National University of Computer and Emerging Sciences, Lahore Campus

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Student : Name:_____ Roll No._____ Section:_____

Question1: John, a team lead at a software development company, manages a team handling multiple projects. Balancing managerial duties, coding responsibilities, and team collaboration while meeting tight deadlines is a constant challenge. John wants to apply the four-quadrant time management approach to organize his tasks more effectively. Place the following tasks into the four quadrants of time management. **[8 Points]**

	Due Soon	Not Due Soon
Important	1	2
Not Important	3	4

Time Management Matrix/Quadrants

Task	Quadrant
Personal social media engagement during office hours.	4
Attend an unplanned meeting regarding office furniture rearrangement.	3
Plan and conduct a code review session with the team to improve code quality and streamline development processes.	2
Casual browsing of tech forums during work hours.	4
Resolve critical bugs affecting the live system that could potentially halt user operations.	1
Review and approve non-mission-critical procurement requests.	3
Address an unexpected server outage that affects the company's primary service.	1
Develop a training program for new team members on the latest coding standards and practices.	2

Question2: Which kind of ethical theory, deontologist or consequentialist, works better for the following situation. **[4 Points]**

Imagine a classic ethical dilemma known as the Trolley Problem: A runaway trolley is hurtling down a track, heading toward five unaware people tied up and unable to move. You are

standing next to a lever that can divert the trolley onto a different track. However, on this alternate track, there is one person tied up.

Consequentialist Perspective (Utilitarianism):

From a consequentialist viewpoint, such as utilitarianism, the morally right action might be to pull the lever and divert the trolley onto the track with one person. This decision aims to minimize overall harm by sacrificing the life of one individual to save five others. Consequentialists prioritize the outcome that leads to the greatest overall good or happiness, which, in this case, involves fewer casualties.

Deontologist Perspective (Kantian Ethics):

From a deontologist perspective, like Kantian ethics, pulling the lever might be considered morally wrong. Deontologists emphasize moral principles and duties that should be followed regardless of consequences. In this scenario, pulling the lever involves intentionally causing harm to an individual, which could be seen as violating the moral principle that treats individuals as ends in themselves, not merely as a means to an end. Therefore, the deontologist might argue that directly causing harm to one person is inherently wrong, regardless of the consequences.

Side note: From a deontologist perspective, like Kantian ethics, pulling the lever might be considered morally wrong. Deontologists emphasize moral principles and duties that should be followed regardless of consequences. In this scenario, pulling the lever involves intentionally causing harm to an individual, which could be seen as violating the moral principle that treats individuals as ends in themselves, not merely as a means to an end. Therefore, the deontologist might argue that directly causing harm to one person is inherently wrong, regardless of the consequences.

Question3: Classify each of the following as either possible defamation or only criticism **[12 Points].**

Expression	Defamation/Criticism
Sarah is known for engaging in unethical practices in her profession.	Def
The author fails to provide adequate evidence to support their arguments, weakening the book's credibility.	Cr
The smartphone's battery life is disappointingly short compared to its advertised specifications.	Cr
The movie lacks character development, resulting in a shallow storyline.	Cr
David cheats on his partner regularly.	Def
John stole money from the company's fund last month.	Def

Question4: Classify each of the following as either opt-in or opt-out. **[8 Points]**

	Opt-in / Opt-out
To stop receiving our newsletters, click the 'Unsubscribe' link at the bottom of the email.	Out
Would you like to receive promotional offers and updates? Click here to subscribe.	In
To discontinue your subscription, manage your account settings before the renewal date."	Out
Manage your preferences to limit the information shared with third parties.	Out
We use cookies to enhance your browsing experience. Click 'Accept' to agree to our cookie policy.	In
Please check this box if you would like to subscribe to our newsletter.	In
Update your email preferences to stop receiving future updates.	Out
Customize your cookie settings for personalized website experiences	Out

Question5: Identify each of the following a privacy violation or not a privacy violation of an employee by the employer's workplace monitoring activities. Also provide reason for your choice. **[10 Points]**

