CSE3004

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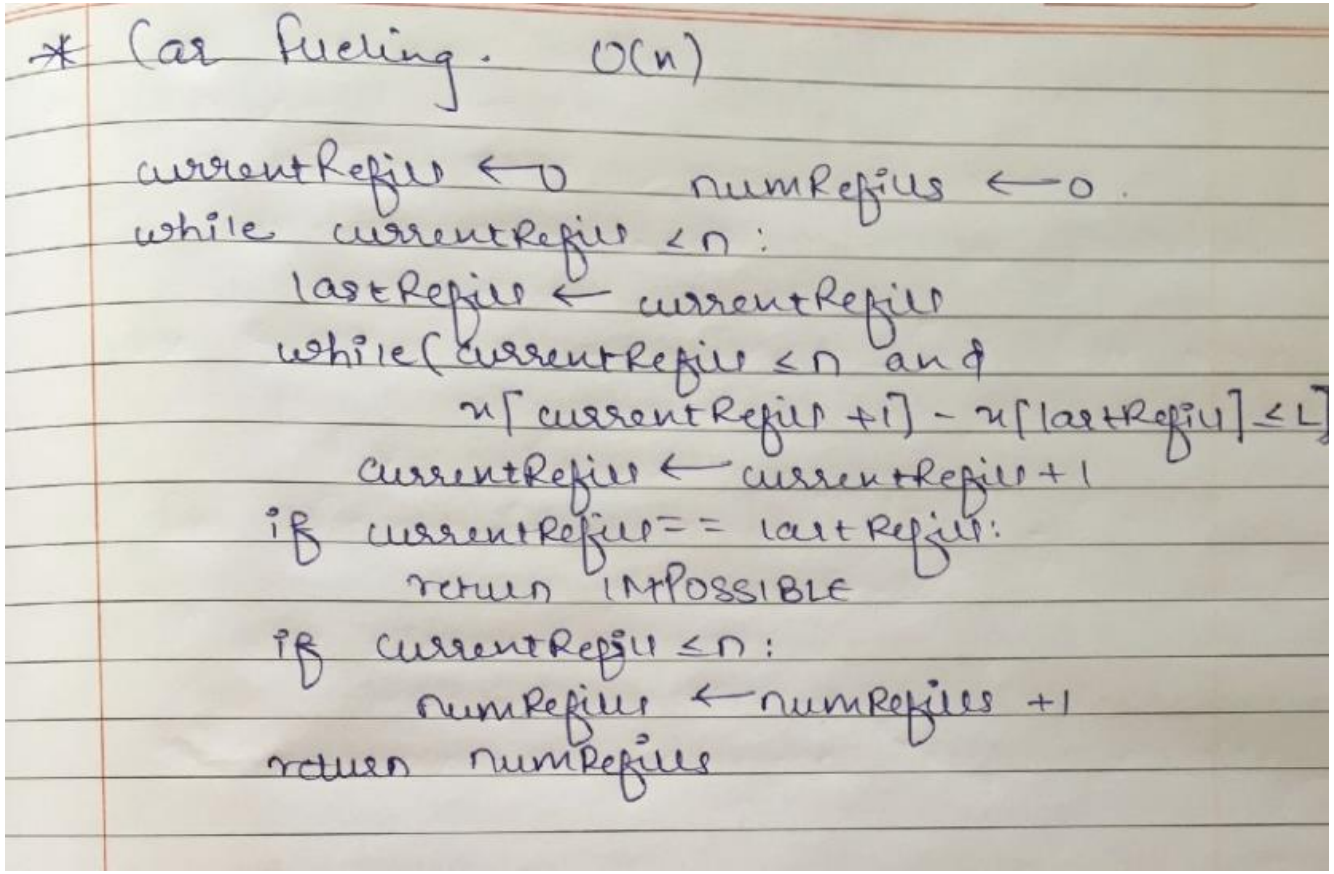
ANALYSIS



1.Make a greedy choice!
2.Reduce to a smaller problem
3.Iterate
A greedy choice is a safe move if there is an optimal solution consistent with the first move:
1.Refill at the closest gas station
2.Refill at the farthest reachable gas station
3.Go until the fuel finishes up!

```
import java.util.*;
 public class CarFuelRound
 {
 public static void main (String arg [])
 {
 Scanner sc=new Scanner(System.in);
 System.out.println("Enter destination distance:");
 int d=sc.nextInt();
 System.out.println("Enter maximum distance a full tank can go: ");
 int m=sc.nextInt();
 System.out.println("Enter number of stops:");
 int n=sc.nextInt();
 int A[]=new int[n+2];
 int i;
 A[0]=0;
 A[n+1]=d;
 System.out.println("Enter distance of stops from origin: " );
 for (i=1;i<=n;i++)
 {
 A[i]=sc.nextInt();
 }

 int minRefill =0;
int currRefill =0;
int lastRefill=0;
 int flag =0;
while (currRefill <= n)
{
lastRefill = currRefill;
while(currRefill<=n && (A [currRefill+1] - A [lastRefill])<=m)
{
currRefill+=1;
}
 if(currRefill==lastRefill)
```

```
int lastRefill=0;
 int flag =0;
while (currRefill <= n)
{
lastRefill = currRefill;
while(currRefill<=n && (A [currRefill+1] - A [lastRefill])<=m)
{
currRefill+=1;
}
 if(currRefill==lastRefill)
{
System.out.println("IMPOSSIBLE");
flag=1;
break;
}
if(currRefill<=n)
{
minRefill+=1;
}
}
if(flag==0)
{
int saved=m-(A[currRefill]-A[lastRefill]);

System.out.println( " Minimum number of stops required:"+minRefill);
System.out.println("Fuel saved: "+saved);
if (saved >=(d - A [n]))
{
System.out.println("Round Trip Successful");
}
else
{
System.out.println("Round Trip Not Successful");
}
}
}
 }
```

```
}
if(currRefill<=n)
{
minRefill+=1;
}
}
if(flag==0)
{
```

CarFuelRound

utput | JavaApplication22.java | DigitalCamera.java | JavaApplication25.java | JavaApplication24

JavaApplication36 (run) | JavaApplication37 (run)

```
run:
950
400
4
200
375
550
750
Possible
2
The extra distance is :-200
Coming back is Possible
BUILD SUCCESSFUL (total time: 5 minutes 31 seconds)
```