

National University of Computer and Emerging Sciences
Islamabad Campus

Professional Practices in IT (CS4001)

Course Instructor(s):

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Section(s): All CS sections

Final Exam

Total Time (Hrs): **3**

Total Marks: **140**

Total Questions: **5**

Date: Dec 17, 2025

Roll No	Course Section	Student Signature
Do not write below this line.		

Attempt all the questions.

INSTRUCTIONS:

1. Verify at the start of the exam that you have a total of Five (05) Questions printed on Twenty-Six (26) pages including this title page.
2. Attempt all questions on this questions paper, no extra answer sheets needs to be attached.
3. The exam is closed books, closed notes. Please see that the area in your threshold is free of any material classified as ‘useful in the paper’ or else there may be a charge of cheating.
4. Read the questions carefully for clarity of context and understanding of meaning, for neither the invigilator will address your queries, nor will the teacher/examiner come to the examination hall for any assistance.
5. Fit in all your answers in the provided space. Answer MCQs on bubble sheet is mandatory.
6. Use only permanent ink-pens. Only the questions attempted with permanent ink-pens will be considered. Any part of paper done in lead pencil cannot be claimed for checking/rechecking.
7. If you read instructions up to this, write any comment on last page for two bonus marks.

	Question-1	Question-2	Question-3	Question-4	Question-5	TOTAL
Total Marks	100	10	10	10	10	140
Marks Obtained						

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Q-1: Please fill the bubble sheet on the last page for all Part A (MCQ) answers [100 marks]

1. A software engineer discovers a bug in a safety-critical system just before launch. Fixing it will cost the company millions and delay the release. The engineer decides to report it because "it is the right thing to do," regardless of the financial outcome. Which ethical theory is the engineer applying?
 - a. Act Utilitarianism
 - b. Deontology
 - c. Egoism
 - d. Relativism
2. According to the "Three Pillars of Professionalism," which attribute is best described as "the obligation to answer for the execution of responsibilities"?
 - a. Integrity
 - b. Responsibility
 - c. Accountability
 - d. Autonomy
3. You are analyzing an ethical dilemma. You have listed the facts and identified the stakeholders. According to the 4-Step Decision Making Process, what is your immediate next step?
 - a. Make a decision and plan the implementation
 - b. Isolate the major ethical dilemma
 - c. Analyze the options using ethical theories
 - d. Consult a lawyer
4. A software house knowingly uses pirated development tools to save costs, justifying the decision by claiming that such behavior is common practice within the industry. This reasoning most closely reflects:
 - a. A duty-based ethical framework grounded in universal moral obligations
 - b. A belief that moral right and wrong are determined by social or industry norms
 - c. An ethical view in which actions are judged by obedience to divine authority
 - d. A moral stance prioritizing the welfare of others over self-interest
5. Which of the following best distinguishes a "Profession" from a regular "Job"?
 - a. Greater financial rewards and long-term employment security
 - b. Self-regulation through specialized bodies and professional autonomy
 - c. Performance of duties within a structured organizational setting
 - d. Supervision under a designated authority or management hierarchy
6. An IT consultant is asked to recommend a hardware vendor. He recommends a company owned by his brother without disclosing the relationship. This violates which professional principle?
 - a. Failure to disclose personal interests that may influence professional judgment
 - b. Improper handling or disclosure of client-sensitive information
 - c. Inadequate application of professional knowledge and technical skill
 - d. Reporting or exposing unethical practices within an organization
7. In the Amazon AI Hiring Tool case, the system showed gender bias due to its training on historical data. If evaluated from a utilitarian perspective, which argument would most likely be used to justify continued use of the tool?
 - a. The system infringes upon the moral and legal rights of female applicants
 - b. The overall efficiency gains and cost savings produce greater net benefit for the organization and its stakeholders
 - c. Any form of discrimination is morally impermissible, independent of outcomes

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- d. The tool minimizes intrusion into applicants' personal data
8. Which ethical framework focuses on "maximizing the greatest good for the greatest number"?
- Deontology
 - Utilitarianism**
 - Virtue Ethics
 - Egoism
9. "Public Interest" is a foundational principle in the ACM/IEEE Code of Ethics. Which of the following actions most strongly upholds this principle?
- Maximizing organizational or client value as the primary measure of professional success
 - Revealing a system weakness that threatens user safety or data, despite internal pressure to remain silent**
 - Optimizing systems exclusively for performance, reliability, and technical excellence
 - Maintaining workplace harmony by adhering strictly to supervisory directives
10. You face an ethical dilemma where two duties conflict: "Duty to Employer" (keep secrets) vs. "Duty to Public" (report safety hazard). A Deontologist would resolve this by:
- Calculating which option saves the most money
 - Determining which duty is the "higher" universal obligation**
 - Doing whatever makes them feel best.
 - Asking the team to vote
11. A freelance developer enters into a contract containing a "Work for Hire" clause and produces software code under that agreement. Under such a clause, who is considered the legal owner of the copyright in the produced code?
- The individual who authored and physically wrote the code
 - The party for whom the work was created under the contractual agreement**
 - Both parties equally, due to shared contribution and compensation
 - No party, since contractual work automatically places code in the public domain
12. You are hiring a software firm to build a system where the requirements are vague and likely to change frequently. Which contract type is most risky for the *client* in terms of cost?
- Fixed Price
 - Time and Materials (Cost Plus)**
 - Royalty based
 - Shrink-wrap
13. A Non-Compete Clause in an employment contract is primarily intended to restrict an employee from:
- Sharing internal compensation details that may affect workplace harmony
 - Engaging in employment or business activities with a competing organization for a defined duration after separation**
 - Approaching or attracting the employer's clients or customers for personal or external benefit
 - Asserting statutory employment rights such as overtime or wage claims
14. In a "Fixed Price Contract," if the development takes 3 months longer than planned due to the developer's inefficiency, who bears the financial cost?
- The Client
 - The Developer (Supplier)**
 - Both split the cost 50/50
 - The Insurance Company

