ASC-bla

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ASC-bla is a C++ library for basic linear algebra operations. The library provides template classes **Vector** and **Matrix**.

Installation is via git-clone:

```
git clone https://github.com/TUWien-ASC/ASC-bla.git
```

To configure and build some tests do

```
cd ASC-bla
mkdir build
cd build
cmake ..
make
```

To use ASC-bla in your code, set the compiler include path properly, and include the header files

```
#include <vector.h>
#include <matrix.h>
```

All objects are implemented in the namespace ASC_bla. To use them with less typing, you can set

```
namespace bla = ASC_bla;
```

or even

```
using namespace ASC_bla;
```

You can create vectors and compute with vectors like:

```
Vector<double> x(5), y(5), z(5);
for (int i = 0; i < x.Size(); i++)
   x(i) = i;
y = 5.0
z = x+3*y;
cout << "z = " << z << endl;
```

For matrices you can choose between row-major (*RowMajor*) or column-major (*ColMajor*) storage, default is row-major.

```
Matrix<double,RowMajor> m1(5,3), m2(3,3);
for (int i = 0; i < m1.Height(); i++)
  for (int j = 0; j < m1.Width(); j++)
    m1(i,j) = i+j;
m2 = 3.7;
Matrix product = m1 * m2;
```

You can extract a rows or a columns from a matrix:

```
Vector col1 = product.Col(1);
```

CHAPTER

ONE

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