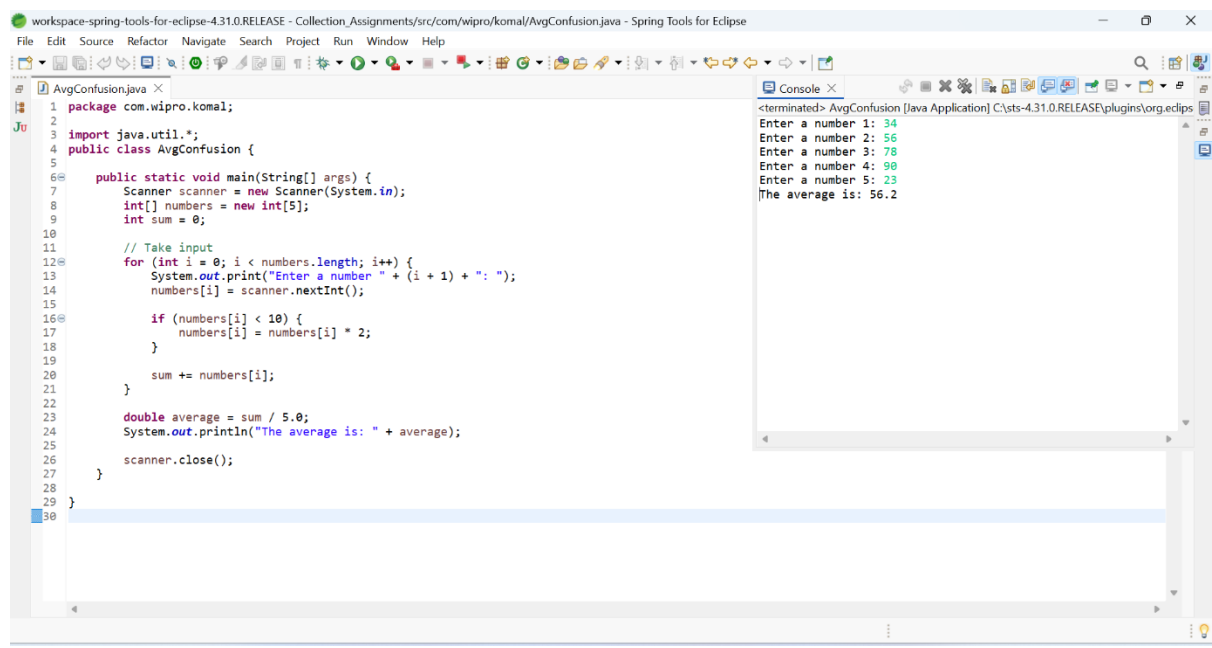


Name:- Komal Sudhakar Baviskar

Core Java And collections:

#Code And their outputs:

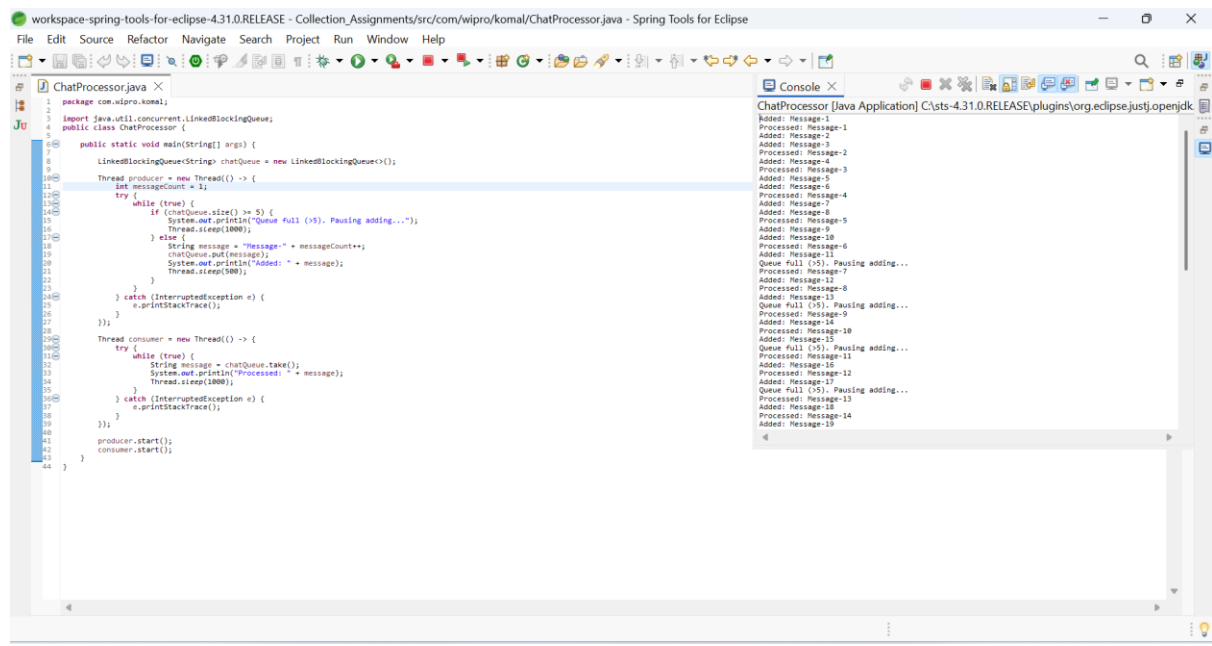


The screenshot shows the Eclipse IDE with the file `AvgConfusion.java` open. The code is as follows:

```
1 package com.wipro.komal;
2
3 import java.util.*;
4 public class AvgConfusion {
5
6     public static void main(String[] args) {
7         Scanner scanner = new Scanner(System.in);
8         int[] numbers = new int[5];
9         int sum = 0;
10
11         // Take input
12         for (int i = 0; i < numbers.length; i++) {
13             System.out.print("Enter a number " + (i + 1) + ": ");
14             numbers[i] = scanner.nextInt();
15
16             if (numbers[i] < 10) {
17                 numbers[i] = numbers[i] * 2;
18             }
19
20             sum += numbers[i];
21         }
22
23         double average = sum / 5.0;
24         System.out.println("The average is: " + average);
25
26         scanner.close();
27     }
28 }
29
30
```

The console output shows the execution of the program:

```
<terminated> AvgConfusion [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.eclipse
Enter a number 1: 34
Enter a number 2: 56
Enter a number 3: 78
Enter a number 4: 90
Enter a number 5: 23
The average is: 56.2
```



The screenshot shows the Eclipse IDE with the file `ChatProcessor.java` open. The code is as follows:

```
1 package com.wipro.komal;
2
3 import java.util.concurrent.*;
4 public class ChatProcessor {
5
6     public static void main(String[] args) {
7         LinkedBlockingQueue<String> chatQueue = new LinkedBlockingQueue<>();
8
9         Thread producer = new Thread(() -> {
10             int messageCount = 1;
11             try {
12                 while (true) {
13                     if (chatQueue.size() >= 5) {
