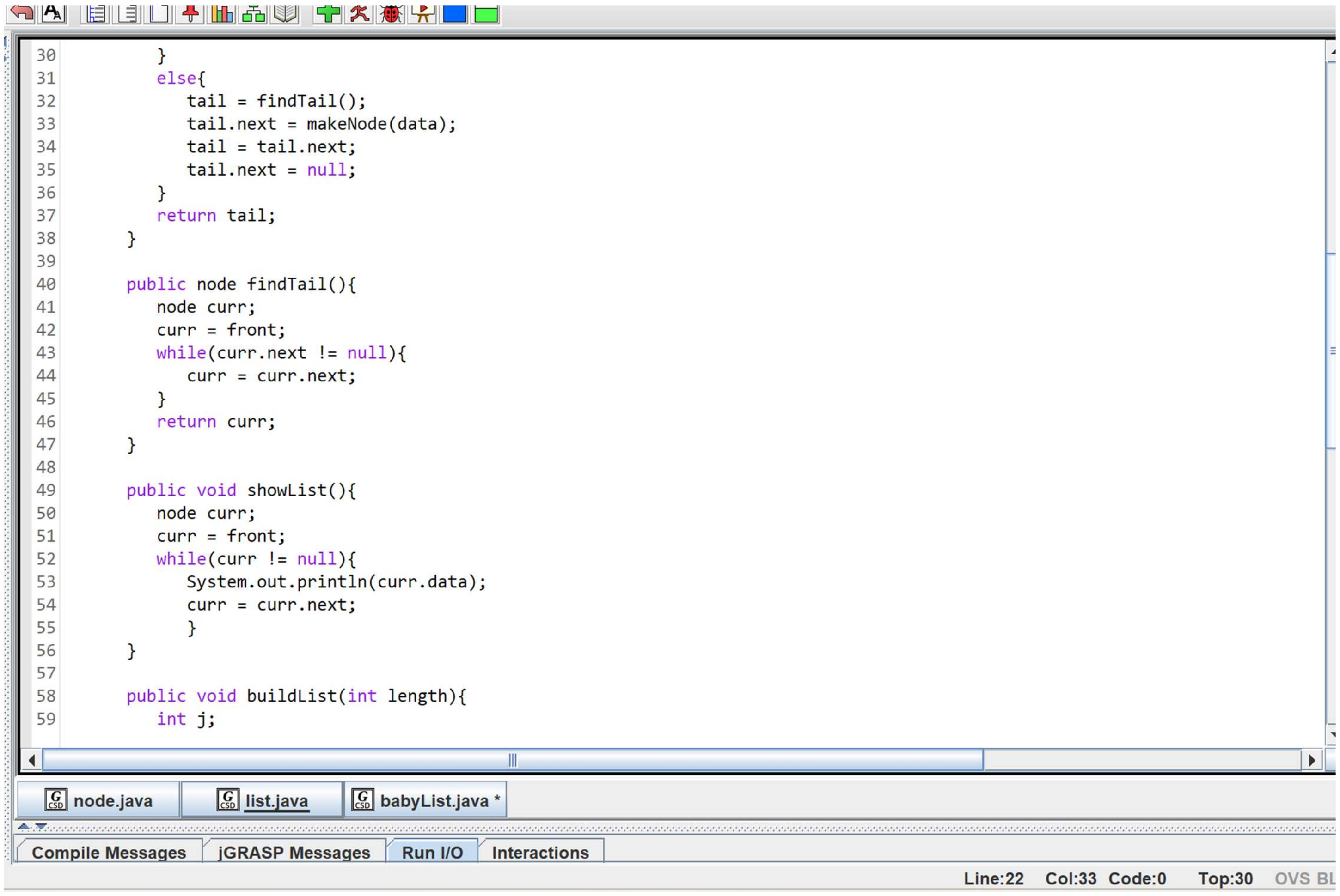
```
}

public node addLast(int data){
  if(front == null){
    front = makeNode(data);
  }
  else{
    tail = findTail();
    tail.next = makeNode(data);
    tail = tail.next;
    tail.next = null;
  }
  return tail;
}

public node findTail(){
  node curr;
  curr = front;
  while(curr.next != null){
    curr = curr.next;
  }
  return curr;
}

public void showList(){
  node curr;
  curr = front;
  while(curr != null){
    System.out.println(curr.data);
    curr = curr.next;
    }
}

public void buildList(int length){
  int j;
  init();

  for(j = 0; j < length; j++){
    if(j == 0){
      node front = makeNode(j);
    }
    else{
      tail = findTail();
      tail.next = makeNode(j);
    }
```

```
        }
      }
}
```