	Violation/Not a violation
In the fictional company of TechSol, the employer implements surveillance measures, such as hidden cameras and keylogging software, in the workplace without informing employees. The company tracks employees' activities both physically and digitally, monitoring their movements, computer usage, emails, and online activities without their knowledge or explicit consent. Reason:	Violation
BrightCorp collects only necessary and relevant data required for employment-related purposes, such as payroll information, contact details, emergency contacts, and work-related communications. Reason:	Not

The employer neglects to provide employees with clear information about the extent of data collection, the purpose behind monitoring, or how their personal data is being used and stored without explicit consent. Reason:	Violation
The employer uses employee data solely for purposes, such as payroll management, performance evaluations, benefits administration. Reason:	Not
The employer does not provide employees with clear information about the extent of data collection, the purpose behind monitoring, or how their personal data is being used and stored. Reason:	Violation

Question 6: Outline a scenario where n-version programming approach might help you avoid certain legal liabilities (specify liability claim(s))? **[2+2 Points]**

Any solution based on following points

N-version programming is a software development technique that involves creating multiple versions (N versions) of a system independently by different development teams to enhance reliability and reduce the risk of system failures due to software faults. Here's a scenario where n-version programming might help avoid certain legal liabilities:

Scenario: Medical Device Software Development

Imagine a scenario where a company is developing software for a medical device, such as a life-critical heart monitoring system used in hospitals.

Regulatory Compliance Concerns:

The company is bound by strict regulatory standards and faces significant legal liabilities if the software fails, leading to incorrect readings or malfunctions in the medical device. Any failure

could result in serious harm to patients and potential lawsuits due to non-compliance with safety and medical standards.

N-Version Programming Implementation:

To mitigate these risks, the company adopts an n-version programming approach. They create multiple independent versions of the software by separate teams, each using different algorithms, coding languages, or methodologies. These versions are then integrated into the final system.

Diverse Error Patterns and Fault Tolerance:

Each version of the software is expected to have different error patterns or faults due to the diverse approaches used in development. By combining these versions, the system aims to improve fault tolerance. In case one version fails or produces incorrect results due to a software fault, the other versions might produce correct outputs, reducing the overall risk of system failure.

Risk Mitigation and Legal Safeguards:

The use of n-version programming can be argued as a risk mitigation strategy. In the event of a software failure, the company could potentially argue that they took all reasonable precautions by employing diverse development approaches, and the failure was an unforeseeable outcome despite their best efforts to enhance system reliability.

Demonstrating Due Diligence:

If legal liabilities arise due to a software-related incident, the company might use the n-version programming approach to demonstrate due diligence and responsible software development practices. They can illustrate that they took significant steps to reduce the risk of software faults and increase the system's reliability, thus minimizing legal culpability.

Question 7: Outline a scenario where human interface can be most important area for a safety critical system and poorly designed interface can lead to liabilities? **[4 Points]**

Different Solutions and points:

Let's consider the scenario of a medical device, specifically an infusion pump used in a hospital setting, where the human interface is crucial for a safety-critical system. A poorly designed interface could lead to liabilities and compromise patient safety:

Scenario: Medical Infusion Pump Interface Design

Human Interface Importance:

An infusion pump in a hospital setting administers precise doses of medication or fluids to patients. The interface allows healthcare providers to set infusion rates, monitor doses, and adjust settings accurately.

High-Stakes Environment:

In a healthcare environment, patient safety relies heavily on the accurate functioning of medical devices. The infusion pump's interface is critical as incorrect dosages or settings can lead to severe consequences for patients.

Example of Interface Design Flaw:

Suppose the interface of the infusion pump has a confusing layout, unclear labels, or a complex menu structure. Due to this flaw, nurses may have difficulty inputting or verifying medication doses, leading to potential errors.

Consequences of Poor Design:

Incorrect Dosages: Nurses may inadvertently set incorrect dosages due to confusion with the interface, resulting in underdosing or overdosing of medication or fluids.

Patient Harm: Incorrect dosages can lead to adverse reactions, treatment inefficacy, or even life-threatening situations for patients, affecting their well-being or complicating their medical conditions.

Liabilities and Legal Issues: If patient harm occurs due to incorrect dosages caused by interface design flaws, the hospital or device manufacturer might face legal liabilities, malpractice claims, and regulatory scrutiny for compromising patient safety.

