20XW47 - MATHEMATICAL COMPUTING LAB (WITH R)

Semester project

Bin packing problem

Introduction

The bin packing problem is another well-known optimization problem in computer science and mathematics. It is a combinatorial optimization problem that seeks to pack a set of items of varying sizes into a minimum number of fixed-size containers, such as bins or boxes, while minimizing wasted space.

Problem statement

A company manufactures custom gift baskets for various occasions, and different items need to be packed into baskets while minimizing the number of baskets used and the amount of leftover space in each basket. Each item is represented its width and height. The available baskets are also represented by its width and height. The goal is to pack all the items into the minimum number of baskets while minimizing the leftover space in each basket.

Mathematical technique used

Four heuristic algorithms, first-fit, worst-fit, best-fit, first-fit decreasing, have been used to solve this problem.

Languages

MATLAB

Team

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