

# Professional Bodies in Computing

Chapter-3

CS449-Professional Issues in Information Technology

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# Chapter Outcome

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*After reading this chapter, you should:*

- *be aware of the most important **professional bodies in computing** across the world;*
- *understand the **membership structure** of the **BCS**;*
- *be familiar with the **range of activities** carried out by professional bodies in computing;*
- *understand **the obligations** that professional bodies in **computing** impose on their members and, specifically, be familiar with **the BCS's Code of Conduct**;*
- *be familiar with **the services that professional bodies offer to their members** in order to help them meet those obligations.*

# DEVELOPMENT OF PROFESSIONAL BODIES IN COMPUTING

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A professional body usually starts by a group of people coming together because of a shared interest in a particular type of activity.

There are many **professional bodies** and they **cover** a very **wide range of professions**, including:

- the law, medicine,
- many different branches of science and engineering, accountancy, architecture, surveying, and many others.

**The British Computer Society (BCS)** was set up in 1957 by a group of people working in the new and expanding field of computers, who wanted the opportunity to exchange ideas  
BCS has about 70,000 members.

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# DEVELOPMENT OF PROFESSIONAL BODIES IN COMPUTING.....

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The **Institution of Engineering and Technology** is the other main body in the UK that includes information systems engineers among its members.

- It was formed in 2006 by a merger of the IEE
- which was set up in 1871 to develop the field of Electrical Engineering,
- It was found by its merger(union) with the Institution of Incorporated Engineers.

It covers Electrical/Electronic Engineering and a number of other fields in addition to IT, with membership of around 150,000.

# DEVELOPMENT OF PROFESSIONAL BODIES IN COMPUTING.....

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While the role of professional bodies in the United States is somewhat different from their role in the UK, there are **two professional computing bodies** based in the USA whose importance is worldwide and immense.

**The Institute of Electrical and Electronic Engineers (IEEE)** is a professional engineering society based in the USA but **with members and activities spread worldwide.**

Under the banner of the IEEE first professional society in the field of computing was founded in 1946.

# DEVELOPMENT OF PROFESSIONAL BODIES IN COMPUTING.....

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- This was the **IEEE Computer Society (IEEE-CS)**; today it has over 100,000 members.
- It was closely followed by The Association for Computing Machinery, universally known as the **ACM**. (non-profit professional membership grp)
- This was founded in 1947 and now has over 75,000 members.
- The ACM is associated with academic and scholarly interests in computer science. Its motto is "Advancing Computing as a Science & Profession".
- Like the IEEE-CS, it is primarily an American organization, but it has members and activities in many countries.



# The BCS Royal Charter

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A BCS Royal Charter is a **formal document**, signed by the Queen in 1984, which establishes the organization and lays down its purpose and rules of operation.

The charter of the BCS sets out very clearly the purposes of the institution.

- To promote the study and practice of Computing
- To advance knowledge and education therein for the benefit of the public.

# The BCS Royal Charter.....

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The **most important rules** of (BCS) can be summarized as follows:

1. Establishing a **code of conduct** to regulate the way members of the body **behave in their professional lives** and a disciplinary procedure to discipline members who breach this code;
2. Promoting education in the field of Computing;
3. Setting standards of education and experience that must be met by people wishing to become members of the body.



# The BCS Royal Charter.....

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4. Establishing mechanisms for disseminating knowledge of good practice and new developments to its members, through publications & conferences and also increasingly using the Internet;
5. To promote and support standards and codes of practice;
6. To advise government & regulatory bodies about matters within its area of expertise.

# Professional Conduct

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The BCS Charter specifically requires the BCS to *‘Establish and maintain a sound ethical foundation for the use of computers.’*

All professional bodies are under a **similar obligation**; this is one of the most important characteristics of a professional body.

It is done by laying down a code of conduct to which their members are required to adhere/obey.

# Professional Conduct....

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The Code is divided into following sections:

1. The Public Interest
2. Professional Competence and Integrity
3. Duty to the Relevant Authority
4. Duty to the Profession

The **highlighted text** of the code is as follows:



# The Public Interest

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You shall:

- a) have due regard for public health, privacy, security and wellbeing of others and the environment.*
- b) have due respect for the legitimate rights of Third Parties.*
- c) conduct your professional activities without discrimination on the grounds of gender, marital status, nationality, color, race, ethnic origin, religion, age or disability, or of any other condition or requirement*
- d) promote equal access to the benefits of IT and seek to promote the inclusion/addition of all sectors in society wherever opportunities arise.*

# Professional Competence and Integrity

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You shall:

- a) Only undertake to do work, or provide a service that is within your professional competence.*
- b) NOT claim any level of competence that you do not possess.*
- c) Develop your professional knowledge, skills and competence on a continuing basis, maintaining awareness of technological developments, procedures, and standards that are relevant to your field.*

