COMP 322: Fundamentals of Parallel Programming (Spring 2019)
Instructors: Mack Joyner, Zoran Budimlić
Worksheet 4: due at end of class today

Name: ___________________________ Netid: _______________

Honor Code Policy: You are free to discuss all aspects of in-class worksheets with your other classmates, the teaching assistants and the professor during the class. You can work in a group and write down the solution that you obtained as a group. If you use any material from external sources, you must provide proper attribution.

Array Sum Speedup

- Assume T(S,P) = WORK(G,S)/P + CPL(G,S) = (S-1)/P + log2(S) for the parallel array sum computation shown in slide 4 (using the upper bound)

- Assume S = 1024 ==> log2(S) = 10

- Compute for 10, 100, 1000 processors (round to 1 decimal place)
  T(S,P) = (S-1)/P + log2(S) = 1023/P + 10
  Speedup(10) = T(1)/T(10) =
  Speedup(100) = T(1)/T(100) =
  Speedup(1000) = T(1)/T(1000) =

- Why does the speedup not increase linearly in proportion to the number of processors?