List Class Screenshots



```
public class list{
  int data;
  node next;
  node curr;
  node front;
  node tail;
  node newNode;

     public void init(){
        front = null;
     }

     public node makeNode(int data){
        newNode = new node();
        newNode.data = data;
        newNode.next = null;

        return newNode;
     }

     public node addFirst(int data){
        front = makeNode(data);
        tail = front;
        return front;
     }

     public node addLast(int data){
        if(front == null){
           front = makeNode(data);
        }
```

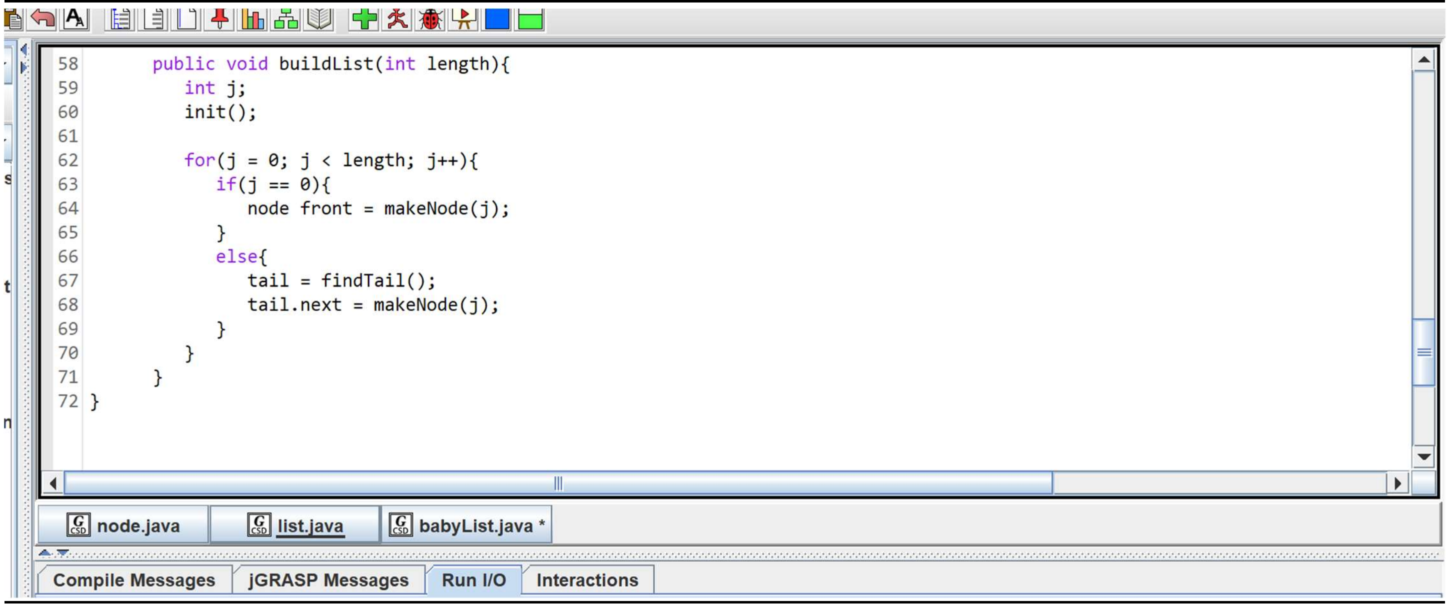


```
      }
      else{
         tail = findTail();
         tail.next = makeNode(data);
         tail = tail.next;
         tail.next = null;
      }
      return tail;
   }

   public node findTail(){
      node curr;
      curr = front;
      while(curr.next != null){
         curr = curr.next;
      }
      return curr;
   }

   public void showList(){
      node curr;
      curr = front;
      while(curr != null){
         System.out.println(curr.data);
         curr = curr.next;
         }
   }

   public void buildList(int length){
      int j;
```