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15. Which clause in a software contract protects the client if the software accidentally deletes their customer database due to a bug?
- Termination Clause
 - Indemnity / Limitation of Liability**
 - Arbitration Clause
 - Force Majeure
16. Acceptance Testing is a critical milestone in a software contract because
- It is when the developers start coding.
 - It usually triggers the final payment and transfer of responsibility**
 - It determines the salary of the developers.
 - It allows the developer to keep the source code.
17. A company outsources its IT support services to an external provider. The contract specifies a maximum response time of one hour for critical incidents. If the provider fails to meet this response time during a server outage, which contractual obligation has been violated?
- An agreement restricting the sharing of confidential organizational information
 - A contractually defined commitment governing service performance metrics and response standards**
 - A provision determining ownership and usage rights of intellectual property
 - A restriction preventing either party from recruiting the other's employees or clients
18. What is the primary difference between an "Employee" and an "Independent Contractor"?
- Employees are paid more
 - Contractors have more autonomy and usually control how the work is done.**
 - Employees sign contracts, contractors do not
 - Contractors always own the IP they create.
19. A "Force Majeure" clause in an IT contract would likely cover which scenario?
- The developer accidentally deletes the code
 - The client runs out of money
 - An earthquake destroys the data center, delaying the project**
 - The lead engineer quit joining a rival.
20. In a "Shrink-wrap" or "Click-wrap" license (like installing Windows), when is the contract considered "accepted"?
- When you pay for the software
 - When you click "I Agree" or open the packaging.**
 - When you successfully install it
 - When you register the product online.
21. You have written a unique algorithm that improves video compression speed by 50%. You want to stop others from using this *method*, even if they write their own code for it. Which protection do you need?
- Copyright
 - Patent**
 - Trademark
 - Trade Secret

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22. A startup names its new messaging app "Face-Booked." Facebook sues them. This is likely an issue of:
- Patent Infringement
 - Trademark Infringement
 - Copyright Violation
 - Industrial Design theft
23. Unlike Patents, Copyright protection for software code arises:
- Only after registration with the IPO
 - Automatically upon creation and fixation in a tangible medium
 - Only if the code is novel and non-obvious
 - Only if the code is open source.
24. Which of the following is NOT patentable in Pakistan under the Patents Ordinance 2000?
- A mechanical invention
 - A new pharmaceutical drug
 - A computer program "as such" (without a technical effect)
 - An industrial process.
25. Coca-Cola keeps its recipe confidential and limits access to a few employees. They rely on which IP protection?
- Patent ent)
 - Trade Secret
 - Copyright
 - Geographical Indication
26. When a software engineer incorporates code released under the GNU General Public License (GPL) into a proprietary software product, which requirement is most likely to apply under the GPL's terms?
- Compensate the original developer through a mandatory licensing or royalty payment
 - Distribute the combined or derivative software under the same license, including providing access to the source code
 - Acknowledge the original author while retaining full control over the proprietary codebase
 - Use the code without additional obligations once it is publicly available
27. "Fair Use" allows the use of copyrighted material without permission in certain cases. Which factor weighs against Fair Use?
- Using it for educational purposes
 - Using a small excerpt
 - Using it to create a competing product that harms the original's market value
 - Using it for news reporting.
28. An "Industrial Design" protects:
- The functional, ornamental appearance of a product
 - The non-functional, ornamental appearance of a product
 - The visual appearance resulting from engineering or functional constraints.
 - The decorative features that are inseparable from the product's function.
29. The name "Basmati Rice" is legally restricted so that it may be used only for rice produced in designated regions of Pakistan and India. This form of protection is best classified as:
- A sign identifying goods of a particular producer or brand in the marketplace
 - A designation linking a product's name and reputation to its place of origin
 - Protection granted to original literary, artistic, or creative expression
 - Exclusive rights over a novel invention or production process

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30. How long does Copyright protection generally last in Pakistan?

- a. 10 years
- b. 20 years.
- c. Life of the author + 50 years
- d. Indefinitely

31. If a criminal operates from Country A but hacks a server in Pakistan (Country B), does Pakistan have jurisdiction to prosecute?

- a. No, because the criminal is not in Pakistan
- b. Yes, under Extraterritorial Jurisdiction if the damage is to a Pakistani system
- c. Only if Country A agrees
- d. Only if the UN intervenes.

32. Under typical data retention regulations, Internet Service Providers (ISPs) are generally required to:

- a. Erase user activity records immediately to maximize individual privacy
- b. Store certain categories of communication or traffic metadata for a defined duration for lawful access
- c. Commercially exploit user information by sharing it with third-party advertisers
- d. Conduct continuous real-time surveillance of all user communications

33. Which source of law relies heavily on "Precedents" (decisions made by judges in previous cases)?

- a. Statute Law
- b. Common Law
- c. Islamic Law
- d. Civil Law

34. In Pakistan's judicial hierarchy, if you are unhappy with a decision from the District Court, where is your first point of appeal?

- a. Supreme Court
- b. Federal Shariat Court
- c. High Court
- d. Magistrate Court

35. The "Federal Shariat Court" in Pakistan specifically reviews laws to ensure they:

- a. Are not repugnant to the injunctions of Islam
- b. Do not violate the UN charter
- c. Fulfill Islamic principles of social justice and public welfare (Maslahah)
- d. Promote economic justice and financial stability in the state

36. "Substantive Law" defines rights and duties (e.g., 'Do not kill'). "Procedural Law" defines:

- a. The definition of crimes
- b. The mechanisms and steps to enforce the law
- c. International treaties
- d. Family disputes.

37. The "Universal Declaration of Human Rights" (UDHR) was adopted by the UN in:

- a. 1948
- b. 1990
- c. 2001
- d. 2005

38. "Public Law" governs the relationship between:

- a. Individuals and other individuals.
- b. Companies and their employees
- c. The State and Individuals

