Assignment:	QM_2018_02
Topic:	Real-Time Bidding
Hand in to:	k.pak@uva.nl
Deadline:	16-3-2018

iPinYou is a Chinese RTB advertising platform. It offers advertisers the possibility to bid on ad impressions. iPinYou provided a free for use RTB dataset for a bid optimization competition. Go to **http://contest.ipinyou.com/** and download the dataset. If you have problems unzipping the files, try using 7-zip (**http://www.7-zip.org/**). For this assignment, we only use a small part of the dataset. We use the data for 19 and 20 October 2013 located in the folder "training3rd". These are the files named: *. 20131019.txt.bz2 and *.20131020.txt.bz2. These files all contain data for the same advertiser (Advertiser ID: 2259). There are different files for bids (starting with bid), impressions (starting with imp), clicks (starting with clk) and conversions (starting with conv). The files can be merged using the Bid ID (first column in every file).

The bid files contain data about the advertiser's bids including the bidding price and a number of attributes about the impressions such as time, website, etc. The impression files contain data about the auctions that the advertiser won including the paying price and a number of attributes about the impression such as time, website, etc. The click and conversion files are similar to the impression files and indicate for which impressions a click and conversion was registered. Additional information about the dataset can be found here **http://contest.ipinyou.com/ipinyou-dataset.pdf**.

Your objective for this assignment is to estimate the win rate function and apply the Adaptive Bidding strategy as proposed by Gosh et al (2009). Assume that your budget is 6.000.000 and your target number of impressions is 100.000.

Hand in a short report where you discuss:
- How you set the parameters of the model and what the effect is of changing them.
- How you estimate the win rate function.
- The results of your model (e.g. impressions, budget, price per impression, win rate).
- How long your model needed to explore before it started to exploit.
- The practical difficulties you encountered while working with this real-life dataset.

Always provide clear arguments for the choices your make (such as the parameter settings you choose).