Topic 5

Computing : Ethics, Professional Conduct & Social Responsibility

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Learning Outcomes

- Describe key ethical frameworks (utilitarianism, deontology, virtue ethics) and apply them to computing scenarios.
- Explain the role and importance of professional codes of conduct in both global (ACM, IEEE) and Malaysian (BEM, MNCC, MBOT, PIKOM) contexts.
- Summarize relevant Malaysian regulations such as the PDPA and the MCMC's oversight regarding data privacy and communications.
- Discuss the social responsibilities of computing professionals, including addressing bias, equity, and ensuring digital well-being and accountability.
- Analyze real-world case studies (e.g., Volkswagen emissions scandal) to identify ethical issues and the importance of whistleblowing and professional conduct.

Why do we need ethical theories

Theories – they guide us in our investigations and analyses.

Ethical theories – provide us with a framework for analysing moral issue via a scheme that is internally coherent and consistent as well as comprehensive and systematic.

Primary goal of a moral system – to produce desirable consequences / outcomes for its members.

The consequences of actions and policies provide the ultimate standard against which moral decisions must be evaluated.

Ethical Frameworks in Computing

- **Utilitarianism**: Focuses on maximizing overall good and minimizing harm.
- **Deontology**: Actions are guided by duty and adherence to rules.
- **Virtue Ethics**: Emphasizes moral character and personal integrity.
- **Whistleblowing**: Responsibility to report unethical or harmful behavior—promotes accountability.

Utilitarianism
consequences

- An action is right if it result in the greatest good for the greatest number of people.

- Application in computing:
  - Evaluate the design, deployment and impact of technology on society.
  - Eg; a new software feature is ethically justified if it benefits many users, even if it slightly inconveniences a few.

Deontology

Duty-based ethical theories

- Ethics are grounded in adherence to rules, duties or obligations regardless of the consequences.
- ***Categorical imperative:*** system based on 2 principles (universality & impartiality).
- Every individual will be treated fairly since the same rules would apply universally to all persons.
- Application in computing:
  - Following professional codes (ACM, IEEE codes) strictly.
  - Eg: it would be unethical for a programmer to write a code that breaches user privacy, no matter the intended benefit.

Virtue Ethics

Character ethics

- Focuses on the moral character and virtues (honesty, courage, integrity) of the individual, rather than on rules or consequences.
- Ignores the special roles that consequences, duties and social contracts play in moral systems - in determining the appropriate standard for evaluating moral behaviour.
- Application in Computing:
  - Encourages professionals to develop good character traits and make ethical decisions naturally.
  - Eg: a virtuous engineer would proactively seek to ensure software is accessible and secure.

Whistleblowing

- Exposing unethical or illegal activities within an organization, even at personal risk, to uphold justice and accountability.
- Application in computing:
  - Employee reporting data misuse, security flaws or unethical corporate practices.
  - Notable case: whistleblowers in tech companies uncovering fraud, privacy violations or discrimination.

Summary

Framework	Key Concept	Example in Computing
Utilitarianism	Maximize overall good	Prioritizing user benefits in design
Deontology	Follow rules/duty	Upholding privacy/confidentiality
Virtue Ethics	Act from good moral character	Practicing honesty and fairness in work
Whistleblowing	Report wrongdoing for public good	Revealing hidden software vulnerabilities

Summary con..

Both utilitarians and deontologists depend on having a system of formal rules.

What should we do in such and such a case or situation?

- Utilitarians – answer could be found by measuring the anticipated outcomes of following a general rule or principle.
- Deontologists – answer can be determined by using a formal rule (categorical imperative as a principle for determine which duties you have).
- Virtue – *what kind of person should I be?*
  - - “agent-oriented” - it is centred on the moral development and character of the agent himself/herself.

Codes of conduct

- Occupational groups adopt ethical codes in order to demonstrate that they deserve to be called a *profession.*
  - Profession = a disciplined group of individuals who adhere to ethical standards
- Codes of conduct outline standards of courtesy and professional conduct among members of a profession.
- Each professional body has their own codes of professional practice.