# Professional Competence and Integrity.....

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*d) Ensure that you have the knowledge & understanding of Legislation & that you comply with such Legislation in carrying out your professional responsibilities.*

*e) Respect and value alternative viewpoints and, seek, accept and offer honest criticisms of work.*

*f) Avoid injuring others, their property, reputation, or employment by false or malicious or negligent action or inaction.*

*g) Reject and will not make any offer of bribery or unethical inducement.*



# Duty to the Relevant Authority

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You shall

- a) Carry out your professional responsibilities with due care and diligence in accordance with the Relevant Authority's requirements whilst exercising your professional judgment at all times.*
- b) Seek to avoid any situation that may give rise to a conflict of interest between you and your Relevant Authority.*
- c) Accept professional responsibility for your work and for the work of colleagues who are defined in a given context as working under your supervision.*

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# Duty to the Relevant Authority....

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*d) NOT disclose or authorize to be disclosed, or use for personal gain or to benefit a third party, confidential information except with the permission of your Relevant Authority, or as required by Legislation.*

*e) NOT misrepresent or withhold information on the performance of products, systems or services (unless lawfully bound by a duty of confidentiality not to disclose such information), or take advantage of the lack of relevant knowledge or inexperience of others.*

# Duty to the Profession

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You shall:

- a) Accept your personal duty to maintain the reputation of the profession and not take any action, which could bring the profession into disrepute.*
- b) Seek to improve professional standards through participation in their development, use and enforcement.*
- c) Uphold the reputation and good standing of BCS, the Chartered Institute for IT.*



# Duty to the Profession....

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*d) Act with integrity and respect in your professional relationships with all members of BCS and with members of other professions with whom you work in a professional capacity.*

*e) Notify BCS if convicted of a criminal offence or upon becoming bankrupt or disqualified as a Company Director and in each case give details of the relevant jurisdiction.*

*f) Encourage and support fellow members in their professional development.*

# Building Team at SYMANTIC



- Symantec gives an environment to its employees to interact effectively with each other.
- Annual trips and dinners are arranged.
- Provides separate dining area with gaming activities so that teams can mix together.

# Status of Professional Codes of Conduct

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Like most professional bodies, the BCS has procedures that allow it to take disciplinary action against members who infringe the Code, with expulsion as the ultimate sanction.

A member who has been subject to disciplinary action can thus take the matter to the civil courts, which will expect the disciplinary proceedings to have been conducted in accordance with the rules of natural justice. This places limits on the extent to which codes of conduct can be enforced.



# Status of Professional Codes of Conduct....

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Most codes of conduct contain some very precise rules and some rather vague or aspirational ones.

Some people would regard any work carried out for the nuclear industry as being Hazardous to public health, safety and the environment.

Others argue that the use of nuclear power stations are beneficial to the environment because it avoids carbon dioxide emissions.

The BCS promotes education in a number of ways:

- It runs its own system of professional examinations and grants approval to suitable organizations that provide courses to prepare students for them;
- It accredits degree programs offered by universities and other higher education institutions;
- It designs and franchises short courses leading to qualifications in specific areas.

# The Professional Examinations

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The BCS professional examinations consist of three stages:

- the Certificate,
- the Diploma, and
- the Professional Graduate Diploma.

They consists of normal written examinations. Projects are assessed at Diploma and Professional Graduate Diploma levels.

The Professional Graduate Diploma with the project is considered to be the equivalent of an honors degree.



# Accreditation and Exemption

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The term *accreditation* is used with a confusing variety of related meanings.

It refers to the process by which a professional body recognizes specific academic awards made by specific institutions of higher education as satisfying, wholly or partly, the academic requirements for professional membership.

# Accreditation and Exemption....

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Awards that are recognized in this way are referred to as *accredited awards* and the courses that lead to them are referred to as *accredited courses*.

This term is used by a range of professional bodies in such fields as Medicine, Law, Engineering and Science.

In deciding whether to accredit an award, the BCS takes into consideration the following:

# Accreditation

- ❑ Two tier process:
- ❑ Institutional Accreditation (HEC)
- ❑ Programme Accreditation (Accreditation Councils)



# Accreditation Councils

- ❑ For Accreditation at Programme level HEC:
- ❑ Linkages with already existing Councils
- ❑ (PMDC, PEC, PVMC, PCTAP, PBC and Pharmacy Council)
  
- ❑ Establishment of new Accreditation Councils
  - i. NCEAC
  - ii. NAEAC
  - iii. PTEAC
  - iv. NBEAC

# 3 Major Components of Quality Assurance Programme

- ❑ Development of Quality Assurance Criteria.
- ❑ Development of Processes & Capacity Building
- ❑ Monitoring and Evaluation

# Accreditation and Exemption....

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- Check the academic content of the program for compliance with Society's requirements, which are based on the Computing benchmark statement of the UK Quality Assurance Agency for Higher Education;
- Check the quality of the learning and teaching facilities provided for students, including laboratory facilities and staff qualifications;
- Is the Quality control and assurance procedures followed by the institution offering the award.



