

BSc (Hons) in Software Engineering

Course Code: GS3207
Introduction Lecture
Ethics & Professionalism

Introduction to GS3207 (CCU) - Ethics & Professionalism

Objectives

- To **improve** long term existence in computing by increasing **knowledge, thinking** and **awareness** about non-technical problems of computing professionals
- To **support to act better** when faced with difficult choices in non-technical problems
- To **gain experience** of identifying and applying appropriate ethical and professional knowledge to deal with real world situations.

Learning Outcomes

After completing this course and the essential reading and activities, you will be able to,

- Recognize intellectual property rights, copyrights and patents.
- Compare methods and tools of analysis to identify and evaluate ethical choices.
- Recognize professional and ethical responsibilities which include in the ACM/IEEE Professional Code of Ethics.
- Explain emerging issues related to ethics in cyberspace.

Aims of the module

- To demonstrate the impact and the ethical concerns of using computer technology in contemporary business domain.

Subjects to cover

- Ethics and Professionalism
- Privacy
- security
- Cybercrime
- Intellectual property
- ICT governance
- Commerce and Free Speech
- Digital divide
- Digital identity and digital communities
- People and Cyber technology

Evaluation Criteria

Assessment	20%
Mid Semester Exam	20%
End Semester Exam	60%

Recommended Reading

- John Weckert, Richard Lucas, Professionalism in the Information and Communication Technology Industry.
- Bynum, Terrell, Computer and Information Ethics, The Stanford Encyclopedia of Philosophy (Winter 2015 Edition).

Background

Just because you can do something doesn't mean you should do it. Like any other profession, information technology benefits from a standard, accepted code of ethics that helps guide behavior in sometimes confusing contexts.

Background

Is it okay to read campus users' email?

What if you believe that university policies are being violated?

Would you tell the users that their email is being read?

Is it okay to look through files on a user's laptop when you're troubleshooting a problem?

What if the user is someone you think might be storing illegal content on the laptop?

Technological Evolution: From Microprocessors to the World Wide Web

- ❑ Evaluation of microprocessor
- ❑ Development of hardware and software
- ❑ Development of the Internet
- ❑ Development of World Wide Web

The Emergence of Social and Ethical Problems in Computing

- Privacy Concerns
- Cybersecurity Threats
- Algorithmic Bias and Fairness
- Digital Divide
- Ethical AI and Autonomous Systems
- Misinformation and Fake News
- Tech Addiction and Mental Health
- Environmental Impact

The Emergence of Social and Ethical Problems in Computing

- Privacy Concerns: The collection, storage, and utilization of personal information have raised serious concerns about individual privacy.
- Cybersecurity Threats : hacking, data breaches, and malware attacks.
- Algorithmic Bias and Fairness: increasingly influential role in decision-making processes
- Digital Divide: unequal access to and utilization of technology due to factors like socioeconomic status, geographic location, and demographic characteristics
- Ethical AI and Autonomous Systems: raising questions about accountability, transparency, and the potential for machines to make life-altering choices.
- Misinformation and Fake News
- Tech Addiction and Mental Health: Excessive screen time, social media pressure, and the nature of online interactions can contribute to various mental health challenges.
- Environmental Impact: energy consumption and the disposal of electronic waste

Case study: Rise of Computer Viruses and Cyber Attacks

Computer viruses and cyber attacks have been on the rise since their early development.

As the Internet has become more widely used, viruses find more opportunities to spread.

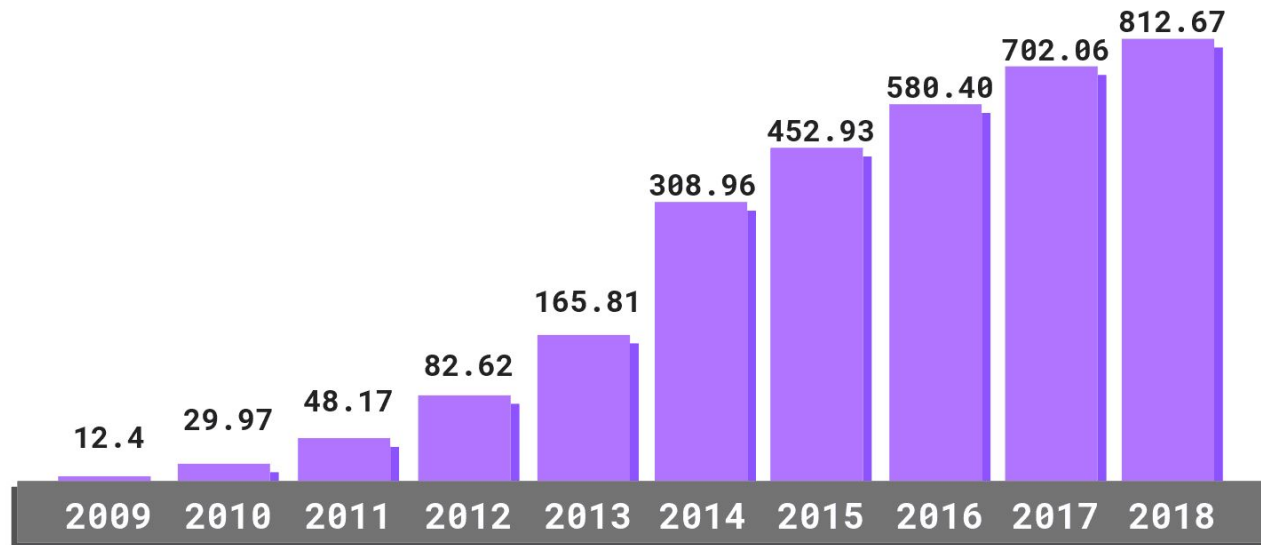
When the media reports on virus incidents, it can contribute to their spread.

