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Subject: cpu times

Posted by [Gianluigi Boca](#) on Fri, 11 May 2012 16:36:41 GMT

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dear collaborators,  
we all know at least from oral tradition, that the Standard Template Library containers are somewhat slower compared to the 'traditional' C code style arrays.

But how much slower are they actually ?

I checked the difference in cpu consumption when using a conventional C array or a Standard Template Library <vector> instead, using a very simple program.

I measured the cputime consumption  
of 10,000,000,000 assignment operations [avoiding  
though a calculation that can be optimized heavily by the compiler].

I wrote two almost identical simple loop programs :

1) Conventional C array program :

```
int main ()
{
    int v[10],b ;
    itmp = 500000;
    for(int j=0;j<10000;j++){
        for(int i=0;i<itmp;i++){
            b=i+j;
            v[3]=j+i;
            b=v[3];
        }
    }
}
```

2) Template <vector> program :

```
#include <vector>
int main ()
{
    vector<int> v(10,0) ;
    int b;
    int itmp = 500000;

    for(int j=0;j<10000;j++){
        for(int i=0;i<itmp;i++){
            b=i+j;
            v.at(3)=i+j;
            b=v.at(3);
        }
    }
    return 0;
};
```

I measured the cpu consumption of the two programs.

I also measured (and subtracted) the cputime consumption of the NON RELEVANT part of the code, namely :

```
int main ()
{
    int b;
    int itmp = 500000;

    for(int j=0;j<10000;j++){
        for(int i=0;i<itmp;i++){
            b=i+j;
        }
    }
    return 0;
};
```

THE FOLLOWING IS THE CpuTime CONSUMPTION OF THE TRADITIONAL C STYLE

```
v[3]=j+i;
b=v[3];
```

STATEMENTS : 9.352 sec

while THE FOLLOWING IS THE CpuTime CONSUMPTION OF THE Standard Template Library

```
v.at(3)= i+j;
b=v.at(3);
```

STATEMENTS : 166 sec

In other words, a factor almost 18 worse of the Template <vector>.

As you very well know, the Template <vector> gives the advantage of the array boundary check (only when you use the at() function though, NOT when you use the [] form! ) but I am wondering if we can afford a factor of speed 18 slower in acces time for a code such as the PANDA code that is supposed to digest billion and billion of events in the future.

Please comment, thanks

Gianluigi