node.java list.java babyList.java *

Compile Messages jGRASP Messages Run I/O Interactions

Line:22 Col:33 Code:0 Top:30 OVS BL

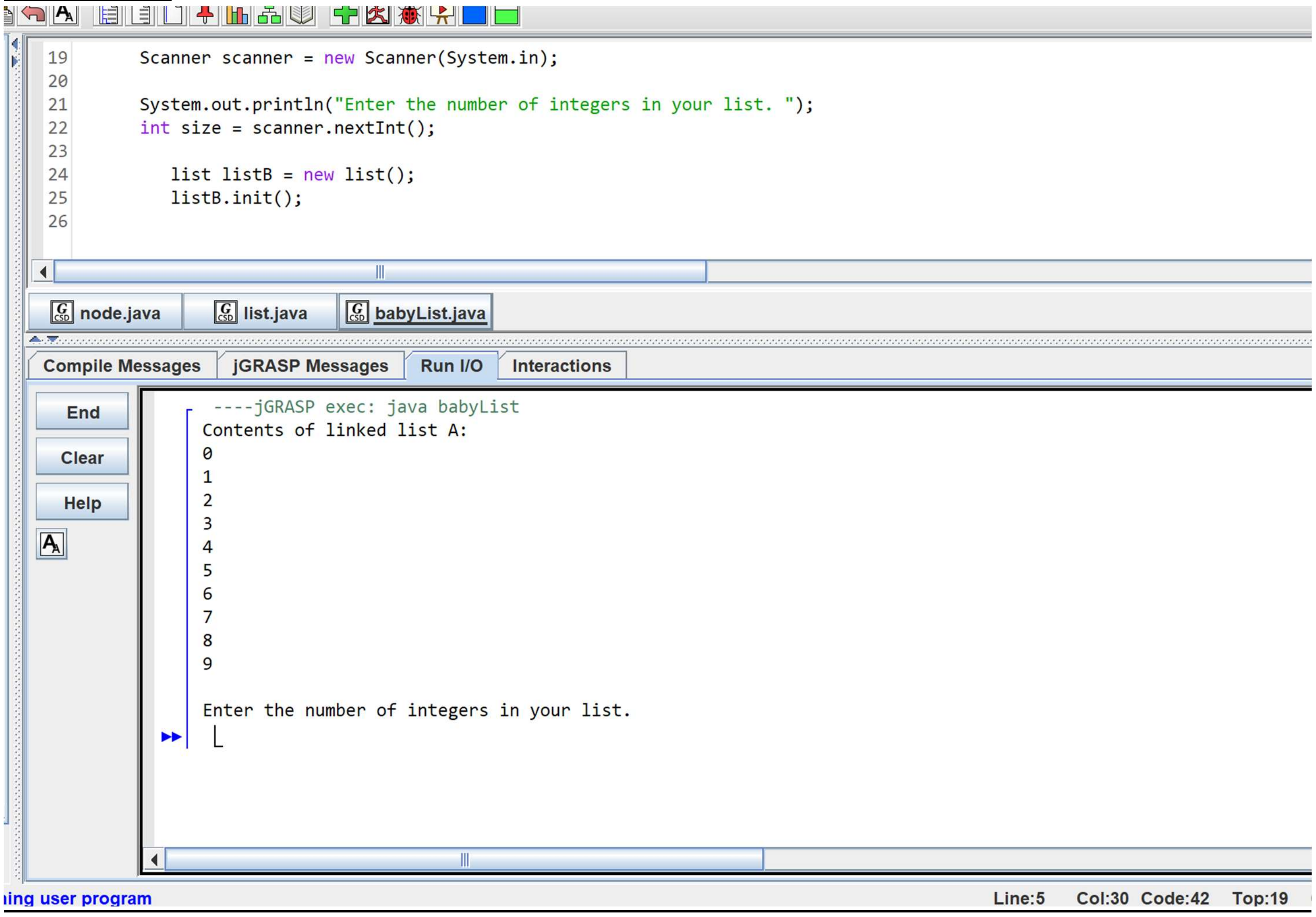


```
   public void buildList(int length){
      int j;
      init();

      for(j = 0; j < length; j++){
         if(j == 0){
            node front = makeNode(j);
         }
         else{
            tail = findTail();
            tail.next = makeNode(j);
         }
      }
   }
}
```