Problem: Rise of Computer Viruses and Cyber Attacks

Table 1.1 Number of attack incidents reported to CERT (1988–2001, third quarter) – Update Table

Year	Incidents
1988	6
1989	132
1990	252
1991	406
1992	773
1993	1,334
1994	2,340
1995	2,412
1996	2,573
1997	2,134
1998	3,734
1999	9,859
2000	21,756
2001 (Q1–Q3)	34,754

Problem: Rise of Computer Viruses and Cyber Attacks



Total Malware Infection Growth Rate (In Millions)

The Latest 2023 Cyber Crime Statistics

<https://aag-it.com/the-latest-cyber-crime-statistics/>

Problem Study

Introduction:

- Growing susceptibility to cyber attacks
- Reliance on computer and telecommunications technology
- Vulnerability of critical infrastructure

Rise in Cyber Vandalism:

- Increasing rate of reported and unreported cyber attacks
- Poor state of cyberspace security
- Vulnerability of cyberspace resources

Reasons for Continuing Cyber Attacks:

- Inherent weaknesses in cyberspace infrastructure
- Limited knowledge among average users
- Society's dependence on technology without understanding
- Complacency towards cyber vandals

Problem Study cnt.

Lack of Preparedness:

- Absence of long-term plans for public education
- Reactive approach of patching vulnerabilities after attacks
- Voluntary and haphazard reporting of cyber incidents

The Need for a National Cyberspace Security Policy:

- Raising awareness about cyber threats
- Equipping individuals to deal with attacks
- Establishing mechanisms for detection and prevention
- Creating a legal and regulatory framework

Importance of Ethics and Professionalism in Computer Science

Why Ethics Matter:

- User Trust: Ethical behavior builds trust between technology users and developers.
- Social Impact: Technology decisions can have profound effects on society and individuals.
- Long-term Viability: Ethical practices contribute to sustainable and successful technology solutions.

Importance of Ethics and Professionalism in Computer Science

Why Professionalism Matters:

- Quality Output: Professionalism leads to high-quality products and services.
- Collaboration: Professional conduct fosters healthy collaborations among peers.
- Respect: Professionals treat colleagues, users, and stakeholders with respect.

Importance of Ethics and Professionalism in Computer Science

- Ethics and Professionalism create a framework for responsible and accountable technology development and use.
- Embracing ethics and professionalism ensures that technology serves humanity positively and responsibly.

Scenarios

- A software developer discovers a vulnerability in a widely used application that could compromise users' personal data. They are torn between reporting the issue and risking the potential for misuse or remaining silent to prevent panic.

What is your thought? Report or remaining Silent

Scenarios

A computer science consultant is hired by two competing companies. They discover that both companies are working on similar projects. How should the consultant handle this situation ethically?

What do you think?

Scenarios

A student develops a tool for a class project that could be valuable to the wider community. He/She is unsure whether to keep it private or release it as open source, potentially benefiting others but also risking their competitive edge.

What do you do? Keep it private or release as open source.

Scenarios

A team of developers struggles with poor communication. Some members fail to provide timely updates, while others do not actively participate in discussions. How can this team enhance professionalism in their communication?

What is your answer?

Scenarios

A project manager notices that client requests keep expanding beyond the initial agreement. They need to manage expectations and maintain professionalism while balancing client needs.

How do you handle this situation?

Scenarios

A junior developer receives constructive criticism on their code from a senior colleague. How should they respond while maintaining a professional attitude and fostering a positive learning environment?

If this is you, then how do you respond to junior developer?

Scenarios

Advices are :

- consider the ethical implications
- professional behaviors.

Some more concerns:

- What ethical principles are at play in this scenario?
- How might different stakeholders be affected by the choices made?
- What actions align with professional conduct and values?
- What strategies can be employed to navigate these situations effectively?

Scenarios

Let's consider somewhat more complex situation.

You're a system administrator with broad access to enterprise systems. Your supervisor has asked you to begin archiving all of the emails and web activity logs of one of your coworkers. Typically requests of this nature are initiated through a formal communication from your campus's legal office. You feel that this request is inappropriate and possibly at odds with standard campus procedure and processes.

You raise your concerns with your supervisor, but are told that this is a sensitive matter, and details cannot be shared with you. After thinking more about the conversation you had with your supervisor, you are under the impression that you might lose your job if you persist in discussing the matter further or if you refuse to carry out the task.

Brief of the Next Lecture

Introduction to Ethics and Professionalism

- o Definition of Ethics and Professionalism
- o Ethics for computer science professionals and users
- o ACM/IEEE Ethics and Professionalism

Thank You.