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- d. Parents and children.
39. A "Sole Proprietorship" has the major disadvantage of:
- a. Double taxation
 - b. **Unlimited Liability**
 - c. Strict government regulations
 - d. Shared decision making.
40. Which organizational structure violates the "Unity of Command" principle (reporting to only one boss) by having employees report to both a Functional Manager and a Project Manager?
- a. Simple Structure
 - b. Bureaucracy
 - c. **Matrix Structure**
 - d. Virtual Organization
41. In the "Business Model Canvas," the "Value Proposition" describes:
- a. How the company makes money.
 - b. **The specific problem the product solves and the benefit it offers to customers**
 - c. The distribution channels
 - d. The key partners
42. Which form of business organization is legally distinct from its owners and limits the personal financial liability of those owners?
- a. An individually owned business where the owner bears full personal responsibility
 - b. A jointly owned enterprise in which partners may share management and risk
 - c. **An incorporated entity recognized by law as separate from its shareholders**
 - d. An independent self-employed professional offering services on a contract basis
43. A leader who consults the team, encourages participation, and decides based on consensus is using which leadership style?
- a. Autocratic
 - b. **Democratic**
 - c. Laissez-Faire
 - d. Bureaucratic
44. In Conflict Management, the "Collaborating" style (Win-Win) involves:
- a. Accepting the other party's demands to keep peace
 - b. **Assertive and cooperative behavior to satisfy the concerns of both parties.**
 - c. Ignoring the conflict
 - d. Splitting the difference (Compromise).
45. Which stage of Group Development is characterized by conflict, resistance to leadership, and jockeying for position?
- a. Forming
 - b. **Storming**
 - c. Norming
 - d. Performing
46. A Freemium business model (as used by platforms such as Spotify) primarily earns revenue by:
- a. Requiring all users to pay before accessing any part of the service
 - b. **Allowing free access to core functionality while monetizing advanced or enhanced features**
 - c. Generating income exclusively through the commercial sale of user information
 - d. Sustaining operations mainly through voluntary financial contributions from users
47. In a "Distributive Bargaining" negotiation (Win-Lose), the parties view the resources as:
- a. Flexible and expandable

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- b. Fixed Only if Country A agrees
 - c. Irrelevant
 - d. Unlimited
48. Which barrier to communication involves manipulating information so the receiver sees it more favorably (e.g., a manager hiding bad news)?
- a. Information Overload
 - b. Filtering
 - c. Selective Perception
 - d. Language Barrier
49. The "Agile Manifesto" values:
- a. Processes and tools over individuals and interactions
 - b. Comprehensive documentation over working software
 - c. Responding to change over following a plan.
 - d. Contract negotiation over customer collaboration
50. In the Scrum framework, who is responsible for maximizing the value of the product and managing the Product Backlog?
- a. Scrum Master
 - b. Development Team
 - c. Product Owner
 - d. Project Manager
51. "Mentorship" relationship differs from a "Management" relationship primarily because:
- a. The mentoring role typically involves financial compensation to the mentee
 - b. It focuses on long-term personal and professional development and is usually voluntary, unlike management which centers on formal authority and task execution
 - c. Mentors are responsible for assigning and monitoring day-to-day operational duties
 - d. Individuals in managerial positions are ethically prohibited from serving as mentors
52. "Span of Control" in organizational design most accurately refers to
- a. The maximum number of individuals or roles a single manager can effectively supervise and coordinate
 - b. The physical scale or capacity of the workspace allocated to a department
 - c. The length of time a manager remains responsible for a particular initiative or project
 - d. The scope of technical infrastructure resources overseen by an administrative unit
53. In a "Matrix Structure," an employee might experience stress due to:
- a. Boredom
 - b. Role Conflict and ambiguity (reporting to two bosses)
 - c. Lack of work
 - d. Too much vacation time.
54. In "Distributive Justice," the focus is on:
- a. The fairness of the process
 - b. The fairness of the outcome/allocation of resources.
 - c. Punishing the wrongdoer
 - d. Following the rules
55. "Open Source Software" (OSS) usually:
- a. Has no copyright
 - b. Allows users to view, modify, and distribute the source code
 - c. Costs a lot of money

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- d. cannot be used commercially.

56. A "Smart Contract" is

- a. A contract written by a lawyer
- b. A self-executing contract with the terms directly written into code (often on Blockchain).
- c. A contract for a smartphone.
- d. An oral agreement.

57. The "Right to be Forgotten" (GDPR concept) allows individuals to:

- a. Delete the internet
- b. Request the removal of their personal data from search engines/databases under certain conditions
- c. Forget their passwords
- d. Change their names.

58. In Pakistan, "PECA" stands for

- a. Prevention of Electronic Crimes Act
- b. Protection of Electric Circuits Act
- c. Pakistan Electronic Computer Association
- d. Public Electronic Communication Act.

59. In a "General Partnership," liability is:

- a. Limited to the investment
- b. Unlimited and Joint (partners are personally liable for firm debts)
- c. Non-existent
- d. Covered by the government.

60. "Crowdsourcing" involves:

- a. Hiring a large crowd
- b. Obtaining services/ideas from a large, open group of people (the crowd), usually via the internet
- c. Creating a crowd at an event
- d. Selling to a crowd.

61. A "Conflict of Interest" occurs when:

- a. You argue with your boss.
- b. A person's personal interests clash with their professional duties
- c. Two computers use the same IP
- d. Software crashes.

62. A "Legacy System" is

- a. A brand new computer
- b. An old method, technology, or computer system that is still used (often critical but hard to maintain).
- c. A legal system.
- d. A backup.

63. "Due Diligence" in business means:

- a. Doing work quickly
- b. Paying bills on time
- c. Taking reasonable steps/investigation before entering an agreement or making a decision
- d. Working overtime.

64. In "Maslow's Hierarchy of Needs," the highest level is:

- a. Physiological
- b. Safety
- c. Self-Actualization
- d. Social

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65. A "Stakeholder" is:

- a. Only the shareholder
- b. Anyone who can affect or is affected by the organization
- c. The person holding the money
- d. The competitor.

66. "Six Sigma" is a set of techniques for:

- a. Marketing
- b. Process Improvement
- c. Hiring
- d. Accounting

67. "Just-In-Time" (JIT) manufacturing aims to:

- a. Produce excess inventory
- b. Reduce inventory costs by receiving goods only as they are needed
- c. Delay production
- d. Hire temporary staff.

68. "Corporate Social Responsibility" (CSR) implies

- a. Companies should only focus on profit.
- b. Government should run companies
- c. Employees should work for free.
- d. Companies have a duty to consider their impact on society and the environment.

69. "Offshoring" means:

- a. Working on a boat
- b. Relocating a business process to another country.
- c. Closing the business
- d. Hiring locally.

70. "Freeware" is:

- a. Open source software
- b. Copyrighted software available at no cost
- c. Software that pays you
- d. Illegal software.

71. "Shareware" implies:

- a. Software is free forever
- b. You must share it.
- c. Software is free to try, but requires payment for continued use
- d. It has no license.

72. "Identity Theft" usually leads to:

- a. Financial gain for the victim.
- b. Financial fraud/crimes committed in the victim's name.
- c. Better credit score.
- d. New friends.

