MPI_Gather

Gathers together values from a group of processes

Synopsis

```
#include "mpi.h"
int MPI_Gather ( sendbuf, sendcnt, sendtype, recvbuf, recvcount, recvtype,
   root, comm )
void             *sendbuf;
int               sendcnt;
MPI_Datatype      sendtype;
void             *recvbuf;
int               recvcount;
MPI_Datatype      recvtype;
int               root;
MPI_Comm          comm;
```

Input Parameters

sendbuf - starting address of send buffer (choice)

sendcount - number of elements in send buffer (integer)

sendtype - data type of send buffer elements (handle)

recvcount - number of elements for any single receive (integer, significant only at root)

recvtype - data type of recv buffer elements (significant only at root) (handle)

root - rank of receiving process (integer)

comm - communicator (handle)

Output Parameter

recvbuf - address of receive buffer (choice, significant only at `root`)

Notes for Fortran

All MPI routines in Fortran (except for `MPI_WTIME` and `MPI_WTICK`) have an additional argument `ierr` at the end of the argument list. `ierr` is an integer and has the same meaning as the return value of the routine in C. In Fortran, MPI routines are subroutines, and are invoked with the `call` statement.

All MPI objects (e.g., `MPI_Datatype`, `MPI_Comm`) are of type `INTEGER` in Fortran.

Errors

All MPI routines (except `MPI_Wtime` and `MPI_Wtick`) return an error value; C routines as the value of the function and Fortran routines in the last argument. Before the value is returned, the current MPI error handler is called. By default, this error handler aborts the MPI job. The error handler may be changed with `MPI_Errhandler_set`; the predefined error handler `MPI_ERRORS_RETURN` may be used to cause error values to be returned. Note that MPI does *not* guarentee that an MPI program can continue past an error.

MPI_SUCCESS - No error; MPI routine completed successfully.

MPI_ERR_COMM - Invalid communicator. A common error is to use a null communicator in a call (not even allowed in `MPI_Comm_rank`).

MPI_ERR_COUNT - Invalid count argument. Count arguments must be non-negative; a count of zero is often valid.

MPI_ERR_TYPE - Invalid datatype argument. May be an uncommitted

MPI_Datatype (see `MPI_Type_commit`).

MPI_ERR_BUFFER - Invalid buffer pointer. Usually a null buffer where one is not valid.

Location:gather.c