Question8: Identify each of the following as legal or illegal spamming. **[10 Points]**

	Legal/Illegal
A company sends promotional emails to individuals who have explicitly opted in or subscribed to receive such communications.	Legal
A professional networking organization plans an industry-specific conference. The organization obtains a list of email addresses belonging to individuals involved in that particular industry but who have not directly subscribed or given consent to receive emails from the organization. The content of the email is relevant to the recipients' professional interests or industry. The organization does not repeatedly send unsolicited emails and respects unsubscribe requests promptly. The emails are personalized and clearly provide an opt-out option.	Legal
A company sends mass unsolicited commercial emails to individuals who haven't opted in to receive such messages.	Illegal
A company continues sending emails to recipients who have previously opted out or unsubscribed from receiving further communications.	Illegal
A company sends emails with false information, deceptive subject lines, or misleading content aimed at deceiving recipients.	Illegal

Question9: You are provided with the laws listed below and types of perpetrators along with their activities. You are required to identify which each activity is covered against a specific law from the list. **[8 Points]**

Type of perpetrator	Typical motives
Hacker	Test limits of system and/or gain publicity
Cracker	Cause problems, steal data, and corrupt systems
Malicious insider	Gain financially and/or disrupt company's information systems and business operations
Industrial spy	Capture trade secrets and gain competitive advantage
Cybercriminal	Gain financially
Hacktivist	Promote political ideology
Cyberterrorist	Destroy infrastructure components of financial institutions, utilities, and emergency response units

Federal law	Subject area
USA Patriot Act	Defines cyberterrorism and penalties
Identity Theft and Assumption Deterrence Act (U.S. Code Title 18, Section 1028)	Makes identity theft a Federal crime with penalties up to 15 years imprisonment and a maximum fine of $250,000
Fraud and Related Activity in Connection with Access Devices Statute (U.S. Code Title 18, Section 1029)	False claims regarding unauthorized use of credit cards
Computer Fraud and Abuse Act (U.S. Code Title 18, Section 1030)	Fraud and related activities in association with computers: • Accessing a computer without authorization or exceeding authorized access • Transmitting a program, code, or command that causes harm to a computer • Trafficking of computer passwords • Threatening to cause damage to a protected computer
Stored Wire and Electronic Communications and Transactional Records Access Statutes (U.S. Code Title 18, Chapter 121)	Unlawful access to stored communications to obtain, alter, or prevent authorized access to a wire or electronic communication while it is in electronic storage

Activity/Perpetrator	Law
Hacking	Computer Fraud and Abuse Act -4
Cracking	Computer Fraud and Abuse Act-4
Malicious insider	Computer Fraud and Abuse Act-4
Industrial spying	Computer Fraud and Abuse Act-4
Cybercriminal	Computer Fraud and Abuse Act-4 or Identity Theft and Assumption Deterrence Act-2

Hacktivist	USA Patriot Act-1
Cyberterrorist	USA Patriot Act-1
Phishing	Identity Theft and Assumption Deterrence Act-2

Question10: Multiple Choice Questions:

1. A dollar today is worth _____ in future. **[1 Point]**
   a. Less
   b. Same
   c. More

2. If a company has total debt of $500,000 and equity of $1,000,000, what is the leverage ratio?
   [1 Point]

   a. 0.5
   b. 1
   c. 2
   d. 3

3. The bureaucratic model typically features a: **[1 Point]**
   a. Flat organizational hierarchy
   b. Decentralized decision-making structure
   c. Matrix organizational structure
   d. Tall and well-defined hierarchical structure

4. In a bureaucratic organization, employees are expected to: **[1 Point]**
   a. Wear multiple hats and perform diverse tasks
   b. Have a narrow and specialized focus
   c. Participate in decision-making at all levels
   d. Rotate roles frequently to foster innovation

5. What is the primary advantage of the Organic Model? **[1 Point]**
   a. Clear hierarchy
   b. Efficient use of resources
   c. Quick response to change
   d. Standardization of processes