73. Considering copyright laws, "You can use excerpts from a book to write a review of it. However, you can't reproduce whole chapters of the book for reviewing purposes without permission"

- a. Correct
- b. Incorrect
- c. Could be correct in some cases
- d. None of the above

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74. Ehsan named his newly started business as 'KARACHI Biryani' while Ali also named his recently started business as 'KARACHI Biryani'. Both individual owners have the NTN's only and they file their taxes as well. Under which business structure they fall in?
- General Partnership
 - Private Ltd. Company
 - Sole Proprietorship
 - B & C
75. The type of crime in which someone wrongfully obtains and uses another person's personal data in some way that involves fraud or deception is:
- fraud
 - identity theft
 - hacking
 - sniffing
76. Which of the following rights is not a right of a copyright holder?
- Right to reproduce the copyrighted work
 - Right to distribute the work to the public.
 - Right to perform the work in public
 - Right to prevent others from producing competitive works
77. Can the inventor/producer of a technology still use it if the related patent is expired?
- Yes, but it has no more the right to exclude others from using the invention
 - No, with the expiration of the patent it is no more allowed to freely produce the invention
 - Yes, but it must acknowledge that on the product packaging
 - A and C
78. The type of law that is concerned with the rights and duties of individuals towards each other is:
- Criminal Law
 - Civil Law
 - Public Law
 - Substantive Law
79. How long does the average recruiter spend reviewing a resume?
- 90 seconds
 - 60 seconds
 - 16 seconds
 - 6 seconds
80. Extreme programming (XP) focuses on:
- Pair Programming
 - Acceptance Testing
 - Continuous Code integration
 - All of the above
81. The way hackers use to gather information about computer systems and the companies they belong to is:
- a bombing run
 - a curtain closer
 - a denial-of-service attack
 - foot Printing
82. If a person uses someone else's song as a background music in his video message then this act could be an example of:
- Copyright Infringement

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- b. Hacking
 - c. Identity theft
 - d. Cyber Bullying
83. A multinational company denies its workers the right to form a union and threatens dismissal if they attempt to organize. Which human right is being violated?
- a. Right to Freedom of Association
 - b. Right to Education
 - c. Right to Property
 - d. Right to Life
84. After WWII, the world recognized the urgent need for a shared framework of human rights. This led to the adoption of which key document?
- a. Magna Carta
 - b. Bill of Rights (U.S.)
 - c. Universal Declaration of Human Rights (UDHR)
 - d. Cairo Declaration on Human Rights in Islam
85. A software engineer is ordered by her manager to develop surveillance tools that will be used to target a minority group. What is the most ethical response?
- a. Refuse the task because it violates human rights and ethics
 - b. Follow the order since it is part of the job
 - c. Do the work secretly but warn the minority group
 - d. Delay the work until someone else is assigned
86. The Cairo Declaration on Human Rights in Islam (1990) was significant because:
- a. It replaced the UDHR globally
 - b. It provided an Islamic perspective on human rights values
 - c. It became an enforceable international law
 - d. It abolished freedom of religion
87. Which principle best explains why ethics and human rights are closely linked?
- a. Ethics provides the legal penalties for violations
 - b. Ethics helps distinguish right from wrong and justifies decisions
 - c. Ethics is only religious, while human rights are universal
 - d. Ethics applies only to professionals, not citizens
88. A healthcare startup collects patient information and decides what data to store and why. They hire a cloud company to store and process this data. Who is the Data Controller in this scenario?
- a. The cloud company because it stores and processes the data
 - b. The healthcare startup because it determines the purpose of processing
 - c. Both are processors since they share the responsibility
 - d. No one — GDPR does not apply to healthcare data
89. An online store asks a user for their full name, address, phone number, and passport copy to deliver a T-shirt. Which GDPR principle is being violated?
- a. Accuracy
 - b. Integrity & Confidentiality
 - c. Data Minimization
 - d. Storage Limitation
90. A financial company wants to implement a new AI tool that analyzes sensitive financial behavior of customers. What is the company required to do before launching the system?
- a. Send a promotional email
 - b. Conduct a Data Protection Impact Assessment

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- c. Notify all competitors
 - d. Delete existing customer data
91. A startup launches a tool called “Target Career” with a company name “Career Recommenders.” They want to protect brand identity. Which IP should they register?
- a. Patent for the name
 - b. Trademark for the brand name and software name**
 - c. Copyright for the idea
 - d. Trade secret for the logo
92. A designer copies graphics from a famous e-learning website and uses them in their training slides. What is this an example of?
- a. Trademark violation
 - b. Patent infringement
 - c. Copyright infringement**
 - d. Fair use
93. In which IT vertical would regulatory compliance, real-time risk scoring, and fraud detection be considered core functional requirements rather than supporting features?
- a. E-Commerce
 - b. Media & Entertainment
 - c. FinTech**
 - d. EdTech
94. A HealthTech platform stores patient data in the cloud and uses AI to recommend treatments. Which concern becomes legally dominant over performance optimization?
- a. Latency and uptime
 - b. User experience design
 - c. Data privacy and lawful processing**
 - d. API scalability
95. A ride-hailing application integrating GPS tracking, driver analytics, and route optimization primarily belongs to which vertical?
- a. Travel & Hospitality
 - b. Aviation & Logistics**
 - c. Media & Entertainment
 - d. FinTech
96. A software product is offered free to users, while revenue is generated by analyzing aggregated behavioral data for advertisers. This is best described as:
- a. Freemium Model
 - b. Subscription SaaS
 - c. Advertising + Data Monetization Model**
 - d. Open-Source Monetization
97. In Privacy-by-Design, which decision reflects default privacy rather than user consent?
- a. Asking users to opt-out later
 - b. Collecting full data but encrypting it
 - c. Disabling tracking unless explicitly enabled**
 - d. Logging all activity for analytics
98. A startup builds software that other companies rebrand and sell as their own. This model is known as:
- a. Open-source model
 - b. White-label software**

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- c. Licensing SaaS
 - d. Shareware
99. Which combination most accurately defines a business model rather than a technology stack?
- a. Cloud + AI + APIs
 - b. Value creation, delivery, and revenue capture
 - c. Databases, servers, and frameworks
 - d. Programming languages and tools
100. In data protection law, which category generally receives the highest level of legal protection?
- a) Publicly available data
 - b) Aggregated statistics
 - c) Sensitive personal data (health, biometrics)
 - d) Anonymous usage metrics

[CLO 8: Understand the Software Industry dynamics, different business and revenue models in IT industry, computer enabled products/services/contracts, virtual and change management, and technology trends and careers.]