Computer Professionals

- In Malaysia, professionals in the fields of IT and computing are expected to register with recognized bodies such as the Malaysian Board of Technologists (MBOT) or join associations like the Malaysian National Computer Confederation (MNCC) or PIKOM.
- Registered professionals, especially those under MBOT as 'Professional Technologists,' must adhere to a strict Code of Ethics.
- If their personal views conflict with the ethical and professional guidelines set by these organizations, their professional obligations must take precedence.
- This ensures accountability, integrity, and public trust in the digital and technology sectors—just as doctors and lawyers are held to the ethical standards of their respective councils.

PIKOM
The National ICT Association Of Malaysia

Malaysian National Computer Confederation
www.mncc.com.my

MBOT
LEMBAGA TEKNOLOGIS MALAYSIA
MALAYSIA BOARD OF TECHNOLOGISTS

Professional comparison (Malaysia): Computing vs Other Professions

Aspect	Medicine	Law	Computing / IT
Governing Body	Malaysian Medical Council (MMC)	Malaysian Bar	Malaysian Board of Technologists (MBOT) / MNCC / PIKOM
Registration Required?	✅ Yes	✅ Yes	✅ For MBOT (Professional Technologist)
Code of Ethics?	✅ Yes (MMC Code of Ethics)	✅ Yes (Legal Profession Act & Bar Rules)	✅ Yes (MBOT Code of Professional Conduct)
Public Responsibility	High – human lives at stake	High – justice and legal outcomes	High – cybersecurity, data privacy, digital infrastructure
Professional Over Personal?	✅ Yes	✅ Yes	✅ Yes – Personal views must not override ethical duties

Ethical Behaviour

- As computing professionals , we all want the same status as medics or lawyers. However, we are more like engineers:
  - ❑We work mainly work for employers
  - ❑We often work in teams, on small parts of large projects
  - ❑We are distant from the effects of our work

Ethical Behaviour cont.

- Computer professionals' approach to their profession is more like engineers' approach to their work
- Four basic types of obligations are important here:

1. Obligations to our clients
2. Obligations to our employers
3. Obligations to other professionals and professional organisations .
4. Obligations to society

Computer Professional

- Clients/users
  - Must have concern for the social effects of computers on operators, users, and the public
- Your employer
  - Keep information confidential
  - Intellectual property rights of the employer
- Other professionals
  - Properly citing resources (academic plagiarism)
- The public
  - Guarantee the safety of the public
  - However, when our obligation of loyalty to our employer conflicts with the obligation to ensure public safety, the professional may consider whistle-blowing

Recap: What is Cybersecurity?

Definition: Protection of internet-connected systems, including hardware, software, and data, from cyberattacks.

Key Pillars:

- **Confidentiality:** Preventing unauthorized access to information.
- **Integrity:** Ensuring data is accurate and unaltered.
- **Availability:** Systems and data must be accessible when needed.

Why Cybersecurity Matters:

- Digital economy reliance
- E-commerce, online banking, mobile apps
- National infrastructure protection

COMMON CYBER THREATS

Threat Type	Description	Local Example
Malware	Malicious software like viruses, worms, trojans	Ransomware in small businesses
Phishing	Fraudulent emails to steal data	Scam calls posing as banks
Ransomware	Locks data until ransom is paid	Government-linked attacks
DDoS	Overloading servers to disrupt services	Defaced government websites
Insider Threats	Employees leaking or misusing data	Staff leaking customer records

Professional Codes of Conduct (Global)

ACM (Association for Computing Machinery):

Standards for ethical professional conduct in technology.

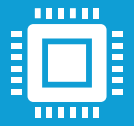
IEEE (Institute of Electrical and Electronics Engineers):

Codes guiding ethical decision-making and responsibility.

