My implementation is in C++ since it is my most comfortable language. To compile the source code, use the following command:

```
jeff@jeff-VirtualBox:~/code/paxos2$
jeff@jeff-VirtualBox:~/code/paxos2$ ls
find-pair.cc  pricesHuge.txt  pricesSmall.txt  prices.txt
jeff@jeff-VirtualBox:~/code/paxos2$ g++ -o find-pair find-pair.cc -std=c++0x
jeff@jeff-VirtualBox:~/code/paxos2$
```

The following examples mimic the examples from the given document:

```
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair prices.txt 2500
Candy Bar 500, Earmuffs 2000
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair prices.txt 2300
Paperback Book 700, Headphones 1400
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair prices.txt 10000
Earmuffs 2000, Bluetooth Stereo 6000
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair prices.txt 1100
Not possible.
jeff@jeff-VirtualBox:~/code/paxos2$
```

For some smaller examples by inspection, I used the following prices file and test cases:

```
jeff@jeff-VirtualBox:~/code/paxos2$ cat pricesSmall.txt
Pencil, 20
Pen, 25
Penny, 1
Nickel, 5
Dime, 10
Quarter, 25
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 1
Not possible.
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 2
Not possible.
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 5
Not possible.
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 6
Penny 1, Nickel 5
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 12
Penny 1, Dime 10
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 25
Nickel 5, Pencil 20
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 26
Penny 1, Quarter 25
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 50
Pen 25, Quarter 25
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt 1000000
Pen 25, Quarter 25
jeff@jeff-VirtualBox:~/code/paxos2$ ./find-pair pricesSmall.txt -1000000
Not possible.
jeff@jeff-VirtualBox:~/code/paxos2$
```

Additionally, I generated 1,000,000 items with numerical IDs of 1-1,000,000 and prices as random numbers between 1 and 10,000. I timed the following examples using a virtual machine and compiled with -O3 for increased performance:

```
jeff@jeff-VirtualBox:~/code/paxos2$ g++ -O3 -o find-pair find-pair.cc -std=c++0x

jeff@jeff-VirtualBox:~/code/paxos2$ time ./find-pair pricesHuge.txt 20000
925641 10000, 299302 10000

real    0m0.182s
user    0m0.147s
sys     0m0.015s
jeff@jeff-VirtualBox:~/code/paxos2$ time ./find-pair pricesHuge.txt 20001
925641 10000, 299302 10000

real    0m0.190s
user    0m0.157s
sys     0m0.008s
jeff@jeff-VirtualBox:~/code/paxos2$ time ./find-pair pricesHuge.txt 1
Not possible.

real    0m0.189s
user    0m0.140s
sys     0m0.020s
jeff@jeff-VirtualBox:~/code/paxos2$ time ./find-pair pricesHuge.txt 2
628328 1, 272527 1

real    0m0.189s
user    0m0.120s
sys     0m0.043s
jeff@jeff-VirtualBox:~/code/paxos2$ time ./find-pair pricesHuge.txt 3
628328 1, 252279 2

real    0m0.189s
user    0m0.138s
sys     0m0.024s
jeff@jeff-VirtualBox:~/code/paxos2$ time ./find-pair pricesHuge.txt 1000000
925641 10000, 299302 10000

real    0m0.201s
user    0m0.145s
sys     0m0.023s
jeff@jeff-VirtualBox:~/code/paxos2$ time ./find-pair pricesHuge.txt -100
Not possible.

real    0m0.189s
user    0m0.160s
sys     0m0.004s
jeff@jeff-VirtualBox:~/code/paxos2$
```