Q2: Software Contracts: Case-Scenario

[10 marks]

XYZ Inc. (client) has commissioned a software development company named ABC Solutions (developer) for developing a bespoke software system. The client and the developer have agreed to enter into a fixed price contract of USD 20,000 for the development of the system and a timeline of 2 calendar months.

Here are some excerpts from a few clauses in the contract:

Functional Requirements

1. The software shall be able to list all of the employees of the client organization (i.e. XYZ Inc) according to their departments, together with the information of the managers they report to and their date of joining.
2. The software shall integrate with XYZ Inc.'s proprietary HRM (human resource management) system through an API that shall be developed and provided by the client internally.

Deliverables and Acceptance

The developer shall inform the client about the completion of the project by sending an email to gavin@xyz-inc.com.

Once the email has been sent, the client shall have 15 working days to test the software and report all bugs and/or missing features to the developer via email.

If the client fails to report any bugs and/or missing features within 5 working days, the project shall be considered accepted and all outstanding payments shall become due.

Payments

The payments shall be made as per the following schedule:

1. Advance mobilization payment - USD 4,000 at the start of the project
2. Final Payment - USD 16,000 after the completion and acceptance of the project

Should the developer not be able to deliver the entire software free of bugs within the stipulated deadline of 2 calendar months (starting July 15 2024), a late fee equal to 20% of the entire contract amount shall be charged. The code and all deliverables (including access to any deployments) for the project shall only be made available to the client by the developer after all the payment for the project has been cleared.

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Termination and Notice Periods

The client shall have the right to terminate the contract (without the need to provide a reason) on a 10 working days' notice. The notice can be served at any time before the acceptance of all deliverables.

In the event of termination of the contract:

1. The developer shall be obliged to deliver all the work they have completed on the project up to the date on which the notice is issued to the client.
2. No further payment shall be made to the developer
3. The developer shall not be obliged to return any advance payments already made, irrespective of the level of completion of the project.

Q2 - Part A: Multiple Choice Questions (7 marks)

Select the correct option based on the text provided. (1 Marks each)

1. The "Termination" clause allows the Client to end the contract without a reason on 10 days' notice. If the Client terminates the contract when the project is 90% complete, what is the financial outcome for the Developer according to the text?

- A) The Developer receives 90% of the total payment.
- B) The Developer must return the \$4,000 advance payment.
- C) The Developer must hand over all work completed but receives no further payment beyond the advance.
- D) The Developer is entitled to keep the source code until full payment is made.

2. The contract requires the software to be "free of bugs" to avoid a late fee. From a Professional Practices perspective, why is this specific wording dangerous for the Developer?

- A) It allows the Developer to charge extra for maintenance.
- B) "Free of bugs" is technically impossible to guarantee in complex software, giving the Client a legal excuse to apply the penalty or withhold payment.
- C) It forces the Client to perform all the testing.
- D) It contradicts the requirement for an API.

3. In the "Functional Requirements," the software depends on an API provided by the Client. If the Client fails to provide this API on time, causing a project delay, how does the current contract text handle this?

- A) The project deadline is automatically extended.
- B) The Developer is still liable for the deadline and the 20% late fee, as there is no "Client Delay" exception clause.
- C) The Client must pay a penalty to the Developer.
- D) The contract is automatically cancelled.

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4. The "Deliverables and Acceptance" section contains a critical ambiguity regarding timelines. Which two timeframes conflict with each other?

- A) The 2-month project deadline vs. the 10-day notice period.
- B) The 15 days given to test the software vs. the 5 days before automatic acceptance occurs.**
- C) The July 15th start date vs. the date of the email notification.
- D) The 5-day bug report window vs. the 20% late fee calculation.

5. The "Late Fee" is calculated as 20% of the *entire* contract amount (\$20,000). If the project is delayed, what will be the actual amount of the "Final Payment" check given to the Developer?

- A) \$16,000
- B) \$12,000**
- C) \$4,000
- D) \$20,000

6. The contract states: "If the client fails to report any bugs... within 5 working days, the project shall be considered accepted." However, another clause gives the client "15 working days to test." If the Client finds a critical bug on Day 12 and reports it, what is the likely legal status of the project according to the strict text?

- A) The Developer must fix the bug immediately because it is within the 15-day testing window.
- B) The Developer could arguably charge extra to fix this "new" bug.**
- C) The contract is void because the dates conflict.
- D) The 20% late fee applies to the Client.

7. The Termination clause allows the Client to cancel "at any time before acceptance" and requires the Developer to "deliver all work completed" while receiving "no further payment." If the Client acts unethically, how could they use this clause to exploit the Developer?

- A) By cancelling on the very first day to get the advance payment back.
- B) By cancelling on the last day of the project.**
- C) By hiring a different developer to finish the API.
- D) By refusing to provide the HRM system API.

Q2- Part B: Short Answers (3 Marks)

Briefly answer the following questions based on professional software engineering standards. (1-2 sentences each).

8. The contract states that the Client must "test the software" to accept it, but also states that code/deployments will "only be made available... after all payment has been cleared." Briefly mention if any functional deadlock this creates for the project and what?

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The client is required to test the software before acceptance, but the software or deployment is not made available until full payment is cleared. This creates a circular dependency, the client cannot test without access, and access is denied until payment is made. Source code is not the issue. Deployment is the issue. So source code can be handed over after payment.

9. The project relies on an API provided by the Client. If the Client delays this API, the Developer is still penalized for being late. What specific type of legal clause in such contract can normally protect the Developer from this external delay?

The most appropriate clause here is a **Client Dependency / Client Delay clause**, often paired with an **Extension of Time (EOT) clause**.

Clarification:

- A **Client Dependency / Client Delay clause** explicitly states that project timelines will be adjusted if the client fails to provide required inputs, such as APIs, data, approvals, or access.
- An **Extension of Time clause** formally allows deadlines to be extended without penalties when such delays occur.

10. You are the Technical Lead. Your Sales Manager wants to sign this contract promising a "bug-free" system in 2 months. Citing the Software Engineering Code of Ethics (specifically regarding valid estimates or product quality), why must you advise against signing a clause that guarantees "zero bugs"?

Ethical Advice: I must advise against it because guaranteeing "zero bugs" is technically impossible and deceptive. It violates the ethical obligation of **Product** and **Judgment** (competence) by promising a standard that cannot be verified or achieved.