Professional Codes of Conduct (Malaysian)

BEM (Board of Engineers Malaysia):
Regulates engineering practice.

MNCC (Malaysian National Computer Confederation):
Provides guidance for ICT professionals.



MBOT (Malaysia Board of Technologists):
Governs technologists and technicians.

PIKOM (The National Tech Association of Malaysia):
Promotes ethical tech industry practices.

Professional Computing Bodies in Malaysia

1. Association for Computing Machinery (ACM)

- Leading a global organization for computing professionals, providing resources, community and ethical standards for those working in ICT and computing field.
- Professional Code of Ethics:
  - Respect for privacy, confidentiality and property rights
  - Honesty and trustworthiness in all professional dealings.
  - Contributing positively to society and minimizing negative consequences of computing systems.
  - Continuous professional development and competence.
  - Avoidance of harm and upholding the public good.
- ACM encourages members to report unethical practices and to actively enhance the quality and impact of computing for society as a whole.

Professional Computing Bodies in Malaysia

2. IEEE Computer Society Malaysia Chapter

- The Malaysian chapter of the IEEE Computer Society, part of the global Institute of Electrical and Electronics Engineers (IEEE), promotes computer-related activities and professional development within Malaysia.
- The IEEE Computer Society is the world's largest organization of computer professionals, providing technical information, conferences, and networking opportunities26.
- The Malaysia chapter organizes conferences and events to advance computing knowledge and practice in the country

Professional Computing Bodies in Malaysia

3. Malaysian National Computer Confederation (MNCC)

- Established in 1967 (originally as the Malaysian Computer Society), MNCC is a non-profit association for information and communications technology (ICT) professionals in Malaysia.
- The MNCC is dedicated to developing IT professionals and fostering an information-rich society.
- Activities include special interest groups (SIGs), annual conferences, seminars, and IT scholarships.
- Members are required to adhere to a code of professional conduct and practice

Professional Computing Bodies in Malaysia

PIKOM
The National ICT Association Of Malaysia

4. PIKOM – The National ICT Association of Malaysia

- PIKOM represents the ICT industry in Malaysia, with over 1,400 member companies covering a wide spectrum of ICT products and services.
- The association advocates for industry growth, organizes events, and presents the PIKOM Digital Excellence Awards to recognize outstanding contributions to the local tech industry5.
- PIKOM acts as the voice of the Malaysian ICT industry, working to improve the business climate and promote the application of information technology

Professional Computing Bodies in Malaysia

5. Malaysia Board of Technologists (MBOT)

- MBOT is the statutory professional body that provides professional recognition to technologists and technicians in technology-related fields, including computing and ICT.
- MBOT recognizes various technology fields such as creative multimedia, games development, and health ICT, and is responsible for accreditation and professional registration

Professional Computing Bodies in Malaysia

6. Board of Engineers Malaysia (BEM)

- BEM is the statutory body constituted under the Registration of Engineer Act 1967.
- It was formed on 23rd August 1972.
- Concern civil, electrical, mechanical and chemical engineering.
- Engineer in Malaysia must register with BEM to legally practice as recognized professionals.
- Serve as a reference for professional conduct and ethics in technical fields more broadly.
- Empowered to investigate breaches of ethics or other professional misconduct among registered engineers.
- Can suspend, fine or deregister members for violation (those jeopardize public trust or safety)

CYBERSECURITY CULTURE IN MALAYSIA

- Malaysia's cybersecurity culture in 2025 is marked by rising AI-powered threats such as sophisticated phishing, deepfakes, and ransomware-as-a-service, making attacks more convincing and widespread.
- The government has responded with the Cyber Security Act 2025, enforcing strict risk assessments, audits, and incident reporting for critical sectors to strengthen national resilience.
- Businesses are adopting AI-driven security tools and unified cybersecurity platforms to manage complex digital environments and address talent shortages through automation and upskilling.
- There is also a strong focus on securing supply chains, cloud, and IoT infrastructures, alongside increased cybersecurity awareness and preparedness among organizations
- Overall, Malaysia's cybersecurity culture is proactive, compliance-driven, and technology-focused to counter evolving threats effectively.

