Professionalism

1 Common Characteristics of a Profession

- Education and training are required prior to being able to practice the profession
- Members of the profession:
  - decide the nature of this training
  - control the entry of new members to the profession
  - decide about certain standards of conduct to be followed
    - design mechanisms to enforce them
- The profession has one (or more) professional bodies
- A combination of formal education and training (experience) is necessary to "rise" within the profession

2 Professional Bodies

- Started by people coming together because of shared interests in some activity, e.g.
- computers, law, science, photography, mathematics . . .
  - (a list of bodies in the UK: `http://www.careercompanion.co.uk/files/page_element/page_element/List_of_Professional_Bodies_mapped_to_career_interests.pdf`)
- BCS (Chartered Institute for IT) started in 1957
- The main goals of a body are to:
  - transfer knowledge / experience to its junior members
  - build stronger connections between its members (networking)
    - organize meetings / conferences
  - help members find jobs
  - provide professional advice to the members from other senior members
- Other main goals of a professional body:
  - to establish code of professional conduct
    - take disciplinary measures against those who breach the code
  - to represent the common interests against others, or protect them from others, who:
    - try to enter it without the proper knowledge, or practice it dishonestly
  - establish mechanisms for disseminating knowledge of good practice
  - setting standards of education and experience to be met by members
  - to advise the government about matters within their expertise, e.g.
    - to set up security standards for using some new technologies
    - to certify new products in the market
  - being member of a body "guarantees" that you satisfy some minimum professional quality standards

3 Professional Bodies

- IET - *Institution of Engineering and Technology* "Professional home for life for Engineers and Technologists"
- IEE - Institute of Electrical Engineers in the UK
- IEEE - Institute of Electrical and Electronics Engineers "The world's largest professional association for the advancement of technology"
- ACM - Association for Computer Machinery "Advancing Computing as a Science & Profession"
- BCS - the Chartered Institute for IT (Royal Charter in 1984) Formerly the British Computer Society (since 1957)
- EATCS - *European Association for Theoretical Computer Science*
- Royal Academy of Engineering
- ACL - Association for Computational Linguistics

4 Protecting the public

- in the past, professional bodies received a royal charter (formal document) to be recognised, e.g. BCS was awarded a royal charter in 1984.
- In cases of public interest, Parliament may grant the members of a professional body some sort of "legal monopoly"
- This can be done in two ways:
  - Reservation of title
  - Reservation of function

Definition: Reservation of title

You are not allowed to use some professional titles, if you are not a member of a particular professional body

Definition: Reservation of function

You are not allowed to perform certain professional activities, if you are not "qualified" by a particular professional body

- In England & Wales, you are not allowed to audit the accounts of *public companies* if you are not a member of:
  - the Institute of Chartered Accountants and the Association of Certified Accountants
- Reservation of title and function could be required
  - Veterinary Surgeons Act 1996
    * you are not allowed to call yourself veterinary surgeon nor carry out surgical operation unless registered with the Royal College of Veterinary Surgeons (RCVS)
  - in the USA, title and function reserved not to members of professional bodies but to those registered by a state government
  - in the UK, membership of the Architects Registration Board now replaces membership in the Royal Institute of British Architects as a requirement for calling yourself an architect

5 Software Development as Engineering

- Software development and information systems usually regarded as a branch of engineering
  - people practicing it are called engineers
- Engineering and software development share some characteristics
  - Engineers design and build a wide variety of objects
  - Designing and building objects must work properly and meet predetermined requirements (functionality, performance, and reliability)
  - designing and building objects must be completed within constrained time and budget

6 Are we engineers in America?

- In the USA, Engineering is reserved both in title and function
- In the USA, it is illegal:
  - to call yourself an engineer in a state unless you are registered with the State Engineers Registration Board
  - do engineering work without the supervision of a registered engineer
  - for a company to have the word "engineering" in its name, unless they employ one or more registered engineers
- Academic degree programs with "engineering" in the title must be taught (mostly) by registered engineers
- Must have approved bachelor's degree, 4 years experience working for a registered engineer, passed 2 eight hour public exams

7 Are we Engineers in the UK?

- Neither the title nor the function of Engineer are reserved in the UK
- Engineering Council: `http://www.engc.org.uk/`
  - the UK regulatory body for the engineering profession
  - if you are registered, then you are "Chartered Engineer"
  - sets standards of education, experience and competency for:
    - initial registration
    - continuing registration
- Main objectives of the Engineering Council:
  - to advance education in science and engineering
  - to promote the practice of engineering for the "public good"
  - to advise the government and represent the UK internationally
  - to maintain a register of accredited programmes in Higher Education
  - license appropriate bodies to admit members to the register
- Useful link with many documents describing the standards of the Engineering Council:
  - `http://www.engc.org.uk/standards-guidance/standards/uk-spec/`

8 International Recognition of Engineering qualification

- EU mobility directives
  - movement of qualified professionals in EU countries
  - This done through FEANI 1951 (European Federation of National Engineering Associations) `https://www.feani.org/feani/what-feani`
    * maintains a register of EU engineers (EurIng)
- Washington Accord 1989 (`https://web.archive.org/web/20160306142535/http://washingtonaccord.org/`)
  - Australia, UK, New Zealand, USA, Canada, Ireland etc.
  - standards and procedures are used to accredit academic education of an engineer
  - the agreement is fairly limited to undergraduate levels

9 Compulsory Registration of Software Engineers (SE)

- many disasters directly related to lack of professional competence of SEs
  - system Therac-25 in the USA
  - the London Ambulance System in the UK
- Dangers arising from professional incompetence led to calls for compulsory registration of SEs
- All software must be written by registered SEs
- Little progress in this direction has been made