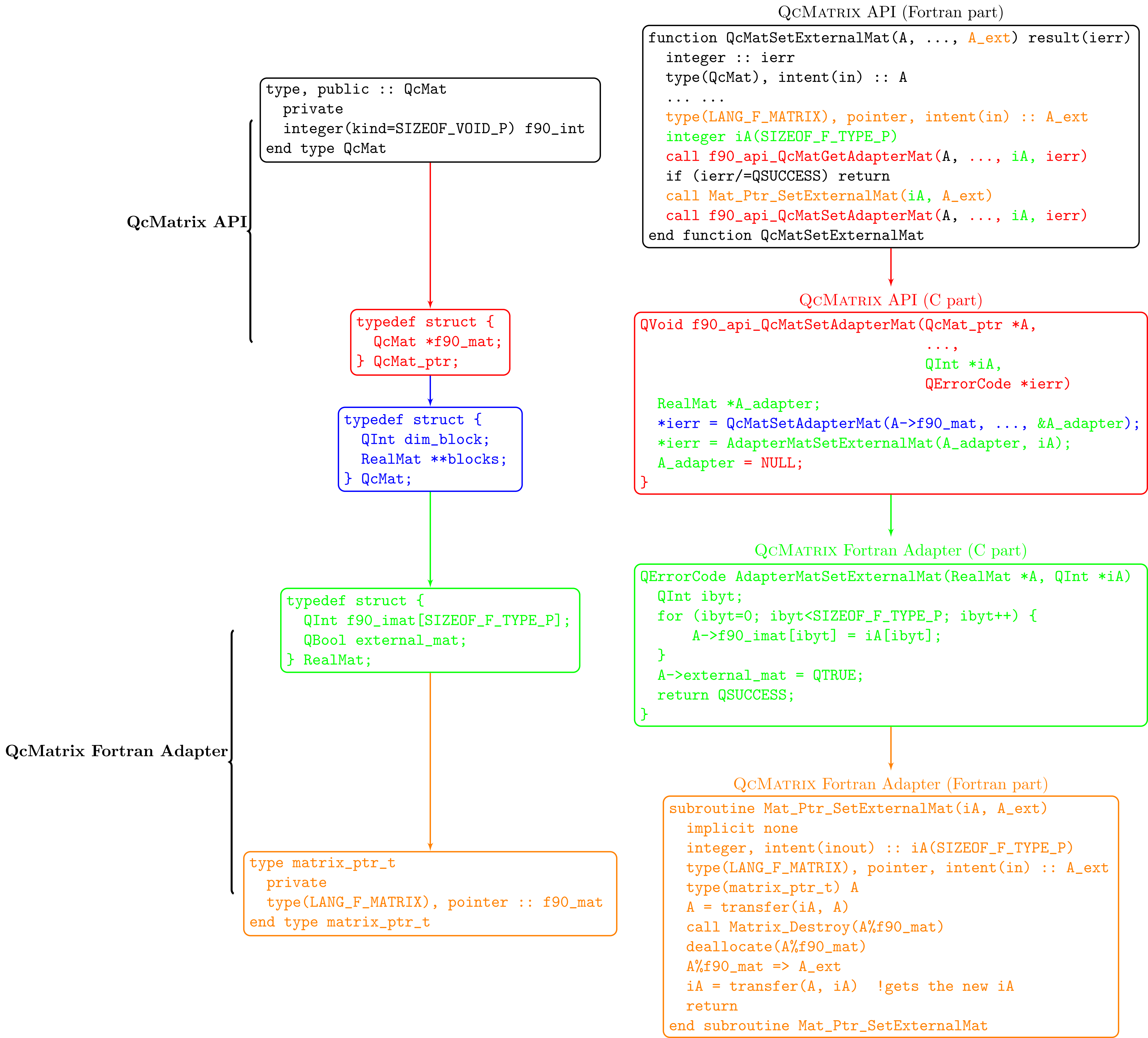
QcMatrix API
QcMatrix Fortran Adapter
QcMatrix API (Fortran part)
QcMatrix API (C part)
QcMatrix Fortran Adapter (C part)
QcMatrix Fortran Adapter (Fortran part)

```
type, public :: QcMat
  private
  integer(kind=SIZEOF_VOID_P) f90_int
end type QcMat
```

```
typedef struct {
  QcMat *f90_mat;
} QcMat_ptr;
```

```
typedef struct {
  QInt dim_block;
  RealMat **blocks;
} QcMat;
```

```
typedef struct {
  QInt f90_imat[SIZEOF_F_TYPE_P];
  QBool external_mat;
} RealMat;
```

```
type matrix_ptr_t
  private
  type(LANG_F_MATRIX), pointer :: f90_mat
end type matrix_ptr_t
```

QcMatrix API (Fortran part)

```
function QcMatSetExternalMat(A, ..., A_ext) result(ierr)
  integer :: ierr
  type(QcMat), intent(in) :: A
  ... ...
  type(LANG_F_MATRIX), pointer, intent(in) :: A_ext
  integer iA(SIZEOF_F_TYPE_P)
  call f90_api_QcMatGetAdapterMat(A, ..., iA, ierr)
  if (ierr/=QSUCCESS) return
  call Mat_Ptr_SetExternalMat(iA, A_ext)
  call f90_api_QcMatSetAdapterMat(A, ..., iA, ierr)
end function QcMatSetExternalMat
```

QcMatrix API (C part)

```
QVoid f90_api_QcMatSetAdapterMat(QcMat_ptr *A,
                                 ...,
                                 QInt *iA,
                                 QErrorCode *ierr)
  RealMat *A_adapter;
  *ierr = QcMatSetAdapterMat(A->f90_mat, ..., &A_adapter);
  *ierr = AdapterMatSetExternalMat(A_adapter, iA);
  A_adapter = NULL;
}
```

QcMatrix Fortran Adapter (C part)

```
QErrorCode AdapterMatSetExternalMat(RealMat *A, QInt *iA)
  QInt ibyt;
  for (ibyt=0; ibyt<SIZEOF_F_TYPE_P; ibyt++) {
      A->f90_imat[ibyt] = iA[ibyt];
  }
  A->external_mat = QTRUE;
  return QSUCCESS;
}
```

QcMatrix Fortran Adapter (Fortran part)

```
subroutine Mat_Ptr_SetExternalMat(iA, A_ext)
  implicit none
  integer, intent(inout) :: iA(SIZEOF_F_TYPE_P)
  type(LANG_F_MATRIX), pointer, intent(in) :: A_ext
  type(matrix_ptr_t) A
  A = transfer(iA, A)
  call Matrix_Destroy(A%f90_mat)
  deallocate(A%f90_mat)
  A%f90_mat => A_ext
  iA = transfer(A, iA)  !gets the new iA
  return
end subroutine Mat_Ptr_SetExternalMat
```