6. What is a key factor in determining the organizational structure of a software house? **[1 Point]**
   a) The personal preferences of the CEO
   b) The size and complexity of the software projects

c) The location of the software house

d) The age of the company

7. What is a common clause included in computer contracts regarding confidentiality? **[1 Point]**

a) Both parties must share all confidential information publicly

b) Each party agrees to maintain the confidentiality of the other's information

c) Confidentiality is only applicable to the software developed as a result of the contract

d) Confidential information must be disclosed to third parties

8. How does a trademark differ from a patent? **[1 Point]**

a) A trademark is a form of physical property, while a patent is not

b) A trademark protects brand identity, while a patent protects inventions

c) A trademark has an indefinite duration, while a patent is time-limited

d) Trademarks are automatically granted, but patents require registration

9. In the context of IT, what is the significance of 'Continuing Professional Development' (CPD)? **[1 Point]**

a) Ensuring IT professionals have a postgraduate degree

b) Keeping IT professionals updated with the latest technologies and practices

c) Focusing on the retirement plans of IT professionals

d) Assessing the annual performance of IT professionals

10. What is a key consideration when appraising an investment proposal using DCF analysis? **[1 Point]**

a) The historical performance of similar investments.

b) The accuracy and reliability of cash flow forecasts.

c) The company's current stock market valuation.

d) The total duration of the investment project.

11. What is the significance of goodwill in the financial accounting of a software company? **[1 Point]**

A. It measures the effectiveness of the company's customer service.

B. It represents an intangible asset like the value of brand names or software rights.

C. It is a direct indicator of the company's annual profit.

D. It reflects the physical assets owned by the company

12. ---------------means favoring only relatives in all positions and ------------- is favoring only companions and friends in every position. **[1 Point]**

a)   Nepotism/ Patronage

b)   Patronage/ Cronyism

c)   Cronyism/ Nepotism

d)   Nepotism/ Cronyism

13. Unlike the other primary forms of doing business, sole proprietorships cannot have employees. **[1 Point]**
    a. Trues
    b. False
14. "Limited liability" means: **[1 Point]**
    a. That an investor cannot lose his or her investment.
    b. That an investor cannot lose more than his or her investment.
    c. That an investor can lose his or her investment and may be responsible for a designated
    percentage or amount in excess of his or her investment.
    c. That an investor must refrain from active management in order to limit his or her risk of loss to the amount of his or her investment.
15. What kinds of trademarks can be registered **[1 Point]**
    a. one or a combination of words
    b. letters
    c. numerals
    d. All of these

16. The name under which a product is sold may be registered as a **[1 Point]**
    a. copyright
    b. trade mark
    c. patent
17. Plagiarism is _____? **[1 Point]**
    a. turning in someone else's work as your own
    b. copying words or ideas from someone else without giving credit
    c. failing to put a quotation in quotation marks
    d. All of these
18. What is the present value of £520,000 expected to be received in three years' time, if the business concerned requires a return of 10% on sums invested? Answers are given to the nearest £'000. **[2 Points]**
    a. £692k
    b. £432k
    c. £473k
    d. £390k
19. Windsor Ltd is considering a project, which will involve the following cash inflows and (out)flows: **[2 Points]**

Initial outlay	(400)
After one year	40
After two years	300
After three years	300

a. 58.87
b. -58.87 (please confirm)
c. 240
d. -240

20. Which of the following statements concerning the NPV is **not** true? **[1 Point]**
    a. The NPV technique takes account of the time value of money.
    b. The NPV of a project is the sum of all the discounted cash flows associated with a project.
    c. The NPV technique takes account of all the cash flows associated with a project.
    d. If two competing projects are being considered, the one expected to yield the lowest NPV should be selected.

21. Your client demands that the source code be placed in escrow as a condition of the contract, but this conflicts with your company's policy. Do you: **[1 Point]**
    A. Refuse the client's request and risk losing the contract
    B. Agree to the escrow to secure the contract
    C. Offer an alternative solution that aligns with your company's policy
    D. Negotiate the terms of the escrow agreement to find a middle ground

22. In a decentralized organizational structure, how should members handle a situation where urgent action is needed but there's no clear authority to make a decision? **[1 Point]**
    A. Wait for a consensus among all members
    B. Take individual action without waiting for others
    C. Form a temporary leadership team to guide the decision
    D. Follow the lead of the most experienced member