Computers and Programming. Unified Fall 2003.   I. K. Lundqvist

Learning Objectives

The learning objectives of Computers and Programming (CP) under the Unified umbrella
are those of a "First Course" in CP. The learning objectives are also influenced by the
fact that many Unified students may not take another course in CP during their
undergraduate studies.

Students who successfully pass CP should:

- Use the Ada programming language as an engineering tool in designing and
  implementing aerospace software systems.

- Develop a programming style that is accepted industry practice.

- Develop a basic understanding of computer architecture.

Measurable Outcomes
Fall term:
1. Describe program language evolution and classification (From Machine Language
   to 4th Generation Languages)
2. Describe basic computer architecture (von Neumann, RISC vs CISC)
3. Solve basic numerical computation in binary/ other number representation
   systems.
4. Design and implement simple assembly language programs (SimpleSIM)
5. Describe the various classes of operating systems and the correlation to hardware
   growth. Evolution based classification (Single User, Multitasking,
   Multiprocessing), Domain-specific classification (Real-Time, Database, etc)
6. Design and implement straight-line Ada programs.
7. Design recursive programs and mathematically compute the upperbound on
   execution time.
8. Develop a programming style that is accepted industry practice (Ada Style Guide)

Assessment Strategies

1. Problem sets consist of theory, programming or a combination thereof.
2. Programming assignments will be graded both on algorithm correctness as well as
   program style.
3. The systems problems provide a means of using Ada as an engineering tool. The
   grading on the Ada portion is treated the same as the programming assignments
4. Theory is graded on technical content followed by neatness.
5. The PRS system is used to reinforce/evaluate in class-understanding of concepts
6. One Quiz will be used to assess end-of-term understanding of the subject