HPC Laboratory Assignment

Lab 2: Parallel Programming with MPI

A Distributed Data Structure

Bioinformatics Degree – Second course, Third Term.

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27/04/2023 – Campus Mar, Barcelona.

S1: MPI\_Comm\_rank( MPI\_COMM\_WORLD, &rank );

S2: MPI\_Comm\_size( MPI\_COMM\_WORLD, &size );

S3: MPI\_Recv( xlocal[0], maxn , MPI\_DOUBLE , rank - 1, 0, MPI\_COMM\_WORLD , &status );

S4: MPI\_Send( xlocal[1], maxn, MPI\_DOUBLE , rank - 1, 1, MPI\_COMM\_WORLD );

S5: MPI\_Recv( xlocal[maxn/size+1], maxn , MPI\_DOUBLW, rank + 1, 1,MPI\_COMM\_WORLD

, &status );

S6: MPI\_Reduce( &errcnt, &toterr, 1, MPI\_INT , MPI\_SUM , 0 , MPI\_COMM\_WORLD );

S7: MPI\_Isend( xlocal[maxn/size][] , maxn, MPI\_DOUBLE, rank + 1, 0, MPI\_COMM\_WORLD, &r[nreq++] );

S8: MPI\_Irecv( xlocal[0][] , maxn , MPI\_DOUBLE, rank - 1, 0, MPI\_COMM\_WORLD,

&r[nreq++] );

S9: MPI\_Isend( xlocal[1][] , maxn , MPI\_DOUBLE, rank - 1, 1, MPI\_COMM\_WORLD,

&r[nreq++] );

S10: MPI\_Irecv( xlocal[maxn/size+1][], maxn , MPI\_DOUBLE, rank + 1, 1, MPI\_COMM\_WORLD, &r[nreq++]);

S11: MPI\_Reduce( &errcnt, &toterr, 1, MPI\_INT, MPI\_SUM, 0, MPI\_COMM\_WORLD);

S12: MPI\_Sendrecv( xlocal[1], maxn , MPI\_DOUBLE , prev\_nbr, 1,

xlocal[maxn/size+1], maxn , MPI\_DOUBLE , next\_nbr, 1,

MPI\_COMM\_WORLD , status );