

LAB15_ANP_C6339_SETANDQUEUE

Due date: Saturday, 25 November 2023, 5:30 AM

Maximum number of files: 1

Type of work: Individual work

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Assignment-1.

Write a Java program that demonstrates the following operations on a HashSet:

- Create a HashSet of integers.
- Add the numbers 5, 10, 15, 20, and 25 to the set.
- Display the elements of the set.
- Check if the set contains the number 10.
- Remove the number 15 from the set.
- Display the size of the set.

Solution:-

```
import java.util.HashSet;
```

```
import java.util.Iterator;
```

```
public class HashSetDemo {  
    public static void main(String[] args) {  
        // Create a HashSet of integers  
        HashSet<Integer> numbers = new HashSet<>();  
  
        // Add numbers to the set  
        numbers.add(5);  
        numbers.add(10);  
        numbers.add(15);  
        numbers.add(20);  
        numbers.add(25);  
  
        // Display the elements of the set  
        System.out.println("Elements of the set:");  
        for (Integer number : numbers) {  
            System.out.println(number);  
        }  
    }  
}
```

```

    }

    // Check if the set contains the number 10
    if (numbers.contains(10)) {
        System.out.println("The set contains 10.");
    } else {
        System.out.println("The set does not contain 10.");
    }

    // Remove the number 15 from the set
    numbers.remove(15);
    System.out.println("\nAfter removing 15:");

    // Display the elements of the set after removing 15
    Iterator<Integer> iterator = numbers.iterator();
    while (iterator.hasNext()) {
        System.out.println(iterator.next());
    }

    // Display the size of the set
    System.out.println("\nSize of the set: " + numbers.size());
}
}

```

Output:

```

C:\Users\thila\OneDrive\Desktop\Anudip_Labs>javac HashSetDemo.java

C:\Users\thila\OneDrive\Desktop\Anudip_Labs>java HashSetDemo
Elements of the set:
20
5
25
10
15
The set contains 10.

After removing 15:
20
5
25
10

Size of the set: 4

```

Assignment-2.

Write a Java program to simulate the "Hot Potato" game using a queue.

In this game, players stand in a circle and pass a potato (or any other object) while music plays.

When the music stops, the player holding the potato is out.

- Create a queue to represent the circle of players.
- Enqueue player names.
- Dequeue players one by one and enqueue them again to simulate passing the potato.
- Repeat the dequeue and enqueue process, simulating the music stopping and players being eliminated until only one player remains.

Solution:-

```
import java.util.LinkedList;
import java.util.Queue;
import java.util.Scanner;

public class HotPotatoGame {
    public static void main(String[] args) {
        // Create a queue to represent the circle of players
        Queue<String> players = new LinkedList<>();

        // Read player names from the user
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter player names separated by commas (e.g., Player1, Player2, Player3):");
        String playerNames = scanner.nextLine();
        String[] names = playerNames.split(",");

        // Enqueue player names into the queue
        for (String name : names) {
            players.add(name);
        }

        // Simulate the game by dequeuing and enqueueing players
        int potatoCount = 7; // Set the potato count (number of times the potato is passed before eliminating a player)
        while (players.size() > 1) {
            for (int i = 0; i < potatoCount; i++) {
```

```

        players.add(players.poll()); // Pass the potato
    }

    String eliminatedPlayer = players.poll(); // Eliminate the player holding the potato
    System.out.println(eliminatedPlayer + " is eliminated.");
}

// Announce the winner
String winner = players.poll();
System.out.println("The winner is: " + winner);
}
}

```

Output:

```

C:\Users\thila\OneDrive\Desktop\Anudip_Labs>javac HotPotatoGame.java

C:\Users\thila\OneDrive\Desktop\Anudip_Labs>java HotPotatoGame
Enter player names separated by commas (e.g., Player1, Player2, Player3):
Player1, Player2, Player3
    Player2 is eliminated.
    Player1 is eliminated.
The winner is:  Player3

```