node.java list.java babyList.java *

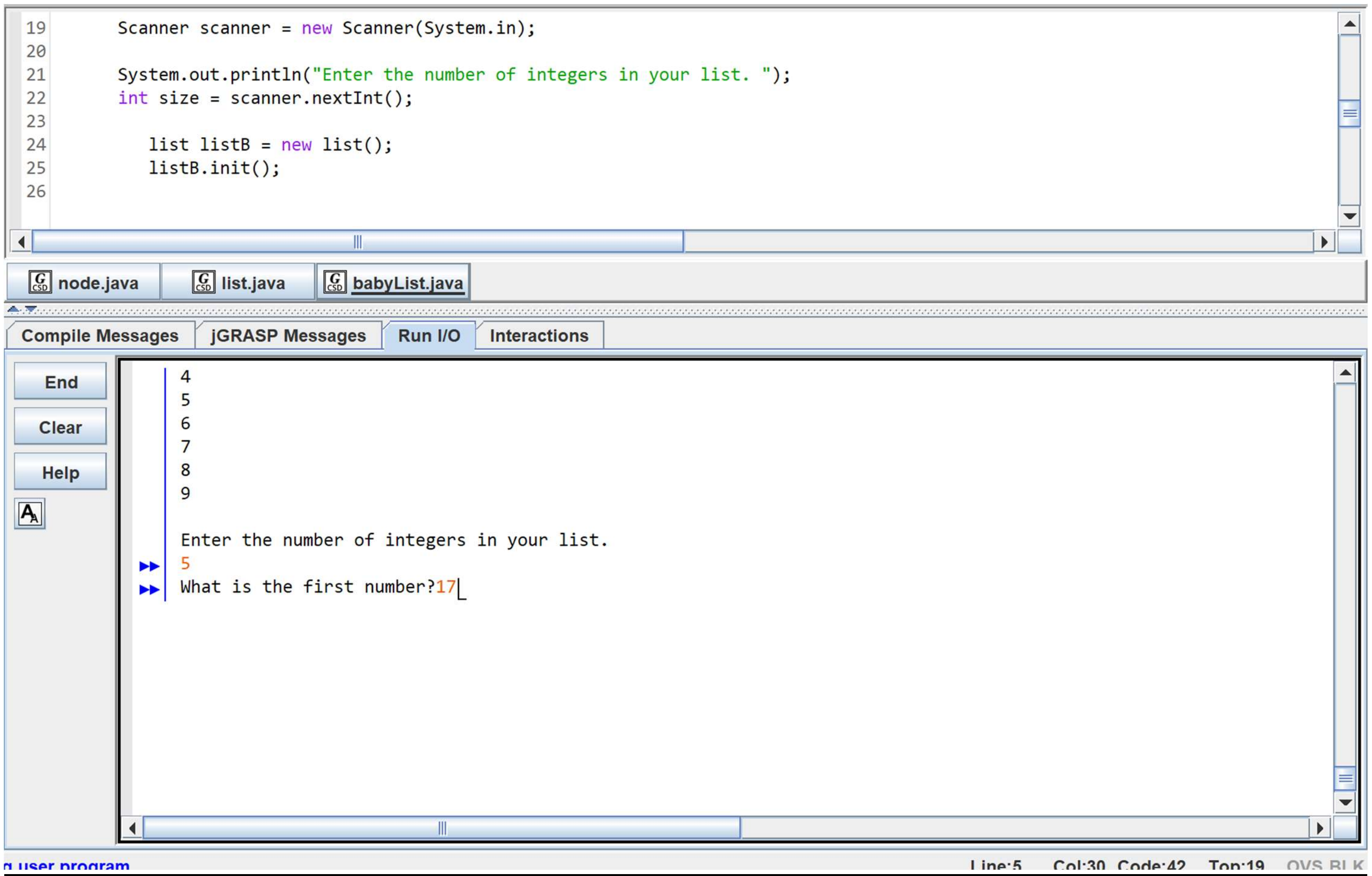
Compile Messages jGRASP Messages Run I/O Interactions

