4/3/39

Assignment No. 2

Message Passing Interface (MPI)

* Problem Statement :

Design a distributed application using MPI to carry out the calculation in parallel (i.e. by dividing the work up evenly among P processors) which count the number of primes between 1 and N

* Objectives :

To learn to implement any distributed applications based on MPI

Software requirements

MPI Express Software

* Theory :
Message Passing Interface (MPI)

Message passing is a popularly renowned mechanism to implement parallelism in applications.

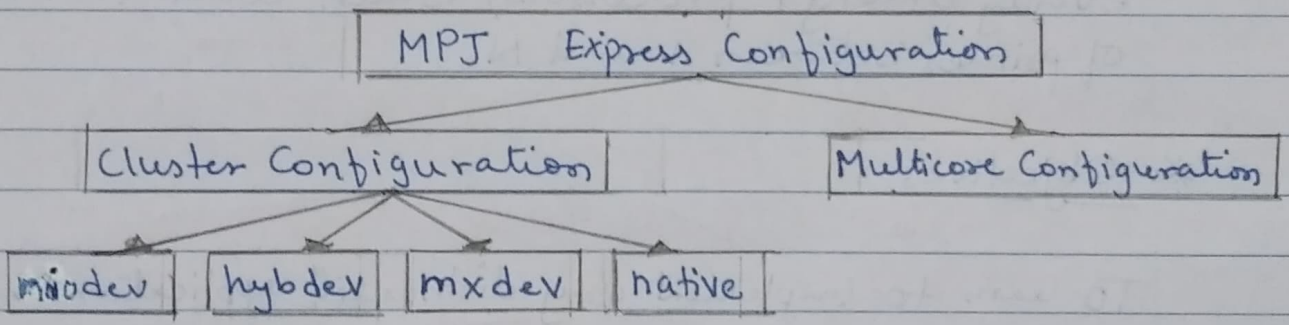
MPJ is a message passing library that can be used by application developers to execute their parallel Java applications on compute clusters or networks of computers.

43139

MPJ is a familiar Java API for MPI implementation. The programming model used by MPJ express is single program Multiple Data (SPMD).

MPJ MPI with Java

MPJ Express Configuration.



Cluster Configuration : Used on clusters or network of computers

Multicore configuration : Used on laptop or desktops.

Compilation and execution :

Installation.

1) Download MPJ Express (mpj.jar) & unpack it.
2) Set MPJ_HOME & PATH Environment variables.
   Export MPJ_HOME = /path/to/mpj
   Export PATH = $MPJ_HOME/bin : $PATH
   (can be added to ~/.bashrc)

43139

Compilation : javac -cp $MPJ_HOME/lib/mpj.jar ScatterGather.java

Execution : $MPJ_HOME/bin/mpjrun.sh -np ScatterGather

* Conclusion :

MPJ Express was successfully installed. A program for sending and receiving prime numbers was successfully created.