Algorithmic game theory — Homework 3[1]
Mechanism design

assigned 5.12.2019, deadline 19.12.2019

Homework 1. *Consider a single-item auction with at least three bidders. Prove that selling the item to the highest bidder at a price equal to the third-highest bid, yields an auction that is not dominant-strategy incentive compatible (DSIC).* **[2]**

Homework 2. *Assume there are k identical items and $n > k$ bidders. Also assume that each bidder can receive at most one item. What is the analog of the second-price auction? Prove that your auction is DSIC.* **[3]**

Homework 3. *Use Myerson's Lemma to prove that the Vickrey auction is the unique single-item auction that is DSIC, always awards the good to the highest bidder, and charges the other bidders 0.* **[2]**

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[1]Information about the course can be found at http://kam.mff.cuni.cz/~balko/