**Exercise 1 - PQL Queries**

**1- Reports descriptions of auctions made in the last 10 minutes by Luitpold Martucci.**

join\_auction\_person = JOIN({predicate = 'auction.seller = person.id'}, auction, person)

join\_window = TIMEWINDOW({SIZE = [10, 'minutes']}, join\_auction\_person)

select\_luitpold\_martucci = SELECT({PREDICATE = 'name == "Luitpold Martucci"'}, join\_window)

projection = PROJECT({attributes = ['id', 'name', 'itemname', 'description']}, select\_luitpold\_martucci)

**2- Find all items in the auctions stream that have an initial bid of more than 120 dollars.**

select\_items = SELECT({PREDICATE = 'initialbid >= 120'}, auction)

projection = PROJECT({attributes = ['itemname', 'initialbid']}, select\_items)

**3- Return the number of bids received for each auction.**

bid\_window = TIMEWINDOW({SIZE = [2,'minutes']}, bid)

auction\_aggregate = AGGREGATE({group\_by = ['auction'],

AGGREGATIONS = [['COUNT', 'bidder', 'num\_bids']]}, bid\_window)

**4- Find auctions which had bids 2 minutes before their expiry date.**

auction\_map = MAP({EXPRESSIONS = [['timestamp', 'auctionTimestamp' ], ['id', 'auctionID'],

['expires', 'auctionExpiry']]}, auction)

map\_stream = MAP({EXPRESSIONS=[['auction', 'bidAuctionID'],

['timestamp', 'bidTimestamp'], ['datetime', 'bidTime']]}, bid)

join\_bid\_auction = JOIN({PREDICATE = 'auctionID = bidAuctionID'},

auction\_map, map\_stream)

bids\_filter = SELECT({PREDICATE = 'auctionExpiry - bidTime <= 120000'}, join\_bid\_auction)

**5- Return the number of bids received for each auction coming from each state.**

join\_bid\_person = JOIN({predicate = 'id = bidder'}, bid, person)

bid\_window = TIMEWINDOW({SIZE = [2, 'minutes']}, join\_bid\_person)

auction\_aggregate = AGGREGATE({group\_by = ['auction', 'state'],   
AGGREGATIONS = [['COUNT', 'bidder', 'num\_bids']]}, bid\_window)