

Параллельный Merge Sort на pthreads

n - количество данных, m - максимальный размер чанка, P - число потоков

n = 3000000, m = 100000, P = 1

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In [16]: import matplotlib.pyplot as plt
X = [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16]
# MergeSort time
Y1 = [0.492207, 0.282706, 0.281921, 0.288199, 0.273104,
      0.200063, 0.194950, 0.191297, 0.203232, 0.189301,
      0.200182, 0.195302, 0.211523, 0.185120, 0.179946, 0.179561]
# QSort time
Y2 = [0.360219, 0.358244, 0.357583, 0.364889, 0.363031,
      0.360070, 0.360070, 0.360032, 0.357583, 0.364889,
      0.370010, 0.365524, 0.370490, 0.359670, 0.359337, 0.368985]

Y = [Y2[i] / Y1[i] for i in range(len(Y1))]
Z = [Y[i] / X[i] for i in range(len(Y1))]

plt.plot(X, Y1, label = "Parallel Merge Sort")
plt.plot(X, Y2, label = "qsort")
plt.xlim(0, 16)
plt.grid(True)
plt.title("T(P)")
plt.legend()
plt.show()

plt.plot(X, Y, label = "Acceleration")
plt.xlim(0, 16)
plt.grid(True)
plt.title("S(P)")
plt.legend()
plt.show()

plt.plot(X, Z, label = "Scale")
plt.xlim(0, 16)
plt.grid(True)
plt.title("E(P)")
plt.legend()
plt.show()
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