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Analysis Report

The one with the electric car

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1 Introduction

This report aim to solve a simple problem utilizing Polya's Problem Solving Technique. This method consists of first gathering an understanding of the problem, then a plan of how to solve it is devised. These steps constitutes the main focus of this report. Additionally with a plan at hand the last steps consists of execute according to the plan and reflecting whether the strategy sufficed to achieve a suitable solution to the problem.

2 Step 1

2.1 Rephrasing the problem

Given a user defined input of total distance to travel the script should display a list of fully electric cars and their battery percentage left after traveling the set amount of kilometers. The list should also be sorted by least battery percentage left. If a car is not able to reach the destination before it reaches 0% the user should be made aware of this.

2.2 Understanding the words

The only unclear part of the problem formulation is how a car that just barely doesn't reach the destination with 0% battery left, should be handled. Such an example could be if a car has 230 km range, but the user wants it to be able to travel 230.1 k, but after second thought the only reasonable approach is to warn the user that the distance exceeds the max range.

3 Devising a plan

3.1 Approach of choice

The rough idea of how to approach the problem can be illustrated with pseudo code. In very short terms the problem consists of solving the following parts:

```
# Reads the contents of a file and saves the lines as strings in a
    list input
input = read_lines_from_file()

# Takes each line in input and formats it as a tuple with car name
    and range, and saves in list
cars = [format(line) for line in input]

# Reads distance to travel from user
distance = input()

# Calculates the distance as percentage for each car max range and
    saves car along with battery percentage in list as tuples
percentages = calculate_percentages(cars, distance)

# Displays the result to the user
display_result(percentages)
```