CYBERSECURITY CULTURE IN MALAYSIA

- **#JagaDataKita Campaign (MCMC):** Raising awareness on personal data protection
- **MyDIGITAL Blueprint:** National digital economy transformation plan with security as a core pillar
- **CyberSAFE (CSM):** National education initiative targeting schools, public & SMEs
- Efforts by **banks**, **telcos**, and **e-wallets** to secure user data

NATIONAL AGENCIES IN MALAYSIA

Agency	Role
CyberSecurity Malaysia (CSM)	National agency for cybersecurity monitoring, education & support
MCMC	Regulates digital communications, content, and infrastructure
MyCERT	Malaysian Computer Emergency Response Team – handles incident reports
NACSA	National Cyber Security Agency – policy & strategic defense
JPDP	Oversees data privacy via PDPA enforcement

CYBERSECURITY LAW IN MALAYSIA

1. **Computer Crimes Act 1997 (CCA)** – Hacking, unauthorised access
2. **Communications and Multimedia Act 1998 (CMA)** – Network and content regulation
3. **Personal Data Protection Act 2010 (PDPA)** – Personal data handling
4. **Digital Signature Act 1997** – Secure online transactions
5. **Cybersecurity Bill (in progress)** – Strengthening national-level cyber law

Computer Crimes Act 1997

Offenses include:

- Unauthorized access to computer material
- Unauthorized modification of data
- Unauthorized interception of communications

Penalties: Fines up to RM150,000 or jail up to 10 years (depending on severity)

Real Case: Student caught hacking into university system to change grades

Malaysian Regulations

Personal Data Protection Act (PDPA):

Safeguards personal information and privacy.

Malaysian Communications and Multimedia Commission (MCMC):

Oversees communications, data privacy, internet regulation.

PDPA 2010 – Data Protection

Applies to: All private organizations handling personal data

7 Data Protection Principles:

- General Principle
- Notice and Choice
- Disclosure
- Security
- Retention
- Data Integrity
- Access

Not yet applicable to: Government agencies

Penalty: Up to RM500,000 fine or 3 years' jail

CMA 1998

Covers:

- Offenses like spam, fake news, cyberbullying, seditious or obscene content
- Regulations for service providers and content creators

Real Case: Social media user fined for spreading fake COVID-19 news

Enforced: by **MCMC**

Other Relevant Frameworks

Malaysia Cyber Security Strategy (MCSS) 2020–2024:

Pillars include governance, capacity building, technology resilience

Cybersecurity Bill (Draft):

Will formalize NACSA's authority

Introduces mandatory breach reporting

Regulates critical infrastructure cybersecurity

CyberSecurity Malaysia & MyCERT

CyberSecurity Malaysia:

- Operates MyCERT
- Provides security consulting, digital forensics, incident response
- Runs **CyberSAFE** awareness programs

MyCERT:

- 24/7 incident reporting
- Tracks and manages cyber incidents in Malaysia

Malaysia Digital/Computing: Ethics and Responsibility

Professional integrity for ICT practitioners

Respecting data privacy and intellectual property

Complying with MBOT **Code of Ethics**

Avoiding conflicts of interest and responsible disclosure

Encouraging ethical hacking and responsible use of information

Real Malaysian Cybersecurity Cases

MALAYSIAN AIRLINES 2021 BREACH – VENDOR-RELATED DATA LEAK OF PASSENGER INFO

E-PAYMENT SCAM SYNDICATES – USERS TRICKED INTO DOWNLOADING MALWARE

FAKE JOB SCAMS ON TELEGRAM/WHATSAPP – SOCIAL ENGINEERING TO STEAL MONEY

UNIVERSITY WEBSITE DEFACEMENT – HACKERS REPLACED HOMEPAGE CONTENT
DISCUSSION: WHAT COULD HAVE PREVENTED THESE INCIDENTS?

