

Introduction to MPI_Cancel



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- MPI_Cancel is a function in MPI that attempts to cancel a communication request.
- Useful when working with non-blocking communications, where a message send or receive operation has been initiated but we decide that the data is no longer needed before the operation completes.

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- `int MPI_Cancel(MPI_Request *request);`
- Here, `request` is a pointer to the communication request object to be cancelled.
- Note that even if a cancellation request is successful, the completion of the operation must still be confirmed using calls like `MPI_Wait` or `MPI_Test` to ensure that all resources associated with the communication are properly released.

Import Considerations of MPI_Cancel



- Effectiveness: The cancellation of a request is not guaranteed to succeed. It may fail if the message was already sent or received by the hardware.
- Usage: Generally used with non-blocking sends (`MPI_Isend`) or non-blocking receives (`MPI_Irecv`).

Simple Example



Let us consider a program where a non-blocking send operation is initiated by one process and then aimed to be cancelled with `MPI_Cancel`.

Suppose Process 0 initializes an array and starts a non-blocking send operation to Process 1. It then attempts to cancel this operation and waits for the cancellation to complete.

Process 1 waits briefly to simulate a delay, allowing the cancellation attempt by Process 0 before trying to receive the data. Depending on timing and MPI implementation, Process 1 might or might not receive the data.