Deadline: October 5th, 2021

1. Implement up-sweep and down-sweep parallel prefix sum algorithm using Openmp (8 points).
    a. Deliverable: Just openmp code.

Up-sweep Algorithm

```
1: for i = 0 to n − 1 in parallel do
2:     B[0][i] = A[i]
3: end for
4: for h = 1 to log n do
5:     for i = 0 to n/2^h − 1 in parallel do
6:         B[h][i] = B[h − 1][2i] + B[h − 1][2i + 1]
7:     end for
8: end for
```

Down-sweep Algorithm

```
9:  C[log n][0] = 0
10: for h = log n − 1 down to 0 do
11:     for i = 0 to n/2^h − 1 in parallel do
12:         if i % 2 == 0 then
13:             C[h][i] = C[h + 1][i/2]
14:         else
15:             C[h][i] = C[h + 1][(i−1)/2] + B[h][i − 1]
16:         end if
17:     end for
18: end for
19: for i = 0 to n − 1 in parallel do
20:     A[i] = A[i] + C[0, i]
21: end for
```