Topics in project 1

Some things covered in lectures, some via examples on web page

- Discretization of cont. problem

$$-\frac{d^2u}{dx^2} = f(x) \qquad u \in [0,1]$$

(Boundary value problem) $u(0)=0$, $u(1)=0$

- Mathematical approx. to (second) derivative (suitable for discretization)
- Connection to standard matrix eq. and ($A\bar{x}=\bar{b}$) approaches to solve this. (Gauss elim., LU decomp.)
- Errors!
  - Truncation error (purely math.)
  - Num. round-off (can't represent numbers with infinite prec.)
  - ⇒ loss of accum. prec.
- FLOPs

Coding

- Working with arrays/vectors and matrices
- Input/output (nicely formatted output)
- Timing code
- Compilation & linking, basic code design, ...