CoCoALib - Bug #517

MaxSquarableInteger gives wrong ans for unsigned long

03 Apr 2014 12:10 - John Abbott

Status:	Closed	**Start date:**	03 Apr 2014
Priority:	High	**Due date:**	
Assignee:	John Abbott	**% Done:**	100%
Category:	Portability	**Estimated time:**	4.00 hours
Target version:	CoCoALib-0.99533 Easter14	**Spent time:**	4.00 hours

Description

MaxSquarableInteger gives wrong ans for unsigned long because conversion to double rounds up!

Fix it!

History

#1 - 03 Apr 2014 14:00 - John Abbott

- Status changed from New to In Progress

- Priority changed from Normal to High

- % Done changed from 0 to 10

Here is a failing case:

```
unsigned long j = NumericLimits<unsigned long>::MaxSquarableInteger();
cout << "j=" << j << endl;
cout << "j^2=" << j*j << endl;
```

It prints out that j^2=0 so overflow has occurred!

Note This should be added to a test somewhere!

#2 - 03 Apr 2014 17:01 - John Abbott

- Status changed from In Progress to Feedback

- % Done changed from 10 to 90

Completely reimplemented: decided to follow design pattern used by std::numeric_limits. Will need updating if other bit sizes are needed; currently offers only 7,8,15,16,31,32,63,64.

Added new test file test-utils2.C

#3 - 04 Apr 2014 11:23 - John Abbott

I have replaced yesterday's impl with a new much simpler and more compact one (but it is a bit slower, and relies on GMP to get the right answer).

So simple that there are obviously no deficiencies... :-)

I also changed the name to MaxSquarableInteger<T>(); the NumericLimits prefix was just a waste of space... of course, it would be nice if the C++ standard put this value in the standard numeric_limits

#4 - 15 Apr 2014 12:46 - John Abbott

- Status changed from Feedback to Closed

- % Done changed from 90 to 100

#5 - 17 Apr 2014 09:26 - Anna Maria Bigatti

- Estimated time set to 4.00 h