1. (i) Given $n$ elements and $n^{3/2}$ CRCW processors, show how to compute the minimum in $O(1)$ time.
(ii) Extend the previous idea to computing minimum of $n$ elements in $O(1)$ time using $n^{1+\varepsilon}$ CRCW processors for any $0 < \varepsilon < 1$.

2. Show how to compute the minimum of $n$ elements with $n$ CRCW processors in $O(1)$ expected time using a randomized algorithm.

3. Given an array of $n$ elements $a_1, a_2, \ldots, a_n$, the nearest smaller value of any element $a_i$ is defined as $\arg \min_{j > i} \{ a_j < a_i \}$. The all nearest value problem (ANSV) is to compute for each element $a_j$, its nearest smaller value.
   (i) Design a linear time sequential algorithm for ANSV.
   (ii) Design a polylog time $O(n)$ processors CRCW PRAM algorithm for ANSV problem.

4. (i) Show how to obtain a better processor-time bound for the two versions of the prefix computation. Recall that the first algorithm uses $n \log n$ processors and the second one uses $n$ processors to obtain the same parallel time bound of $O(\log n)$.
   (ii) Generalize the technique of clubbing $k$ (a parameter between 1 and $n$) contiguous values, compute the prefix recursively and then generate the missing values as a function of $k$ and $n$.

   Verify if these algorithms can be done using EREW model.

5. Show how to sort $n$ integers in the range $[1..\sqrt{n}]$ using $\sqrt{n}$ processors in $O(\sqrt{n})$ parallel steps. Specify which PRAM model is used.