# Professional Certification

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The BCS offers a substantial range of qualifications, known as certificates that are achievable through short courses.

The courses are intended as training courses for staff working in the industry.

These training course are of about 40 hours.

BCS does not itself provide the training courses; they are provided by outside training organizations.

# Professional Certification....

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BCS designs the syllabus for each course, accredits training organizations that wish to run courses, and sets and marks the examinations.

Courses are available in a wide range of topics including:

- Business Analysis
- Sustainable IT
- IT Governance & Information Security
- Project Management & Support
- Software Testing.

# Continuing Professional Development

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For many years, little attention was given to how professionals kept their knowledge up to date after qualifying.

Thus, it was possible for a doctor, a dentist or a solicitor to practice for 40 years without any formal requirement to update their knowledge.

Most professionals were aware of the need to do this and would take whatever opportunities were available.



# Continuing Professional Development....

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These opportunities might not be readily available and the pressures of day-to-day work might make it difficult for busy professionals to take advantage of them.

The increasing rate at which new knowledge was becoming available and existing knowledge was being used in new ways led, in the 1970s, to increasing concern that professionals should keep their qualifications up to date and this process became known as *continuing professional development* (CPD).

# CPD Services to Individual Members

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All members of the BCS receive a copy of its monthly publication, “**IT NOW**”.

This is the basic mechanism the Society provides to keep its members aware of new developments and current topics of interest to the profession.

Through its branches, the Society provides its members with many opportunities for *continuing professional development*.

# Career Development & CPD Services to the Industry

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For many years, managing IT staff presented problems to their employers.

The chronic shortage of qualified & experienced staff together with the rapid pace of change made the problems particularly acute for large organizations.

The BCS started to tackle this problem in the mid-1980s with the development of the *Industry Structure Model* (ISM).



# Career Development & CPD Services to the Industry

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The model is in the form of a matrix of roles,

- One dimension indexed by specialty (computer operations, network design, database design, programming, project management, and so on)
- And the other indexed by level, from 1 to 8.

In each cell of the matrix, a description was provided,

- That defined the criteria that a person should meet on entry to the role,
- The tasks an employee in that role is expected to perform,
- The level of competence expected, and a description of appropriate training and development activities.

# The Advancement of Knowledge

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The Royal Charter of the BCS states very specifically that one of its objects is to *advance knowledge of computing*.

When the Society was founded in 1957, this was its main concern. Many professional bodies began in the same way and most include the advancement of knowledge among their objects.

In practice, however, much of the research that contributes to the advancement of knowledge takes place in universities and in research establishments both public and private.

# The Advancement of Knowledge....

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As a result, professional bodies tend to be more concerned with the dissemination of knowledge, through their publications, conferences that they organize or sponsor various other activities.

The BCS and the IET are both very active in this area but they are small players in comparison with the ACM and the IEEE-CS.



# The Advancement of Knowledge....

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One of the first actions of the BCS when it was formed was to establish the Computer Journal, which is published regularly since 1958.

Most of the articles in the Computer Journal and the IET journals are targeted at specialists.

BCS also supports a considerable number of specialist groups. These groups bring together people with interests in specific areas covering a wide range from AI to Software Testing, from Human Computer Interaction to Law.

# The Advancement of Knowledge...

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Many of the specialist groups of the BCS organize or sponsor conferences.

Conferences form a second important mechanism for disseminating advances in knowledge.

Again, the ACM and the IEEE-CS are leaders in the field and they sponsor or organize a large number of specialized conferences every year.

However, the majority of them are held in the United States.

# Membership Grades

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The BCS has three major membership categories:

- Standard grades,
- professional grades and
- chartered professional status.

Membership in the professional grades requires degree level qualifications in IT or substantial experience.

For chartered professional status, both degree level qualifications and substantial experience are required.



# The Standard Grades

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The standard grades are Affiliate, Student and Associate.

- Affiliate status is open to anyone with an interest in IT who is prepared to commit to complying with the BCS Code of Conduct and Code of Practice.
- Student membership is open to those following an approved course of study leading to a qualification recognized for admission to Associate or Professional membership of the Society.

# The Standard Grades.....

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Associate membership is open to anyone who has any of the following:

- More than one but less than five years of IT work experience;
- A Higher National Certificate in an IT-related field;
- A non-accredited degree with a significant IT content.