Code Running



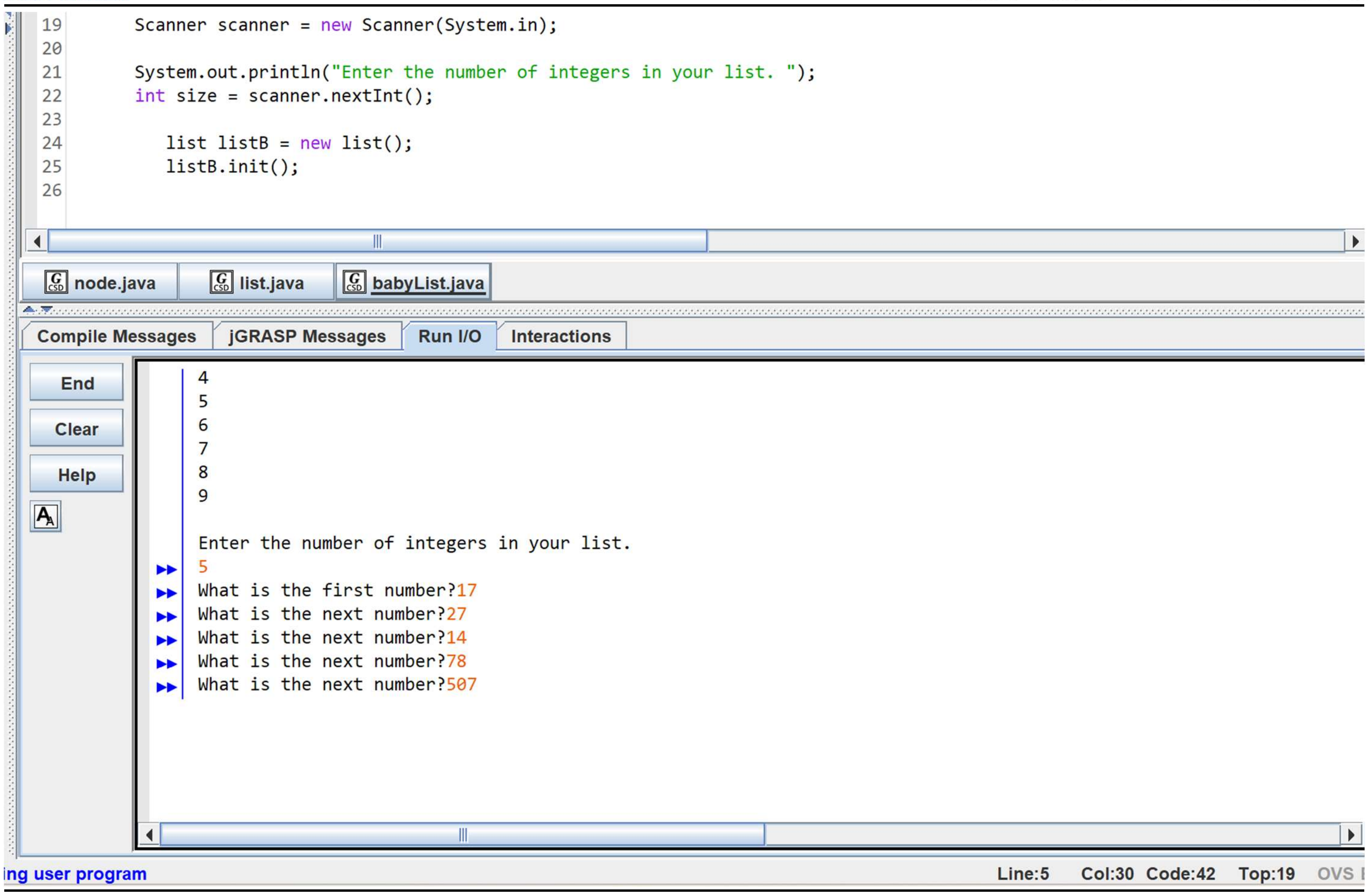
```
      Scanner scanner = new Scanner(System.in);

      System.out.println("Enter the number of integers in your list. ");
      int size = scanner.nextInt();

         list listB = new list();
         listB.init();

```

```
 ----jGRASP exec: java babyList
Contents of linked list A:
0
1
2
3
4
5
6
7
8
9

Enter the number of integers in your list.
```



