Problem Set 1 Exercise #22: Packing

Reference: Lecture 4 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.
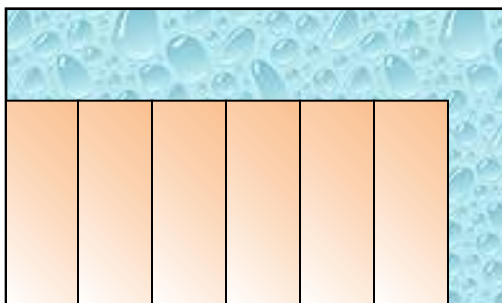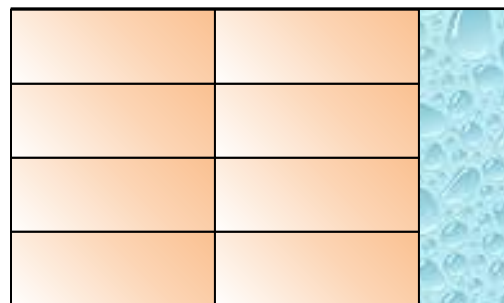

A 12×20 tray

An 8×3 slab

You are to find the <u>minimum unused area</u> 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
```