Lab-4

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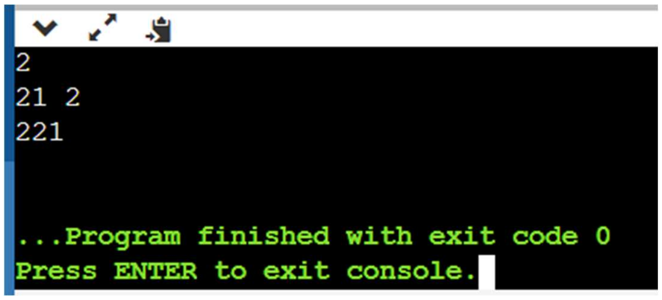
1Q: Maximum Salary

Code:

```
import java.util.*;

public class Main {
    private static String largestNumber(String[] salaryParts) {
        int numParts = salaryParts.length;
        if (salaryParts == null || numParts == 0)
            return "";

        String[] maxSalary = new String[numParts];
        for (int i = 0; i < numParts; ++i) {
            maxSalary[i] = String.valueOf(salaryParts[i]);
        }

        Arrays.sort(maxSalary, (s1, s2) -> (s2 + s1).compareTo(s1 + s2));

        StringBuilder sb = new StringBuilder();
        for (String salaryPart : maxSalary) {
            sb.append(salaryPart);
        }
        return sb.toString();
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        String[] salaryParts = new String[n];
        for (int i = 0; i < n; i++) {
            salaryParts[i] = scanner.next();
        }
        System.out.println(largestNumber(salaryParts));
    }
}
```

output:



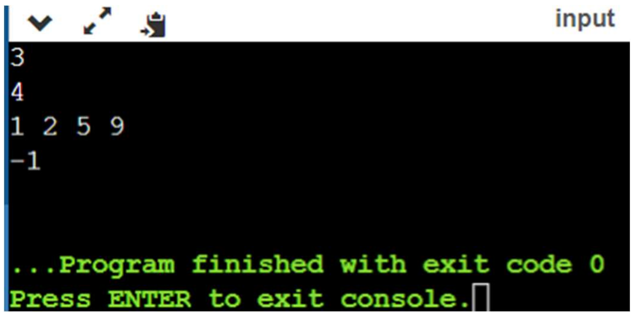
```
2
21 2
221


...Program finished with exit code 0
Press ENTER to exit console.
```

2Q:Car fueling

Code:

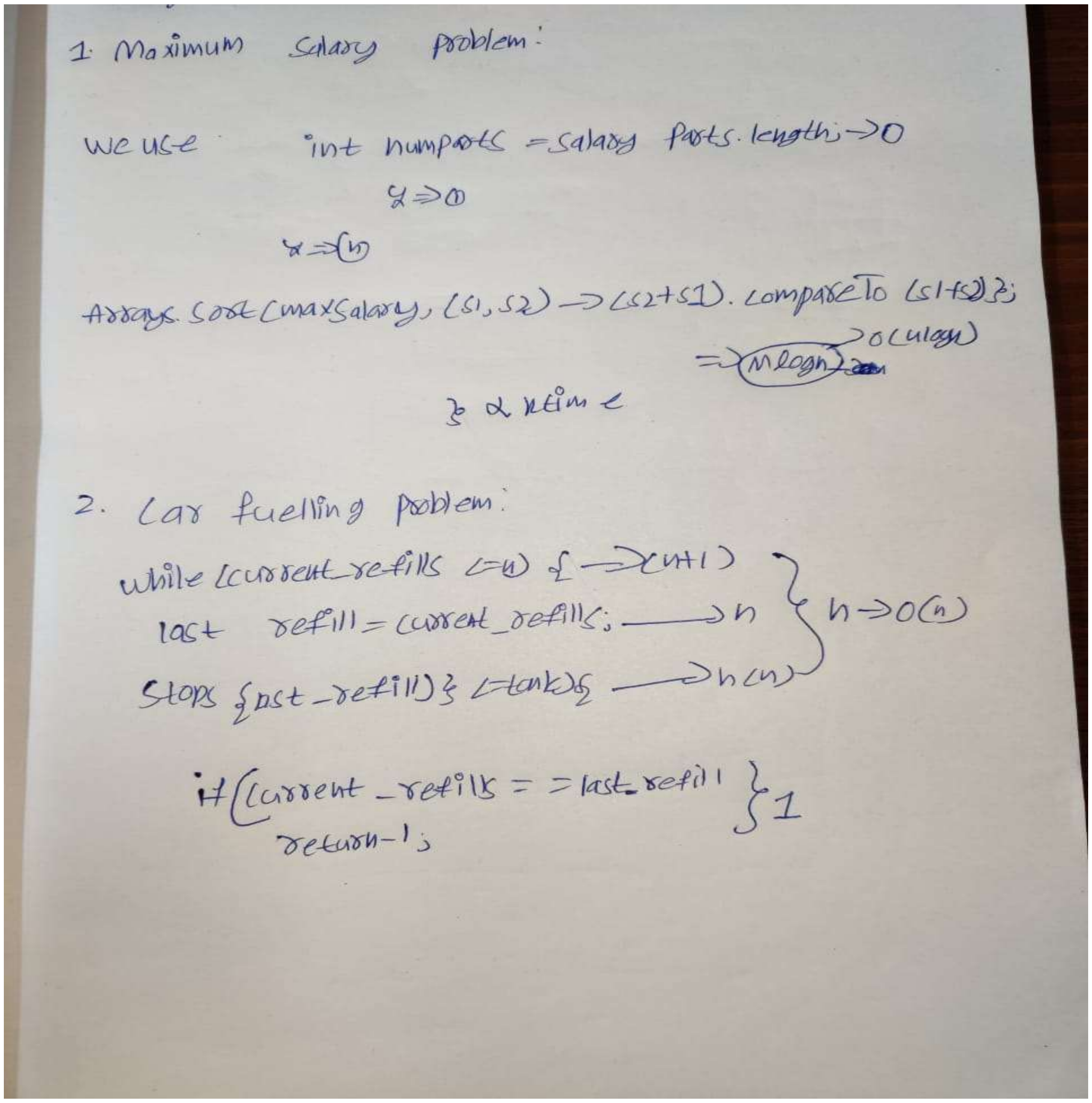
```
import java.util.*;

import java.lang.*;

import java.io.*;



class Main

{

    static int compute_refills(int dist,int tank,int stops[],int n){

        int current_refills=0;

        int num_refills=0;

        int last_refill=0;

        while(current_refills<=n) {

            last_refill = current_refills;

            while ((current_refills <= n) && (stops[current_refills + 1] -
stops[last_refill]) <= tank) {

                current_refills = current_refills + 1;

            }


            if (current_refills == last_refill)
            return -1;
          if (current_refills <= n)
            num_refills = num_refills + 1;
        }
        return num_refills;
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int dist = scanner.nextInt();
        int tank = scanner.nextInt();
        int n = scanner.nextInt();
        int stops[] = new int[n+2];
        stops[0] = 0;
        stops[n+1] = dist;
        for (int i = 1; i <= n; i++) {
            stops[i] = scanner.nextInt();
        }

        System.out.println(compute_refills(dist,tank,stops,n));
    }
}
```

Output:



```
3
4
1 2 5 9
-1


...Program finished with exit code 0
Press ENTER to exit console.
```

Analysis:



1. Maximum Salary problem:

We use int numparts = salary parts.length; → O

y ⇒ O(1)

x ⇒ (n)

```
Arrays.sort(maxSalary, (s1, s2) -> (s2+s1).compareTo(s1+s2));
```

→ O(nlogn)

⇒ (nlogn)

} α time

2. Car fuelling problem:

```
while (current_refills <= n) { → (n+1)
  last refill = current_refills; → n
  stops [last_refill] <= tank) { → n(n)
```

} n → O(n)

```
if (current_refills == last_refill
  return -1;
```

} 1