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Analysis Report

The one where money need to be transported

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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

The task consists of developing a script that manages given a volume, calculates the optimal combination of bags that to fit as many big bags, then medium bags and lastly small bags up to the given volume. For reference a big bag can hold 80L and costs 60, 000kr, a medium bag can hold 50L and costs 30, 000kr and a small bag can hold 20L and costs 10, 000kr. It would not be worth it for the company to carry out the transport if the given volume is less than 100L, so the script needs to make sure that the volume is larger to be accepted.

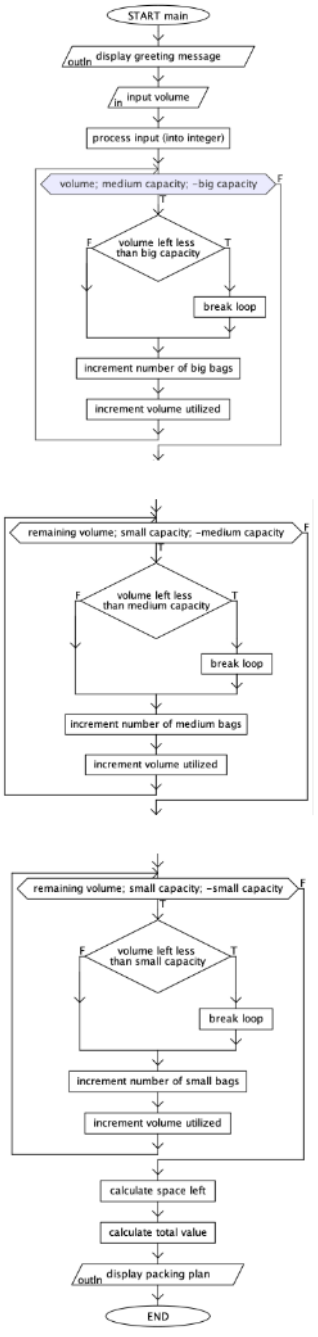
Additionally the bank that is responsible for the assignment, has requested for security purposes that the number of bags should be calculated with three loops, where the first one figures out the number of big bags, the second medium bags and the third small bags. When the problem is solved the bank also wants the script to show a packing plan containing information about the amount of different bags as well as the volume left after packing the bags and the total value.

2.2 Understanding the words

There was one formulation that was confusing in the problem description "the number of bags of each type shall be calculated using three loops" and it took a few moments to come up with the realization that it meant to use three separate for loops. By the time this became clear another solution had already been implemented, which led to a quick rewrite of the solution. The research that contributed to solving the problem, consisted of refreshing the knowledge of how to format string and doc-strings.

3 Devising a plan

3.1 Approach of choice



The idea is to greet the user with a message to ask what the total volume is. This input will then be processed and converted into an integer that can be used to figure out how many of each type of bag is needed. This process consists of looping over how many big bags of 80L fits in the total volume. If during looping the volume left is less than the volume of a big bag the loop will break and otherwise the number of big bags will be incremented and the volume utilized so far will be updated.

The same procedure is then repeated for medium and ultimately small bags until the utilized capacity is less than that of a small bag. The remaining capacity gets stored in a variable and the total value of the bags are calculated and stored to then be printed together with amounts of different bags in a packing plan.

This solution idea is depicted in the flowchart on the left side. There are some gaps in the flowchart, but please ignore these since they are a result of technical issues exporting the flowchart to the report.

2.3 Comment to examiner

I copied and pasted the introduction from my previous assignment, since the purpose is exactly the same. I know this is not what you're supposed to do and it's not difficult to write a new introduction, but rather than calling it lazy, I would like to to argue that I respect both of ours time. I'm sure you can relate :)