14                         System.out.println("Queue full (%s). Pausing adding...",
15                             Thread.sleep(1000));
16                     } else {
17                         String message = "Message-" + messageCount++;
18                         chatQueue.put(message);
19                         System.out.println("Added: " + message);
20                         Thread.sleep(500);
21                     }
22                 }
23             } catch (InterruptedException e) {
24                 e.printStackTrace();
25             }
26         });
27
28         Thread consumer = new Thread(() -> {
29             while (true) {
30                 String message = chatQueue.take();
31                 System.out.println("Processed: " + message);
32                 Thread.sleep(1000);
33             }
34         });
35
36         producer.start();
37         consumer.start();
38     }
39 }
40
```

The console output shows the execution of the program:

```
ChatProcessor [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.eclipse.justi.openjdk
Added: Message-1
Processed: Message-1
Added: Message-2
Processed: Message-2
Added: Message-3
Processed: Message-3
Added: Message-4
Processed: Message-4
Added: Message-5
Processed: Message-5
Added: Message-6
Processed: Message-6
Added: Message-7
Processed: Message-7
Queue full (%s). Pausing adding...
Added: Message-8
Processed: Message-8
Queue full (%s). Pausing adding...
Added: Message-9
Processed: Message-9
Added: Message-10
Processed: Message-10
Queue full (%s). Pausing adding...
Added: Message-11
Processed: Message-11
Queue full (%s). Pausing adding...
Added: Message-12
Processed: Message-12
Queue full (%s). Pausing adding...
Added: Message-13
Processed: Message-13
Queue full (%s). Pausing adding...