[CLO 4: Understand professional ethical theories and code of ethics (IEEE/ACM)]

Q3: You are given the following scenario. Answer the questions given at the end of the scenario. **[10 marks]**

You are the senior software engineer at a start-up company developing an exciting new product that will allow salespeople to generate sales and email sales quotes and customer invoices from their smartphones. Your company's sales force has led a major corporation to believe your product will be available next week. Unfortunately, at this point the package still contains quite a few bugs. The leader of the testing group has reported that all of the known bugs appear to be minor, but it will take another month of testing for his team to be confident the product contains no catastrophic errors. Because of the fierce competition in the smartphone software industry, it is critical that your company be the "first to market." To the best of your knowledge, a well-established company will release a similar product in a few weeks. If its product appears first, your start-up company will probably go out of business.

(Refer to the above Scenario: Senior Software Engineer at a start-up, pressure to release buggy sales software to beat competition, risk of catastrophic errors vs. risk of bankruptcy.)

Q3-Part A: Multiple Choice Questions

Select the best option based on professional ethics and the scenario details. (1 Marks each)

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1. According to the ACM/IEEE Software Engineering Code of Ethics, the "Public Interest" (Principle 1) is paramount. In this scenario, who represents the "Public" that could be harmed by catastrophic errors?

- A) The shareholders of the start-up company.
- B) The sales force of the major corporation using the app to generate invoices.**
- C) The competitors releasing a similar product.
- D) The testing group leader.

2. The testing lead states that "known bugs are minor" but "catastrophic errors" are still possible without further testing. If you recommend releasing the product now *without* disclosing these risks to the customer, you are primarily violating the ethical obligation of:

- A) Competence
- B) Honesty and Integrity**
- C) Confidentiality
- D) Collegiality

3. From a business perspective, who is the primary beneficiary if the product is released next week and happens to work without major failure?

- A) The Client (Major Corporation) who gets a potentially buggy tool.
- B) The Start-up Company (Shareholders/Employees) who avoid bankruptcy.**
- C) The Competitor Company.
- D) The General Public.

4. If you decide to recommend the release, what is the most ethical course of action to mitigate harm to the client?

- A) Release the product and hope no bugs are found.
- B) Release the product but strictly limit it to internal use only.
- C) Release the product with a clear "Beta" warning and fully disclose the known bugs and risks to the client.**

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D) Resign from the company immediately.

5. The scenario mentions "fierce competition" and the risk of the start-up "going out of business." In ethical decision making, this pressure is often categorized as:

A) A conflict of interest between business survival and professional responsibility.

B) A technical limitation of the smartphone platform.

C) A legal mandate to release.

D) A whistle-blowing opportunity.

Q3- Part B: Short Answers (5 Marks)

Briefly answer the following questions (1-2 sentences). Each question requires you to apply ethical reasoning to the specific scenario. (1 Mark each)

6. The test lead fears "catastrophic errors" might still exist. Since this software generates invoices and sales quotes, give one specific example of what a "catastrophic error" would look like in this context?

Catastrophic Error Example: The system calculating invoice totals with incorrect decimal placements (e.g., charging \$10.00 instead of \$1,000.00) or accidentally emailing confidential price lists/data to the wrong customers.

7. If the company decides to release the software despite the warnings, what should company (startup) do/discuss with the Major Corporation to satisfy ethical standards?

Ethical Action: The company must practice **Informed Consent** by holding a transparent discussion with the Major Corporation, disclosing that the software is in a "Beta" state with known bugs and incomplete testing.

8. Highlight any short-term preference which may cause any long term issue?

Short vs. Long Term: The short-term preference for "First to Market" (speed) risks the long-term issue of Reputation Destruction, lawsuits, and loss of client trust which could destroy the business anyway.

9. If you are at a managerial position what will be your decision "Release Now" or "Delay Month" or propose any other option that could satisfy the client without risking the entire system.

Managerial Decision: I would propose a "Controlled Beta Release" (Pilot Program) to a small, restricted group of users. This minimizes risk while satisfying the client's need to see progress.

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10. If you sign off on the release knowing the testing is incomplete, and a bug causes the Major Corporation to lose \$1 million in sales, under what legal concept could you or your company be sued?

Legal Liability: The company could be sued for **Professional Negligence** (or Product Liability).

[CLO 8: Understand the Software Industry dynamics, different business and revenue models in IT industry, computer enabled products/services, virtual and change management, and technology trends and careers.]

Q4: Is the Telephone Company Violating Your Privacy?

[10 marks]

In May 2006, USA Today reported that three of the four major United States landline telecommunications companies had cooperated with the National Security Agency (NSA) fight against terrorism by turning over records of billions of phone calls made by Americans.

AT&T, Verizon Communications, and BellSouth, all contributed to the NSA's anti-terrorism program. Qwest Communications International was the only one of the big four to withhold its records. The revelation by USA Today caused a firestorm of controversy. Media outlets, privacy advocates, and critics of the Bush administration expressed outrage over the program and questioned its legality. The Washington Post referred to the program as a "massive intrusion on personal privacy". The issue received particularly strong scrutiny because it came to light only five months after President Bush said that he had authorized the NSA to listen in on international phone calls of Americans suspected of having ties to terrorism without obtaining a warrant.

When combined, the two stories caused intense worry among privacy activists who feared that a widespread data mining effort was being carried out against American citizens by the administration. President Bush would not acknowledge the existence of such an initiative. He said only that, "the intelligence activities I authorized are lawful and have been briefed to appropriate members of Congress." He added, "We are not mining or trolling through the personal lives of innocent Americans" and the privacy of citizens was being "fiercely protected". What exactly did the phone companies do for the government? After September 11, 2001, they began turning over phone call records to the NSA, whose goal was to build a database of every call made inside the United States. The records that were turned over contained only phone numbers and calling information such as time, date, and the duration of the calls; they omitted names, addresses, and other personal data.

Qwest was approached by the NSA at the same time as the others, but *Joseph Nacchio*, the company's CEO at the time (later involved in an insider trading scandal), refused to cooperate. Nacchio based his decision on the fact that the NSA had not secured a warrant or submitted to other legal processes in requesting the data.

The ethical questions raised by this case prompted no shortage of opinions from executives, politicians, pundits, activists, and legal experts. The phone companies cited a strong belief in protecting the privacy of their customers but stated that the belief must co-exist with an obligation to cooperate with law enforcement and the government in matters of national security. A release from AT&T summed up the company's position as follows: "If and when AT&T is asked to help, we do so strictly within the law and under the most stringent conditions". Verizon made a similar statement but also declined to comment on having a connection to a "highly classified" national security plan.