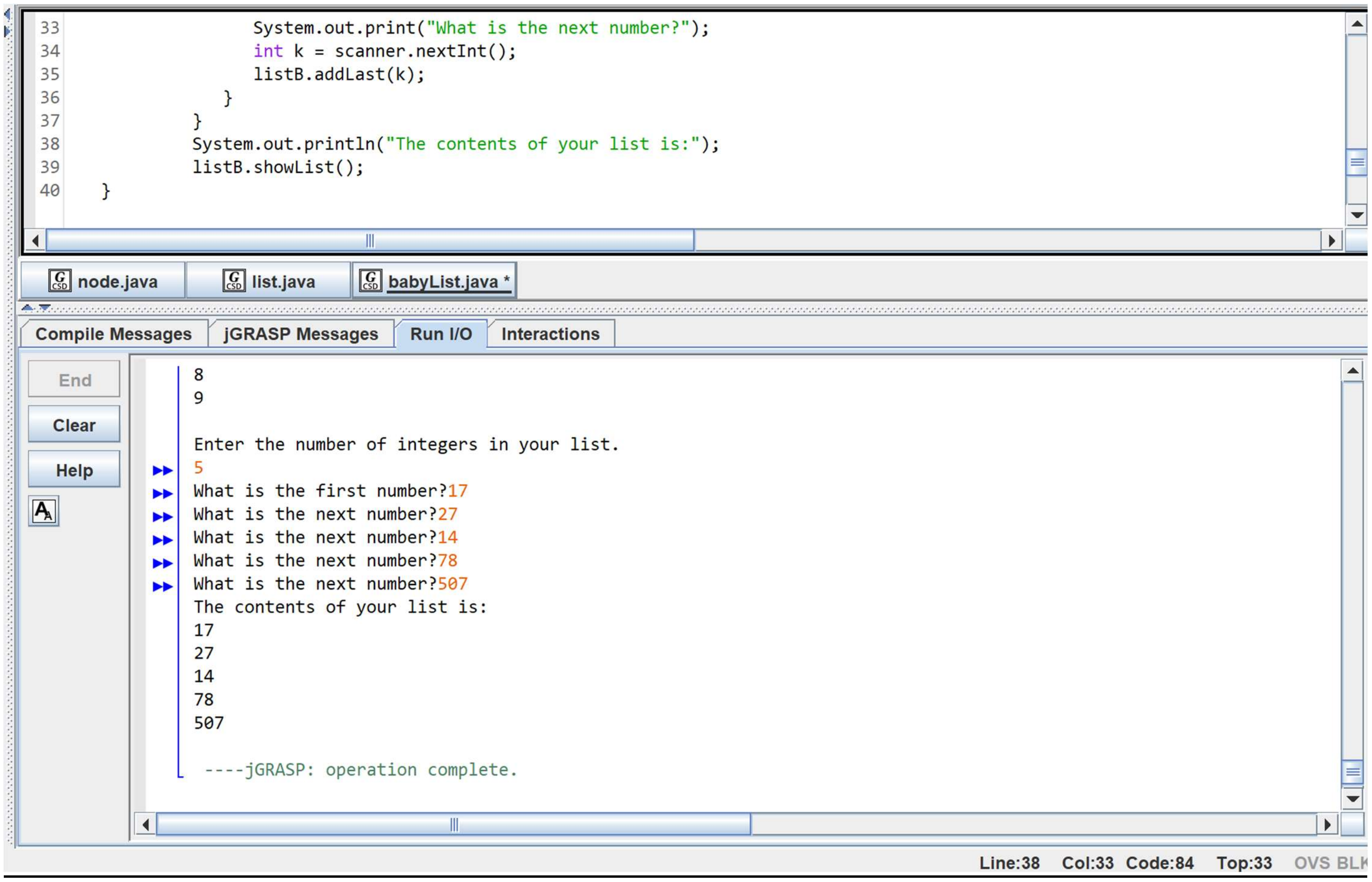
```
        Scanner scanner = new Scanner(System.in);

        System.out.println("Enter the number of integers in your list. ");
        int size = scanner.nextInt();

           list listB = new list();
           listB.init();

```

```
4
5
6
7
8
9

Enter the number of integers in your list.
5
What is the first number?17
```



```
        Scanner scanner = new Scanner(System.in);

        System.out.println("Enter the number of integers in your list. ");
        int size = scanner.nextInt();

           list listB = new list();
           listB.init();

```

```
4
5
6
7
8
9

Enter the number of integers in your list.
5
What is the first number?17
What is the next number?27
What is the next number?14
What is the next number?78
What is the next number?507
```



```
                System.out.print("What is the next number?");
                int k = scanner.nextInt();
                listB.addLast(k);
            }
        }
        System.out.println("The contents of your list is:");
        listB.showList();
}
```

```
8
9

Enter the number of integers in your list.
5
What is the first number?17
What is the next number?27
What is the next number?14
What is the next number?78
What is the next number?507
The contents of your list is:
17
27
14
78
507

 ----jGRASP: operation complete.
```