Program:

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import java.util.*;

public class BullyAlgorithm {
   static int num_pr; // Number of processes
   static int old_cord; // The failed coordinator or leader
   static int new_cord; // The new elected leader
   static int curr_elec; // The current process that is holding the election
   static int[] isActive;
   static int failed_process;

   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.println("Enter the number of processes: ");
      num_pr = sc.nextInt();

      isActive = new int[num_pr + 1];
      for (int i = 1; i <= num_pr; i++) {
         isActive[i] = 1;
      }

      old_cord = num_pr;
      // Leader has failed
      isActive[old_cord] = 0;

      System.out.println("Enter the process that initiates the election process: ");
      curr_elec = sc.nextInt();
      System.out.println("The process that failed is: " + old_cord + "\n");
```

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        System.out.println("Enter the process that fails (other than the leader process), if none then enter 0: ");
        failed_process = sc.nextInt();

        if (failed_process != 0) {
            isActive[failed_process] = 0;
        }

        // Output
        new_cord = election_process(isActive, old_cord, curr_elec);
        System.out.println("Finally, process " + new_cord + " became the new leader\n");

        // Inform all processes about new leader
        for (int i = 1; i <= num_pr; i++) {
            if (isActive[i] == 1 && i != new_cord) {
                System.out.println("Process " + new_cord + " passes a Coordinator (" + new_cord + ") message to process " + i);
            }
        }
    }

    public static int election_process(int[] isActive, int old_cord, int curr_elec) {
        int higher_process = curr_elec;

        for (int i = curr_elec; i <= num_pr; i++) {
            if (isActive[i] == 1) {
                for (int j = i + 1; j <= num_pr; j++) {
                    if (isActive[j] == 1) {
                        System.out.println("Process " + i + " passes Election(" + curr_elec + ") message to process " + j);
                    }
                }
```

```
            System.out.println();


            for (int j = i + 1; j <= num_pr; j++) {
               if (isActive[j] == 1) {
                  System.out.println("Process " + j + " passes Ok(" + j + ") message to process " + i);
               }
               if (higher_process < j) {
                  higher_process = j;
               }
            }
            System.out.println();
         }
      }
      return higher_process;
   }
}
```

Output