Department of Mathematics and Computer Science

2301365 Algorithm Design and Analysis   Lab #5

Name _____ Student ID _____ Computer No._____

Dynamic Programming

A triangulation of a convex polygon is formed by drawing diagonals between non-adjacent vertices (corners) such that the diagonals never intersect. The problem is to find the cost of triangulation with the minimum cost.

The cost of a triangulation is sum of the weights of its component triangles. Weight of each triangle is its perimeter (sum of lengths of all sides)
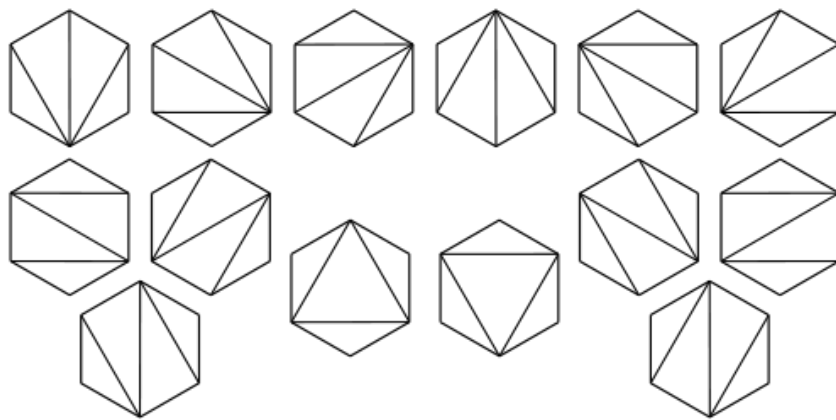
Consider
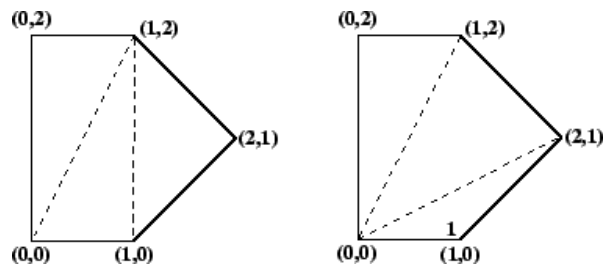
Two triangulations of the same convex pentagon. The triangulation on the left has a cost of 8 + 2√2 + 2√5 (approximately 15.30), the one on the right has a cost of 4 + 2√2 + 4√5 (approximately 15.77).

Example of the program

```
Input
{0, 0}, {1, 0}, {2, 1}, {1, 2}, {0, 2}

Output
15.3006
```