Real Malaysian Deepfake Cases

1. **Investment Scam Deepfakes:** Police detected five deepfake videos featuring VIPs like Prime Minister Anwar Ibrahim and Elon Musk promoting fraudulent investment schemes, misleading the public.
2. **Johor School Deepfake Porn:** A 16-year-old student created and sold AI-generated explicit deepfake images of female students from a private school, involving over 40 victims aged as young as 12.
3. **Illegal Gambling Promotion:** Influencers' likenesses were deepfaked to advertise illegal gambling sites, leading to legal actions and public warnings (reported broadly in 2025).
4. **Corporate Deepfake Fraud Attempts:** Near-miss cases include deepfake impersonation of a bank CFO in Zoom calls and unauthorized stock trades linked to AI-driven scams (reported in 2025).

Professionalism & Computing

- All Computing bodies has basic principles which are embedded within the operations of the organization.
- The four pillar support the professionalism are:
  1. Commitment to the profession
  2. Integrity (the word from Latin-integratas means-entire, undivided, or whole)
  3. Responsibility
  4. Accountability

Code of Conduct Categories

Malaysian Computer Society Contains 22 statements over four categories:

1. The public interest
2. Professional competence and integrity
3. Duty to relevant authority
4. Duty to the profession

1. Public Interest

You shall:

a) have **due regard** for **public health**, **privacy**, **security** and **wellbeing of others** and the **environment**.

b) have **due regard** for the **legitimate rights** of Third Parties*.

c) **conduct your professional activities without discrimination** on the grounds of sex, sexual orientation, marital status, nationality, colour, 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** of all **sectors** in **society** wherever opportunities arise.

* The term “Third Parties” includes any person or organisation that might be affected by your activities in your professional capacity, irrespective of whether they are directly aware or involved in those activities.

2. Professional Competence and Integrity

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**.

d) ensure that you have the **knowledge** and **understanding** of **Legislation*** and 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**.

3. Duty to Relevant Authority

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 judgement 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**.

d) **NOT disclose** or **authorise** 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**.

4. Duty to the Profession

You shall:

a) **accept** your **personal duty** to **uphold** 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 **MCS**, the Chartered Institute for IT.

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

e) **notify MCS** 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**.

