

# CS 186 - Homework 3

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## 1 Designing a bidding agent

See implmentation in code distribution.

## 2 Analysis of the GSP agents

### 2.1 Average Utility

We run the simulation for either 5 truthful agents or 5 balanced budget (mewzybb) agents with seed 5 and 200 iterations. The total utility for the two scenarios are shown below

- Truthful Agent:  $u_{tot} = \$1659.37$
- Balanced Agent (mewzybb):  $u_{tot} = \$3342.55$

There is a improvement of \$1683.18 or approximately 67.3%.

We see that the balanced bidding agents result in a better total utility of the bidding.

## 3 Auction Design and Reserve Prices

## 4 Budget constraints