Added: Message-14
Processed: Message-14
Added: Message-15
Processed: Message-15
Added: Message-16
Processed: Message-16
Added: Message-17
Processed: Message-17
Queue full (%s). Pausing adding...
Added: Message-18
Processed: Message-18
Added: Message-19
Processed: Message-19
```

```
workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/EmergencyPatientTracker.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

EmergencyPatientTracker.java
package com.wipro.komal;
import java.util.PriorityQueue;
import java.util.Comparator;

class Patient {
    int severity;
    long arrivalTime;
    String name;

    public Patient(String name, int severity, long arrivalTime) {
        this.name = name;
        this.severity = severity;
        this.arrivalTime = arrivalTime;
    }

    @Override
    public String toString() {
        return name + " (Severity: " + severity + ")";
    }
}

public class EmergencyPatientTracker {

    public static void main(String[] args) throws InterruptedException {
        // TODO Auto-generated method stub
        PriorityQueue<Patient> patientQueue = new PriorityQueue<>(5, new Comparator<Patient>() {
            @Override
            public int compare(Patient p1, Patient p2) {
                if (p1.severity != p2.severity) {
                    return Integer.compare(p1.severity, p2.severity); // lower severity = higher priority
                } else {
                    return Long.compare(p1.arrivalTime, p2.arrivalTime); // earlier = higher priority
                }
            }
        });

        // Add patients
        addPatient(patientQueue, new Patient("Alice", 3, System.currentTimeMillis()));
        Thread.sleep(100); // simulate time gap
        addPatient(patientQueue, new Patient("Bob", 2, System.currentTimeMillis()));
        Thread.sleep(100);
        addPatient(patientQueue, new Patient("Charlie", 2, System.currentTimeMillis()));
        Thread.sleep(100);
        addPatient(patientQueue, new Patient("Diana", 1, System.currentTimeMillis()));
        Thread.sleep(100);
        addPatient(patientQueue, new Patient("Ethan", 4, System.currentTimeMillis()));

        // Try to add when full
        addPatient(patientQueue, new Patient("Frank", 1, System.currentTimeMillis())); // Should be rejected

        System.out.println("U... Treating patients ---");
        while (!patientQueue.isEmpty()) {
            Patient p = patientQueue.poll();
            System.out.println("Treated: " + p);
        }
    }

    private static void addPatient(PriorityQueue<Patient> queue, Patient patient) {
        if (queue.size() < 5) {
            queue.add(patient);
        } else {
            System.out.println("Queue full. Cannot add: " + patient);
        }
    }
}

Console
<terminated> EmergencyPatientTracker [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.eclipse.justi.openjdk.hotspot...
Added: Alice (Severity: 3)
Added: Bob (Severity: 2)
Added: Charlie (Severity: 2)
Added: Diana (Severity: 1)
Added: Ethan (Severity: 4)
Queue full. Cannot add: Frank (Severity: 1)

--- Treating patients ---
Treated: Diana (Severity: 1)
Treated: Bob (Severity: 2)
Treated: Charlie (Severity: 2)
Treated: Alice (Severity: 3)
Treated: Ethan (Severity: 4)
```

```
workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/GroceryLineShuffle.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

GroceryLineShuffle.java
package com.wipro.komal;
import java.util.ArrayDeque;

public class GroceryLineShuffle {
    public static void main(String[] args) {
        ArrayDeque<String> line = new ArrayDeque<>();
        addCustomer(line, "Ravi");
        addCustomer(line, "Meena");
        addCustomer(line, "John");
        addCustomer(line, "Alex");

        System.out.println("Grocery Queue: " + line);
    }

    static void addCustomer(ArrayDeque<String> line, String name) {
        if (name.length() % 2 == 0) {
            line.addFirst(name);
        } else {
            line.addLast(name);
        }
    }
}

Console
<terminated> GroceryLineShuffle [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.e...
