

Execution Policies Solutions

Code execution and parallelism

- Briefly explain what is meant by the following type of execution
- Sequential
 - An operation is performed in a single instruction
- Vectorized
 - Several operations are performed simultaneously in a single instruction
- Parallel
 - Several cores each perform an operation in a single instruction, simultaneously
- Parallel + Vectorized
 - Several cores each perform several operations simultaneously in a single instruction, simultaneously

Execution policies

- Write a program which exercises the following code and outputs the final values of v

```
vector<int> v(2000);  
int count {0};  
for_each(v.begin(), v.end(), [&] (int& x) { x = ++count; });
```

- Rewrite the program to use each of the C++17 execution policies in turn

Execution policies

- Compare the output from each program, explaining any unusual features
- seq
 - Values will be from 1 to 2000. May not be in numerical order
- par
 - Values will be from 1 to n
 - If count is not protected against data races, n will differ from 2000.
 - May not be in numerical order
- par_unseq
 - Values will be from 1 to n
 - If count is not protected against data races, n will differ from 2000.
 - May not be in numerical order