**CMPE 300 ANALYSIS OF ALGORITHMS** 28.12.2017

###### FINAL

1. Write in pseudocode a comparison-based sorting algorithm for sorting a list of size n on 2-dimensional mesh Mq,q, where n=q2. The algorithm must be written completely.

Suppose that initially each element of the list is in a separate processor. The complexity W(n) of the algorithm must be Θ(n1/2 log n).

Analyze W(n), C(n), S(n), and E(n) clearly.

1. Determine the worst-case lower bound of finding the maximum value in a list L[0:n-1] by a comparison-based algorithm on EREW PRAM using an unlimited number of processors. Assume that the elements in the list are distinct.

Use the adversary technique. The role of the adversary must be stated clearly with examples.

1. Suppose that we do not know the value of the constant π, but we have the following information: the area of a circle with radius r is πr2. By using this fact, write in pseudocode a numerical probabilistic algorithm for finding an approximate value for π. (If desired, you can assume that the random function returns real values.)

*Notes:*

* Where pseudocode is required, the syntax of the pseudocode must be strictly followed. No points will be given if the syntax is not followed or any other language (e.g. C) is used.
* Questions 1,2:35 points, 3:30 points
* Time: 1:45 hours
* Close notes and books

Mesut sanmak için kendimi

Ne kâğıt isterim, ne kalem;

Parmaklarımda cıgaram,

Dalar giderim mavisinden içeri

Karşımda duran resmin.

Giderim, deniz çeker;

Deniz çeker, dünya tutar.

İçkiye benzer bir şey mi var,

Bir şey mi var ki havada

Deli eder insanı, sarhoş eder?

Bilirim, yalan, hepsi yalan;

Taka olduğum, tekne olduğum yalan;

Suların kaburgalarımdaki serinliği,

İskotada uğuldayan rüzgâr,

Haftalarca dinmeyen motor sesi,

Yalan.

Ama gene de,

Gene de güzel günler geçirebilirim;

Geçirebilirim bu mavilikte,

Suda yüzen karpuz kabuğundan farksız,

Ağacın gökyüzüne vuran aksinden,

Her sabah erikleri saran buğudan,

Buğudan, sisten, ışıktan, kokudan...