The company also indicated that press coverage of its data dealings contained factual errors. After examining the issue, legal experts on both sides of it weighed in with their opinions on the actions taken by the phone companies. Lawmakers began to seek hearings on the matter almost immediately. Customers directed their anger and concern directly to customer support lines. Two lawyers in New Jersey filed a \$5 billion suit against Verizon on behalf of the public accusing the company of violating privacy laws. Some legal scholars and privacy advocates agree that the telecoms may have crossed the line. These experts cite the Electronic Privacy Act of 1986, which permits businesses to turn over calling data to the government only in extreme cases (for example, to protect individuals who are in immediate danger of being harmed). Creating a database from the records does not meet the criteria. James X. Dempsey of the Center for Democracy and Technology noted that the law allows for a minimum

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penalty of \$1,000 per customer whose calling data were submitted to the government. Based on the number of records contributed to the NSA database, the phone companies faced civil penalties reaching hundreds of millions or possibly billions of dollars.

Dempsey shot down the idea that the phone companies did not break the law because the records they turned over included only phone numbers and not identifying information. According to Dempsey, the law does not specify that such personal information needs to be exchanged for the law to be broken. This was a popular position among critics of the NSA program. They asserted that phone numbers could easily be cross-referenced to personal information, such as names and addresses, using databases. That is readily available to the public on the Internet. A senior government official who spoke on condition of anonymity admitted that the NSA had access to most domestic telephone calls even though, according to Kate Martin of the Center for National Security Studies, the NSA would be prohibited by federal statutes from obtaining such data without judicial consent. The government official said that the scope of the program was small in the sense that the database was used only to track the communications of individuals who were known to have ties to terrorism.

The non-profit Electronic Frontier Foundation (EFF), a privacy watchdog, concurs with Martin's assessment. EFF supports its argument by referencing the Pen Register Statute, which prohibits the government from gathering calling data without a court order, and the Fourth Amendment, which covers privacy rights and unreasonable search and seizure. However, the impact of such a defense in court was unclear.

In response to the wiretapping controversy of five months earlier, the Bush administration cited Article 11 of the Constitution as the derivation of its authority to employ wiretapping as a terror-fighting tool. Furthermore, Congress virtually wrote the President a blank check by empowering him to "use all necessary and appropriate force" in the war on terror. It was not surprising that Congress had as much to say about the issue as anyone. Various senators weighed in both with opinions and calls for investigation. Opinions did not always fall along party lines. Senator Dick Durbin, a Democrat from Illinois, believed that actions of the telephone companies put the privacy of American citizens at stake and that the companies should be compelled to appear before the Senate Judiciary Committee. Durbin was backed up by the chairman of that committee, Senator Arlen Specter, a Republican from Pennsylvania. Senator Specter intended to call upon executives from the participating companies to give their testimony about the NSA database program. House Majority Leader John Boehner of Ohio and Senator Lindsey Graham of South Carolina also crossed party lines in questioning the necessity of such a program.

Senator Graham asked, "The idea of collecting millions of thousands of phone numbers, how does that fit in to following the enemy?"

Proponents of the program answer that question by saying that the purpose of the program is to discover patterns in the calling records that indicate the presence of terrorist activity. Intelligence analysts and commercial data miners refer to this as "link analysis," which is a technique for pulling meaningful patterns out of massive quantities of data. Defenders of the program were harshly critical of media outlets who exposed it. Representative Peter Hoekstra, a Republican from Michigan and chairman of the House Intelligence Committee, insisted that reporting on the NSA's programs undermined national security. He stated, "Rather than allow our intelligence professionals to maintain a laser focus on the terrorists, we are once again mired in a debate about what our intelligence community may or may not be doing". President Bush echoed this sentiment by declaring that leaks of sensitive intelligence always hurt the government's ability to counter terrorism.

Republican Senator Jeff Sessions of Alabama also disputed the need to investigate the program. Senator Sessions answered the critics by emphasizing that the program did not involve actual surveillance of phone conversations and therefore did not merit the scrutiny it was receiving. In his statements, the president also went out of his way to distinguish between eavesdropping on telephone conversations and gathering call data. In May 2006, senior intelligence officials revealed that the scope of the NSA's eavesdropping operations was strongly influenced by Vice President Dick Cheney and his office. The Vice President and his key legal adviser, David S. Addington, began pushing for surveillance of domestic phone calls and e-mails without warrants soon after September 11th. They believed that the Constitution gave the executive branch expansive powers that covered this type of domestic spying, as well as certain interrogation tactics for dealing with suspected terrorists.

However, the NSA pushed back on advice from its own legal team. As a result, the NSA limited the eavesdropping to calling where at least one participant was outside the United States. Still, conducting such

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operations appeared to conflict with the 1978 Foreign Intelligence Surveillance Act (FISA), which required court authorization before any wiretapping done: within the United States. Naney Labin of the Center for Democracy and Technology persist that listening in on any phone call without a warrant, regardless of whether it is domestic or international, is illegal according to FISA. However, while FISA covers wiretapping, it does not clearly prohibit the type of data mining was that done in the NSA database program. In June 2006, a federal court in California released document related to EFF's suit against AT&T that sheds light on how the phone company may have provided its data to the NSA. In the document, J. Scott Marcus, who had worked as a senior advisor for Internet technology to the Federal Communications Commission, evaluates evidence presented to EFF from a former AT&T technician named Mark Klein. Klein claimed that AT&T reconfigured its network in San Francisco and installed special computer systems in a secret room in order to divert and collect Internet traffic for use by the NSA. Marcus concluded that Klein's description of a private backbone network partitioned from AT&T's main Internet backbone was "not consistent with normal AT&T practice." Marcus further observed that at the time of the reconfiguration, AT&T was in poor shape financially and would have been very unlikely to have made such expensive infrastructure changes on its own. In July 2006, Senator Specter announced that an agreement had been reached with the White House to give the Foreign Intelligence Surveillance Court the authority to review the constitutionality of the NSNs surveillance programs.

