

# Rcpp Quick Reference Guide

Romain François

Dirk Eddelbuettel

Rcpp version 0.8.9 as of November 27, 2010

## Create simple vectors :

```
SEXP x; std::vector<double> y(10);

// from SEXP
NumericVector xx(x);

// of a given size (filled with 0)
NumericVector xx(10);
// ... with a default for all values
NumericVector xx(10, 2.0);

// range constructor
NumericVector xx( y.begin(), y.end() );

// using create
NumericVector xx = NumericVector::create(
    1.0, 2.0, 3.0, 4.0 );
NumericVector yy = NumericVector::create(
    Named["foo"] = 1.0,
    _["bar"]      = 2.0 ); // short for Named
```

## Extract and set single elements :

```
// extract single values
double x0 = xx[0];
double x1 = xx[1];

double y0 = yy["foo"];
double y1 = yy["bar"];

// set single values
xx[0] = 2.1;
xx[1] = 4.2;

yy["foo"] = 3.0;

// grow the vector
yy["foobar"] = 10.0;
```

## STL interface :

```
std::accumulate( xx.begin(), xx.end(),
    std::plus<double>(), 0.0 );
int n = xx.size();
```

## Function :

```
Function rnorm("rnorm");
rnorm(100, _["mean"] = 10.2, _["sd"] = 3.2 );
```

## Environment :

```
Environment stats("package:stats");
Environment env( 2 ); // by position

// special environments
Environment::Rcpp_namespace();
Environment::base_env();
Environment::base_namespace();
Environment::global_env();
Environment::empty_env();

Function rnorm = stats["rnorm"];
glob["x"] = "foo";
glob["y"] = 3;
std::string x = glob["x"];

glob.assign( "foo" , 3 );
int foo = glob.get( "foo" );
int foo = glob.find( "foo" );
CharacterVector names = glob.ls()
bool b = glob.exists( "foo" );
glob.remove( "foo" );

glob.lockBinding("foo");
glob.unlockBinding("foo");
bool b = glob.bindingIsLocked("foo");
bool b = glob.bindingIsActive("foo");

Environment e = stats.parent();
Environment e = glob.new_child();
```

## Rcpp sugar :

```
NumericVector x = NumericVector::create(
  -2.0, -1.0, 0.0, 1.0, 2.0 );
IntegerVector y = IntegerVector::create(
  -2, -1, 0, 1, 2 );

NumericVector xx = abs( x );
IntegerVector yy = abs( y );

bool b = all( x < 3.0 ).is_true() ;
bool b = any( y > 2 ).is_true();

NumericVector xx = ceil( x );
NumericVector xx = ceiling( x );
NumericVector yy = floor( y );
NumericVector yy = floor( y );

NumericVector xx = exp( x );
NumericVector yy = exp( y );

NumericVector xx = head( x, 2 );
IntegerVector yy = head( y, 2 );

IntegerVector xx = seq_len( 10 );
IntegerVector yy = seq_along( y );

NumericVector xx = rep( x, 3 );
NumericVector xx = rep_len( x, 10 );
NumericVector xx = rep_each( x, 3 );

IntegerVector yy = rev( y );
```