Grocery Queue: [Alex, John, Ravi, Meena]
```

```
workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/LastThreeSearches.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

LastThreeSearches.java
1 package com.wipro.komal;
2
3 import java.util.*;
4 import java.util.ArrayDeque;
5
6 public class LastThreeSearches {
7
8     public static void main(String[] args) {
9         Scanner sc = new Scanner(System.in);
10        ArrayDeque<String> searchBox = new ArrayDeque<>();
11
12        for (int i = 0; i < 4; i++) {
13            System.out.print("Enter a search term: ");
14            String term = sc.nextLine();
15
16            if (searchBox.size() == 3) {
17                searchBox.removeFirst();
18            }
19
20            searchBox.addLast(term);
21        }
22
23        System.out.println("Last 3 searches:");
24        for (String term : searchBox) {
25            System.out.println(term);
26        }
27    }
28 }

Console
<terminated> LastThreeSearches [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.ec
Enter a search term: komal
Enter a search term: Aachal
Enter a search term: shubham
Enter a search term: pooja
Last 3 searches:
Aachal
shubham
pooja
```

```
workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/LimitedChat.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

LimitedChat.java
1 package com.wipro.komal;
2
3 import java.util.*;
4 import java.util.ArrayDeque;
5 import java.util.Deque;
6
7 public class LimitedChat {
8
9
10    public static void main(String[] args) {
11        // TODO Auto-generated method stub
12        Scanner scanner = new Scanner(System.in);
13        Deque<String> chatHistory = new ArrayDeque<>();
14
15        for (int i = 0; i < 6; i++) {
16            System.out.print("Enter message " + (i + 1) + ": ");
17            String message = scanner.nextLine();
18
19            // If already 4 messages, remove oldest
20            if (chatHistory.size() == 4) {
21                chatHistory.removeFirst();
22            }
23
24            chatHistory.addLast(message);
25
26            System.out.println("Current chat history: " + chatHistory);
27        }
28
29        scanner.close();
30    }
31
32
33 }

Console
<terminated> LimitedChat [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win3
Enter message 1: Hello
Current chat history: [Hello]
Enter message 2: How Are you
Current chat history: [Hello, How Are you]
Enter message 3: What are doing
Current chat history: [Hello, How Are you, What are doing]
Enter message 4: everything is fine
Current chat history: [Hello, How Are you, What are doing, everything is fine]
Enter message 5: okay
Current chat history: [How Are you, What are doing, everything is fine, okay]
Enter message 6: no worries
Current chat history: [What are doing, everything is fine, okay, no worries]
```

```
workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/PrintManager.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

PrintManager.java
1 package com.wipro.komal;
2
3 import java.util.concurrent.ArrayBlockingQueue;
4
5 public class PrintManager {
6     public static void main(String[] args) {
7
8         ArrayBlockingQueue<String> printQueue = new ArrayBlockingQueue<>
9
10         addJob(printQueue, "Job1");
11         addJob(printQueue, "Job2");
12         addJob(printQueue, "Job3");
13
14         addJob(printQueue, "Job4");
15
16         while (!printQueue.isEmpty()) {
17             String job = printQueue.poll();
18             System.out.println("Printing: " + job);
19         }
20     }
21
22     static void addJob(ArrayBlockingQueue<String> queue, String job) {
23         if (!queue.offer(job)) {
24             System.out.println("Queue full. Skipping: " + job);
25         } else {
26             System.out.println("Added: " + job);
27         }
28     }
29 }

Console
<terminated> PrintManager [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win
Added: Job1
Added: Job2
Added: Job3
Queue full. Skipping: Job4
Printing: Job1
Printing: Job2
Printing: Job3
```

```
workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/RecentAppMemory.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

RecentAppMemory.java
1 package com.wipro.komal;
2
3 import java.util.*;
4 import java.util.LinkedList;
5
6 public class RecentAppMemory {
7
8     public static void main(String[] args) {
9         Scanner scanner = new Scanner(System.in);
10         LinkedList<String> recentApps = new LinkedList<>();
11
12         for (int i = 0; i < 5; i++) {
13             System.out.print("Open app " + (i + 1) + ": ");
14             String app = scanner.nextLine();
15
16             if (recentApps.contains(app)) {
17                 recentApps.remove(app);
18             }
19
20             recentApps.addFirst(app);
21
22             System.out.println("Current Recent Apps: " + recentApps);
