Computer Arithmetic - Fall 2001
Assignment No. 1
Course homepage: `http://hyde.eng.tau.ac.il/Arith01/arith.html`

The syllabus and academic requirements for this course appear in the course's homepage.

Questions: (Deadline: November 8th - before the beginning of the lecture.)

1. Recoding. These questions refer to the paper "Partial Compression and Recoding", by Daumas, Even, and Matula. You can download the manuscript at `http://hyde.eng.tau.ac.il/Arith01/recoding_paper.ps`

   (a) Prove the correctness of the implementations of PPM and MMP Recoders depicted in Figure 1 in page 13.

   (b) Prove parts 1 and 3 of Theorem 3 (page 6).

   (c) Prove Corollary 4 (page 6).

   (d) Prove Corollary 5 (page 7).

2. Parallel addition. This question refers to class notes on parallel addition prepared by Alexander Lifshitz. You can download the manuscript from `http://www.eng.tau.ac.il/~guy/arith99/Lecture_Notes/3_alex.ps.gz`

   (a) Read the lecture notes.

   (b) Extend the design and its proof to a radix r adder. Assume that each digit is represented by $\lceil \log_2 r \rceil$ bits. (Do not assume that r is a power of 2.)
   Analyze the cost and delay of your design.