AIM:

To demonstrate intermediate stream operations such as map(), filter(), sorted(), and distinct() using Java Streams API.

ALGORITHM:

1. Create a list of integers.
2. Convert the list into a stream.
3. Use filter() to select even numbers.
4. Use map() to square the filtered numbers.
5. Use distinct() to remove duplicates.
6. Use sorted() to sort the result.
7. Display the output.

PROCEDURE:

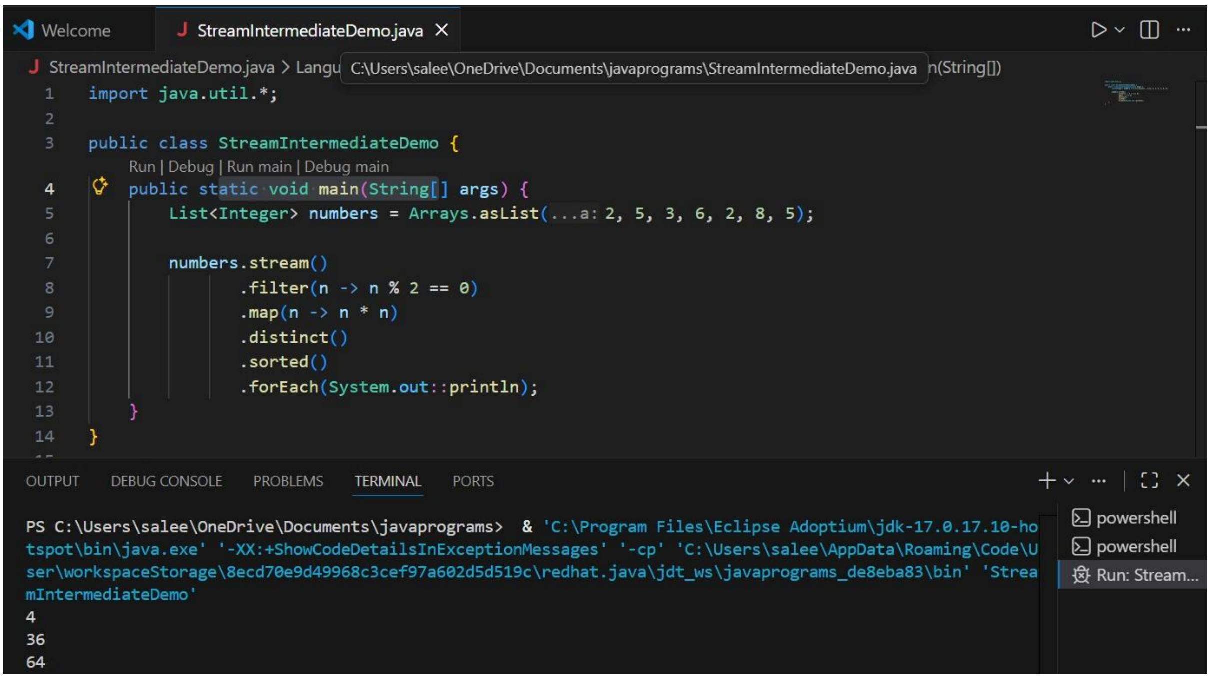
1. Import required packages.
2. Create a list using Arrays.asList().
3. Apply stream intermediate operations.
4. Print the processed stream using forEach().

PROGRAM:

```
import java.util.*;
import java.util.stream.*;


public class StreamIntermediateDemo {
    public static void main(String[] args) {
        List<Integer> numbers = Arrays.asList(2, 5, 3, 6, 2, 8, 5);


        numbers.stream()
               .filter(n -> n % 2 == 0)
```

```
                .map(n -> n * n)
                .distinct()
                .sorted()
                .forEach(System.out::println);
    }
}
```

OUTPUT:



Welcome
StreamIntermediateDemo.java
StreamIntermediateDemo.java > Langu C:\Users\salee\OneDrive\Documents\javaprograms\StreamIntermediateDemo.java n(String[])
Run | Debug | Run main | Debug main
OUTPUT DEBUG CONSOLE PROBLEMS TERMINAL PORTS
powershell
powershell
Run: Stream...

```
import java.util.*;

public class StreamIntermediateDemo {
    public static void main(String[] args) {
        List<Integer> numbers = Arrays.asList(...a: 2, 5, 3, 6, 2, 8, 5);

        numbers.stream()
                .filter(n -> n % 2 == 0)
                .map(n -> n * n)
                .distinct()
                .sorted()
                .forEach(System.out::println);
    }
}
```

```
PS C:\Users\salee\OneDrive\Documents\javaprograms>  & 'C:\Program Files\Eclipse Adoptium\jdk-17.0.17.10-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\salee\AppData\Roaming\Code\User\workspaceStorage\8ecd70e9d49968c3cef97a602d5d519c\redhat.java\jdt_ws\javaprograms_de8eba83\bin' 'StreamIntermediateDemo'
4
36
64
```

RESULT:

The program successfully demonstrates the use of **intermediate Stream operations** such as filter(), map(), distinct(), and sorted(). It shows how data can be processed step-by-step in a functional manner using Java Streams to produce the desired output efficiently.

AIM:

To demonstrate terminal operations of Stream API such as collect(), count(), reduce(), and anyMatch().

ALGORITHM:

1. Create a list of integers.
2. Convert the list into a stream.
3. Use count() to count elements.
4. Use reduce() to find sum.
5. Use anyMatch() to check a condition.
6. Use collect() to store filtered results into a list.
7. Display outputs.

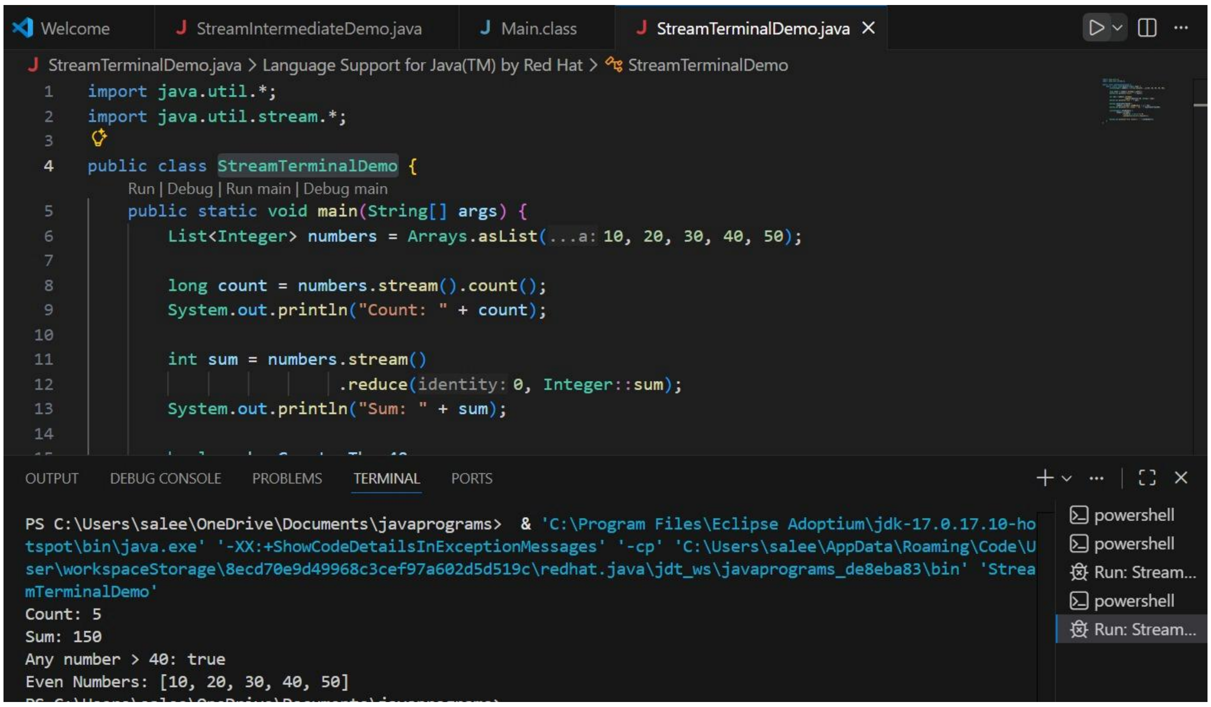
PROCEDURE:

1. Import required packages.
2. Create a list of integers.
3. Apply terminal operations.
4. Print the results.

PROGRAM:

```
import java.util.*;

import java.util.stream.*;


public class StreamTerminalDemo {

    public static void main(String[] args) {

        List<Integer> numbers = Arrays.asList(10, 20, 30, 40, 50);
        long count = numbers.stream().count();
        System.out.println("Count: " + count);

        int sum = numbers.stream()
                         .reduce(0, Integer::sum);
        System.out.println("Sum: " + sum);

        boolean hasGreaterThan40 =
            numbers.stream().anyMatch(n -> n > 40);
        System.out.println("Any number > 40: " +
hasGreaterThan40);

        List<Integer> evenNumbers =
            numbers.stream()
                .filter(n -> n % 2 == 0)
                .collect(Collectors.toList());

        System.out.println("Even Numbers: " + evenNumbers);
    }
}
```

OUTPUT:



```java
import java.util.*;
import java.util.stream.*;

public class StreamTerminalDemo {
    public static void main(String[] args) {
        List<Integer> numbers = Arrays.asList(...a: 10, 20, 30, 40, 50);

        long count = numbers.stream().count();
        System.out.println("Count: " + count);

        int sum = numbers.stream()
                         .reduce(identity: 0, Integer::sum);
        System.out.println("Sum: " + sum);

```

```
PS C:\Users\salee\OneDrive\Documents\javaprograms>  & 'C:\Program Files\Eclipse Adoptium\jdk-17.0.17.10-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\salee\AppData\Roaming\Code\User\workspaceStorage\8ecd70e9d49968c3cef97a602d5d519c\redhat.java\jdt_ws\javaprograms_de8eba83\bin' 'StreamTerminalDemo'
Count: 5
Sum: 150
Any number > 40: true
Even Numbers: [10, 20, 30, 40, 50]
```

RESULT:

The program effectively demonstrates terminal Stream operations including count(), reduce(), anyMatch(), and collect(). It confirms that Stream terminal operations are used to produce final results from a stream pipeline.

AIM:

To demonstrate the use of ZonedDateTime and ZoneId classes for handling date and time with time zones.

ALGORITHM:

1. Obtain the current date and time.
2. Create ZoneId objects for different regions.
3. Use ZonedDateTime.now() with different zones.
4. Display date and time for each zone.

PROCEDURE:

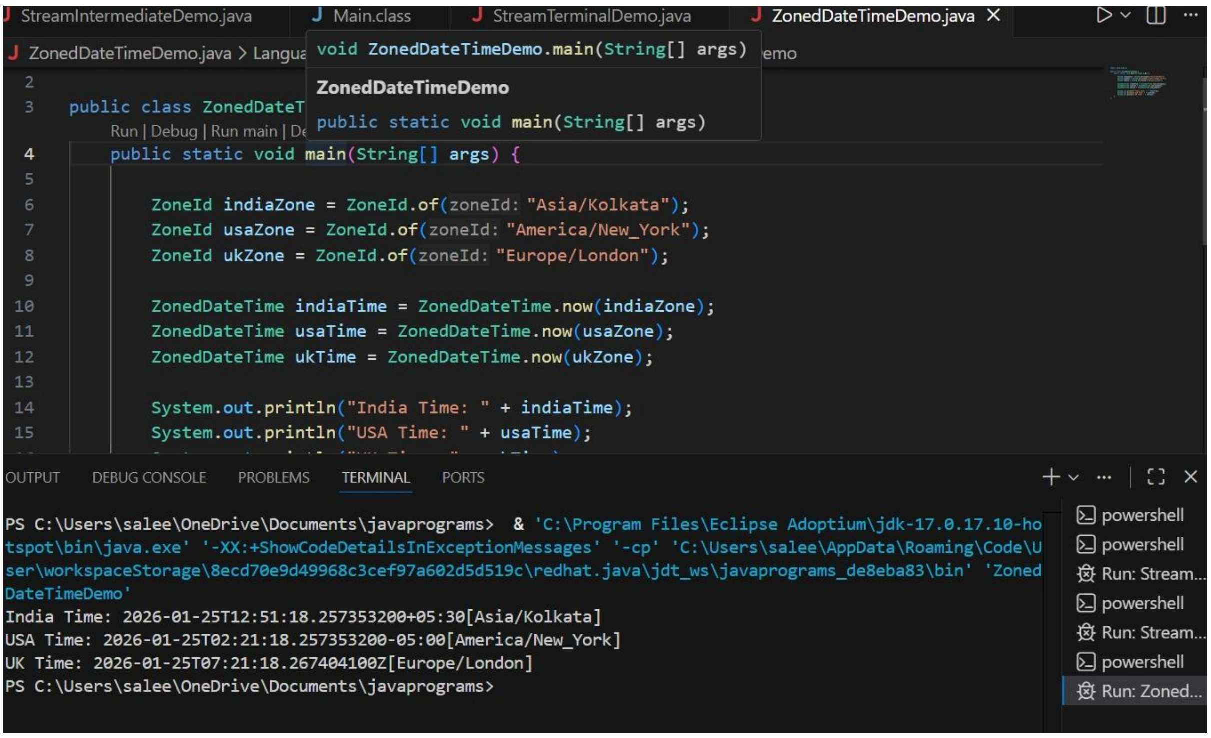
1. Import java.time package.
2. Create ZoneId for required countries.
3. Fetch date and time using ZonedDateTime.
4. Display the output.

PROGRAM:

```
import java.time.*;


public class ZonedDateTimeDemo {
   public static void main(String[] args) {


      ZoneId indiaZone = ZoneId.of("Asia/Kolkata");
      ZoneId usaZone = ZoneId.of("America/New_York");
      ZoneId ukZone = ZoneId.of("Europe/London");


      ZonedDateTime indiaTime = ZonedDateTime.now(indiaZone);
```

```
        ZonedDateTime usaTime = ZonedDateTime.now(usaZone);
        ZonedDateTime ukTime = ZonedDateTime.now(ukZone);

        System.out.println("India Time: " + indiaTime);
        System.out.println("USA Time: " + usaTime);
        System.out.println("UK Time: " + ukTime);
    }
}
```

OUTPUT:



```
public class ZonedDateT
    public static void main(String[] args) {

        ZoneId indiaZone = ZoneId.of(zoneId: "Asia/Kolkata");
        ZoneId usaZone = ZoneId.of(zoneId: "America/New_York");
        ZoneId ukZone = ZoneId.of(zoneId: "Europe/London");

        ZonedDateTime indiaTime = ZonedDateTime.now(indiaZone);
        ZonedDateTime usaTime = ZonedDateTime.now(usaZone);
        ZonedDateTime ukTime = ZonedDateTime.now(ukZone);

        System.out.println("India Time: " + indiaTime);
        System.out.println("USA Time: " + usaTime);
```

```
PS C:\Users\salee\OneDrive\Documents\javaprograms>  & 'C:\Program Files\Eclipse Adoptium\jdk-17.0.17.10-ho
tspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\salee\AppData\Roaming\Code\U
ser\workspaceStorage\8ecd70e9d49968c3cef97a602d5d519c\redhat.java\jdt_ws\javaprograms_de8eba83\bin' 'Zoned
DateTimeDemo'
India Time: 2026-01-25T12:51:18.257353200+05:30[Asia/Kolkata]
USA Time: 2026-01-25T02:21:18.257353200-05:00[America/New_York]
UK Time: 2026-01-25T07:21:18.267404100Z[Europe/London]
PS C:\Users\salee\OneDrive\Documents\javaprograms>
```

RESULT:

The program successfully demonstrates the use of ZonedDateTime and ZoneId classes to display date and time for different time zones. It highlights how Java’s Date and Time API handles global time zone differences accurately.