23         }
24
25         System.out.println("\nFinal Recent Apps: " + recentApps);
26
27         scanner.close();
28     }
29 }
30
31 }

Console
<terminated> RecentAppMemory [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.f
Open app 1: Amazon
Current Recent Apps: [Amazon]
Open app 2: swiggy
Current Recent Apps: [swiggy, Amazon]
Open app 3: flipkart
Current Recent Apps: [flipkart, swiggy, Amazon]
Open app 4: Netflix
Current Recent Apps: [Netflix, flipkart, swiggy, Amazon]
Open app 5: tinder
Current Recent Apps: [tinder, Netflix, flipkart, swiggy, Amazon]
Final Recent Apps: [tinder, Netflix, flipkart, swiggy, Amazon]
```

```
workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/ReversedTaskQueue.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

ReversedTaskQueue.java
1 package com.wipro.komal;
2
3 import java.util.*;
4 import java.util.LinkedList;
5 import java.util.ListIterator;
6
7 public class ReversedTaskQueue {
8
9     public static void main(String[] args) {
10         Scanner scanner = new Scanner(System.in);
11         LinkedList<String> tasks = new LinkedList<>();
12
13         // Take 4 task inputs
14         for (int i = 0; i < 4; i++) {
15             System.out.print("Enter task " + (i + 1) + ": ");
16             String task = scanner.nextLine();
17
18             if (task.endsWith("!")) {
19                 tasks.addFirst(task);
20             } else {
21                 tasks.addLast(task);
22             }
23         }
24
25         // Print tasks in reverse
26         System.out.println("\nTasks in reverse order:");
27         ListIterator<String> iterator = tasks.listIterator(tasks.size())
28         while (iterator.hasPrevious()) {
29             System.out.println(iterator.previous());
30         }
31
32         scanner.close();
33     }
34 }
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workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/StageBasedTaskRunner.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

StageBasedTaskRunner.java
1 package com.wipro.komal;
2
3 import java.util.concurrent.*;
4
5 class Task {
6     int id;
7     String desc;
8
9     Task(int id, String desc) {
10         this.id = id;
11         this.desc = desc;
12     }
13
14     public String toString() {
15         return "Task#" + id + " - " + desc;
16     }
17 }
18
19 public class StageBasedTaskRunner {
20     public static void main(String[] args) {
21         LinkedBlockingQueue<Task> stage1 = new LinkedBlockingQueue<>();
22         LinkedBlockingQueue<Task> stage2 = new LinkedBlockingQueue<>();
23
24         stage1.add(new Task(1, "Load"));
25         stage1.add(new Task(2, "Parse"));
26         stage1.add(new Task(3, "Validate"));
27         stage1.add(new Task(4, "Save"));
28
29         while (!stage1.isEmpty()) {
30             Task task = stage1.poll();
31             System.out.println("Stage 1: " + task);
32             if (task.id % 2 == 0) {
33                 stage2.add(task);
34             }
35         }
36
37         System.out.println("\nStage 2 Tasks:");
38         for (Task t : stage2) {
39             System.out.println("Stage 2: " + t);
40         }
41     }
42 }

Console
<terminated> StageBasedTaskRunner [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64.jre\bin\java.exe
Stage 1: Task#1 - Load
Stage 1: Task#2 - Parse
Stage 1: Task#3 - Validate
Stage 1: Task#4 - Save

Stage 2 Tasks:
Stage 2: Task#2 - Parse
Stage 2: Task#4 - Save

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```
workspace-spring-tools-for-eclipse-4.31.0.RELEASE - Collection_Assignments/src/com/wipro/komal/UndoStack.java - Spring Tools for Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help

UndoStack.java
1 package com.wipro.komal;
2
3 import java.util.Scanner;
4 import java.util.Stack;
5
6 public class UndoStack {
7
8     public static void main(String[] args) {
9         Scanner sc = new Scanner(System.in);
10         Stack<String> commandStack = new Stack<>();
11
12         System.out.println("Enter 3 commands:");
13         for (int i = 0; i < 3; i++) {
14             commandStack.push(sc.nextLine());
15         }
16
17         // Undo (pop last command)
18         String undoneCommand = commandStack.pop();
19         System.out.println("Undone command: " + undoneCommand);
20
21         // Redo (push it back)
22         commandStack.push(undoneCommand);
23
24         System.out.println("Commands in stack now:");
25         for (int i = commandStack.size() - 1; i >= 0; i--) {
26             System.out.println(commandStack.get(i));
27         }
28     }
29 }

Console
<terminated> UndoStack [Java Application] C:\sts-4.31.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64.jre\bin\java.exe
Enter 3 commands:
create
update
delete
Undone command: delete
Commands in stack now:
delete
update
create
```