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# The Professional Grades

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There are two professional grades:

- Member
- Fellow.

To qualify for membership in the professional grades, one must have one of the following:

- The BCS Professional Graduate Diploma including the project;
- An honors degree that gives you full exemption from the BCS examinations;
- Five years of relevant professional IT work experience;



# The Professional Grades....

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Some combination of academic qualifications and professional IT work experience that is judged to be equivalent to one of the above.

Members are entitled to use the letters MBCS after their name.

Fellow is the most senior professional grade. It is open to applicants who can demonstrate a minimum of five years IT practitioner experience and hold a senior IT position or who have an established reputation of eminence or authority in the field of IT.

Fellows may use the letters **FBCS** after their names.

# Chartered Professionals

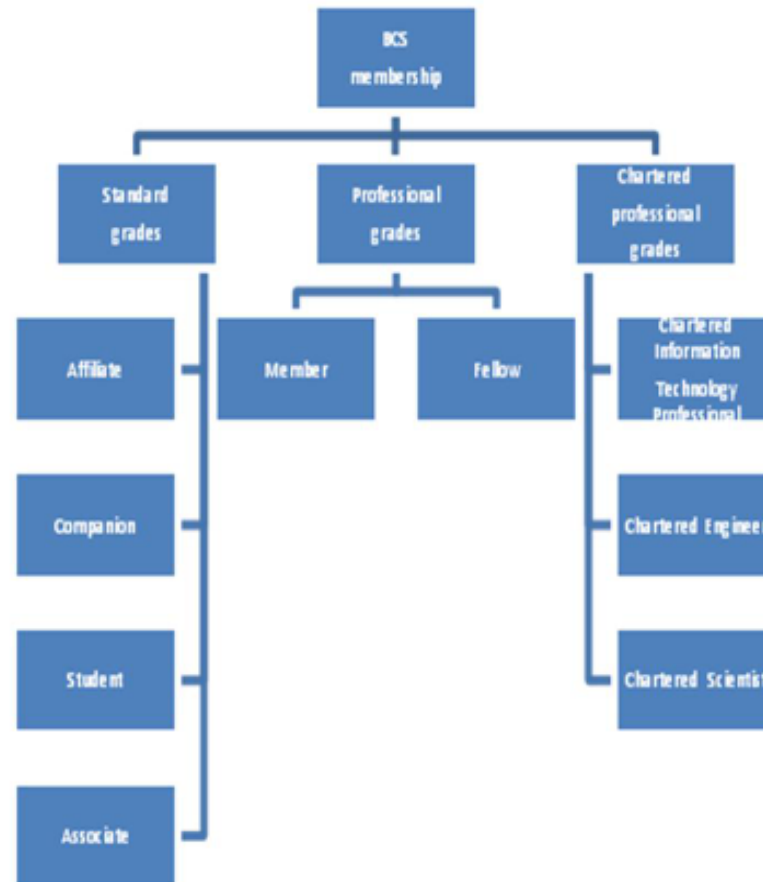
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To qualify for chartered professional status within the BCS, you must be a Member or Fellow holding the BCS Professional Graduate Diploma including the project,

Or an honors degree and five years of relevant professional IT work experience.

Chartered professionals are entitled to use the letters **CITP** (*for Chartered Information Technology Professional*) after their names, along with **MBCS** or **FBCS**, in the form **MBCS CITP** or **FBCS CITP**.

# BCS Membership Structure





# Summary

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- The development of professional bodies in computing
- Professional conduct
- Education
- Continuing professional development
- The advancement of knowledge
- Membership grades

# Case:

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Your company is due to deliver a new water processing facility to a national water company. The facility includes real-time monitoring of chemicals and pollutants. This is a major contract for your company, but it is behind schedule and late delivery will result in heavy penalty costs. You have just been told that the company has assigned you to the project to work on the real-time monitoring subsystem. Assuming that you are an experienced programmer but have little experience of real-time systems, discuss which clauses in the Code of Conduct are relevant to this situation and how the Code might affect what you do.

# *Answer:*

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- The most relevant clauses are: In your professional role you shall have regard for the public health, safety and environment (Clause 2). The system you are going to work on clearly has the potential to affect all these. You must therefore take your responsibilities very seriously.
- You shall seek to upgrade your professional knowledge and skill, and shall maintain awareness of technological developments, procedures and standards which are relevant to your field, and encourage your subordinates to do likewise (Clause 14). Since you have little experience of this field, you have a duty to try to learn as much as you can about it. You can certainly expect your company to send you on relevant courses or provide training in other ways but you should expect to spend some of your spare time on private study in the area.
- You shall not claim any level of competence that you do not possess (part of Clause 15). You must make sure that your company understands that you have little experience in the area of real time programming.