MCS Code of Good Practice

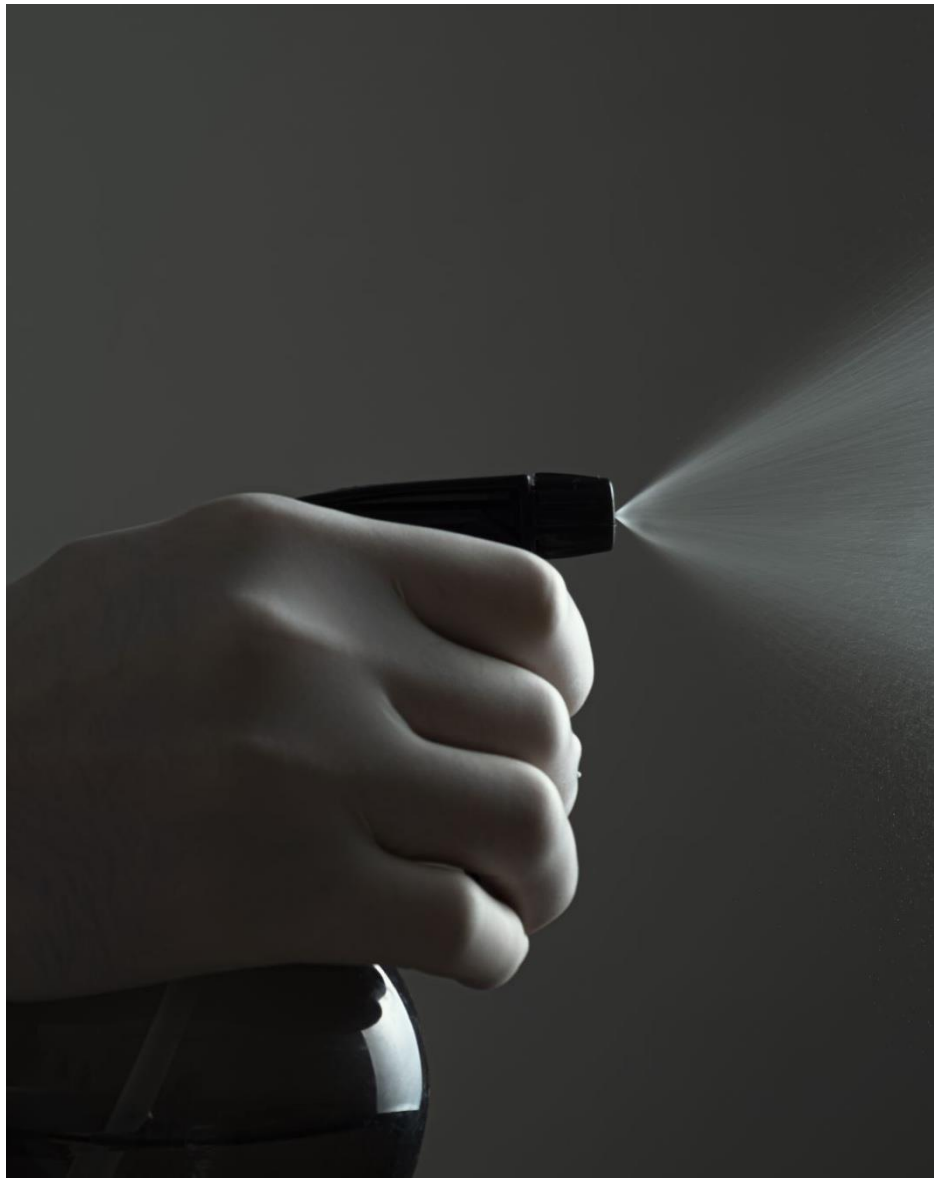
- Maintain Your Technical Competence
- Adhere to Regulations
- Act Professionally as a Specialist
- Use Appropriate Methods and Tools
- Manage Your Workload Efficiently
- Participate Maturely
- Respect the Interests of your Customers
- Promote Good Practices within the Organisation
- Represent the Profession to the Public.

Who Enforces These Codes?

- As a professional you will be expected to uphold these codes yourself and monitor and report your colleagues who fail to uphold the same standards.
- In cases of crime, you should report the individual to the correct authorities
  - Whistleblowing protection might be useful here.

What Penalties Can Professional Bodies Impose?

- Unless you have committed a criminal act, professional bodies have no special powers to seek recompense for your actions
- They can ban you from their society
- *Is this really a viable deterrent?*
- Credibility is a big factor here – lack of endorsement by your peers.



Social Responsibility in Computing

Bias & Equity: Identify, reduce, and prevent discrimination in algorithms and systems.

- Eg: Avoiding bias in AI that could reinforce societal inequities (facial recognition software misidentifying women or minorities).

Digital Well-Being: Promote healthy tech usage and prevent digital addiction.

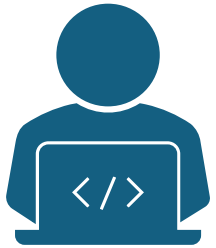
- Design systems to reduce compulsive behaviors (social media features that encourage excessive screen time)

Accountability: Ensure transparency, explainability, and responsibility in computing solutions.

- Professional are responsible for the consequences of their creations, including unintended harm or misuse.

Summary

Professional codes of conduct are grounded in ethical theories



As a computing professional, our clients and colleagues can expect certain uniform behaviours and actions

Sometimes this will cause us to make difficult choices, but we should strive to act with the greatest responsibility

The End