Problem Set 1 Exercise #22: Packing

Reference: Lecture 3 notes

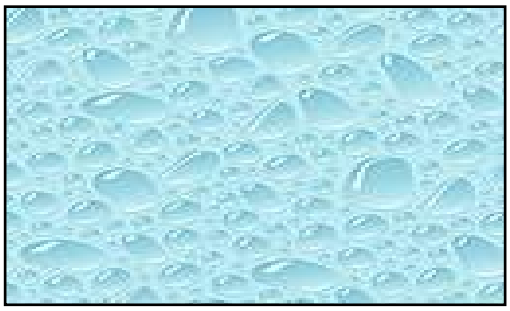
Learning objectives: Selection statements; Algorithm design

Estimated completion time: 40 minutes

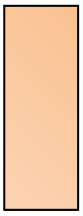
Problem statement:

[CS1010 AY2013/14 Semester 1 Practical Exam 1, Q1 Part 1]

You are given a rectangular tray and an unlimited supply of slabs. An example of a 12×20 tray and an 8×3 slab is shown below. Note that it is possible for the slab to be larger than the tray.

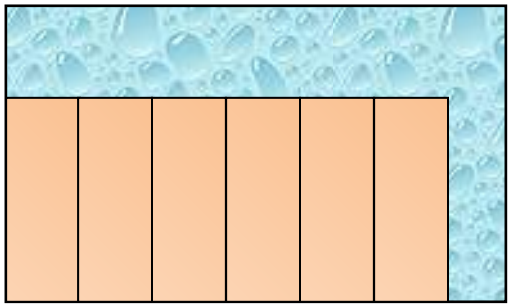


A 12×20 tray

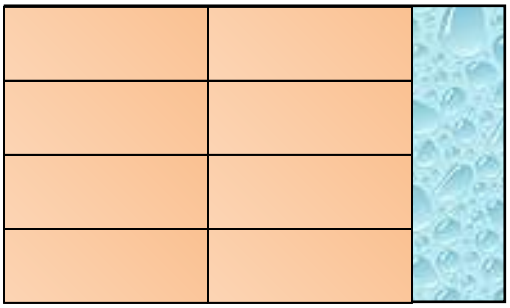


An 8×3 slab

You are to find the minimum unused area of the tray after the slabs are packed onto the tray. The slabs may be packed in either one of the two orientations, as shown below, but not in a mix of orientations.



Unused area of tray = 96



Unused area of tray = 48

The minimum unused area of the tray is 48 in this example.

Write a program **packing.c** to read the dimensions (integers) of a tray and a slab, and to compute the minimum unused area of the tray after it is filled with slabs.

Sample run #1:

```
Enter size of tray: 12 20
Enter size of slab: 8 3
Minimum unused area = 48
```

Sample run #2:

```
Enter size of tray: 12345 139
Enter size of slab: 27 33
Minimum unused area = 49785
```