The court would be empowered to determine whether wiretapping fails within the president's powers to fight the war on terrorism. The agreement allowed for the court's proceedings and rulings to be conducted in secretive though judicial oversight of the NSNs activities had been established, debate continued over the efficacy of the compromise. The American Civil Liberties Union and the ranking democrat on the House Intelligence Committee, Representative Jane Harman of California, accused Senator Specter of giving away too much, including a key Fourth Amendment protection. The White House won several important points in the agreement, including the ability to appeal the court's decisions; changing the language so that submitting a program to the court was actually optional for the administration; and a guarantee that the agreement does not retract any of the president's existing constitutional authority. On the other hand, the lead judge on the court was known to have significant misgivings about the NSNs actions even before the program came to light. The bill to enact FISA's power over NSA wiretapping awaits Congressional approval.

Q4- Part A: Multiple Choice Questions (5 Marks)

Select the best option based on the case study text. (1 Mark each)

1. Which major telecommunications company was the only one to refuse the NSA's request for customer records because the NSA did not have a warrant?

- A) AT&T B) Verizon C) Qwest Communications D) BellSouth

2. J. Scott Marcus, a former FCC advisor, analyzed the claim that AT&T installed a "secret room" for the NSA. What was his conclusion regarding AT&T's motivation?

- A) The installation was standard industry practice for improving internet speed.

B) Likely agreed to it because of poor financial shape and the government's expensive infrastructure.

- C) The room was actually used for storing backup billing records.

- D) The configuration was necessary to prevent cyber-attacks from foreign nations.

3. Which specific 1978 law was cited by critics as being violated because it requires a court order for any wiretapping done within the United States?

- A) The Patriot Act

B) The Foreign Intelligence Surveillance Act (FISA)

- C) The Sarbanes-Oxley Act

- D) The Freedom of Information Act

4. The technique used by intelligence analysts to find "meaningful patterns" (such as terrorist networks) inside massive amounts of calling data is known as:

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A) Link Analysis

B) Encryption

C) Phishing

D) Packet Switching

5. Mark Klein, a former technician, accused AT&T of installing a "secret room" in San Francisco. What was the alleged function of the equipment in this room?

A) To store customer billing records.

B) To divert and collect Internet traffic for the NSA.

C) To improve the speed of international calls.

D) To block spam emails.

Q4- Part B: Short Questions (5 Marks)

Briefly answer the following questions (1-2 sentences each). These questions test your understanding of the ethical and legal conflicts in the case.

6. AT&T and Verizon argued that their "belief in privacy" must coexist with an obligation to help the government with National Security. However, Qwest CEO Joseph Nacchio refused to cooperate. Was Nacchio right or not and why?

Nacchio's Stand: Yes, Nacchio was right. He refused because the NSA had not secured a **Warrant** or submitted to the legal processes required by law to request such data.

7. Proponents of the program argued that collecting the data of innocent people is necessary rather than just suspects. Will you agree with this and why?

Agreement: Proponents argue that "Link Analysis" (Data Mining) requires analyzing the entire dataset (the "haystack," including innocent people) to identify the hidden connections to terrorists (the "needles").

8. What was the Bush administration argument that the program was legal? Acting as a professional will you accept that argument or not and why?

Bush's Argument vs. Professional View: Bush cited Article 11 of the Constitution (Commander-in-Chief powers). As a professional, I would not accept this because it conflicts with FISA (which requires warrants) and the Fourth Amendment protection against unreasonable search and seizure.

9. Mark Klein exposed AT&T's secret operations to the media. While he violated his company's confidentiality agreement, what we call this act and which ethical principle (from the Software Engineering Code of Ethics) could be used to justify his actions?

Whistleblowing: The act is Whistleblowing

10. In the above case study text mentions that they can share personal data without a warrant. What do you think is it legal or not according to this case study perspective and why?

Legality of Sharing: No, it is likely not legal. The Electronic Privacy Act only permits sharing data without a warrant in "extreme cases" (like immediate physical danger), and creating a massive database for mining does not meet this criterion.

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[CLO 7: Understand the Software Industry Dynamics, Communication, Leadership and conflict Management]

Q5: Google Gemini AI Image Generation Controversy (2024)

[10 marks]

In early 2024, Google paused the image-generation feature of its Gemini AI model following widespread criticism from users and experts. The system produced historically inaccurate and culturally insensitive images when prompted to generate depictions of historical figures and events. These outputs rapidly circulated on social media, triggering public backlash and raising concerns about bias, overcorrection, and the reliability of generative AI systems. Internally, the incident revealed growing tensions among AI research teams, product teams, and senior leadership. Engineers reported significant pressure to release new features quickly in order to remain competitive in the generative AI market, while ethics and safety teams had previously raised concerns regarding model behavior, testing limitations, and potential societal impact. In response to the controversy, leadership publicly acknowledged the failure, took responsibility, and suspended the feature while committing to corrective measures and further improvements. Despite these actions, the incident sparked broader debate around accountability for AI-generated outputs, the limits of automated decision-making, and the appropriate balance between human oversight and rapid technological deployment in high-impact AI products. Overall, the situation highlighted the challenges faced by large technology firms in aligning human decision-making, advanced AI technology, organizational accountability, and public trust under intense competitive and regulatory pressure.

Critically analyse the Google Gemini AI image-generation incident using relevant conflict management theories and organizational behaviour concepts studied in class.

In your answer, examine how differences in goals, perceptions, and roles among leadership, technical teams, and ethics units contributed to the conflict. Analyse the situation using appropriate perspectives on conflict, assess whether the conflict was functional or dysfunctional, and how the conflict was managed. (Keep it précised and accurate, adjust your answer only in the given space.)

Conflict Sources: The conflict arose from diverging goals: Leadership and Product teams prioritized **Speed and Competitiveness** (market share), while Ethics/Safety teams prioritized **Accuracy and Social Responsibility**. This created high pressure that suppressed necessary safety checks.

Conflict Type: It was a **Dysfunctional Conflict** because it hindered organizational performance, leading to a flawed product release, public embarrassment, and loss of trust.

Management Style: Leadership initially used a **Forcing** style (pressuring for quick release). After the crisis, they shifted to **Accommodating/Yielding** (pausing the feature and accepting fault) to restore equilibrium. A better approach would have been **Integration**, aligning technical speed with ethical guardrails before release.

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NAME :	EXAM :
DATE :	

Roll No	Final Exam PPIT	A	B	C	D	E	A	B	C	D	E
	Section1	34	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	69	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	A B C D E	35	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	70	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	36	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	71	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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3	■ 3	38	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	73	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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6	A B C D E	A B C D E	A B C D E	A B C D E	A B C D E	A B C D E					
7	6	41	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	76	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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	10	45	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	80	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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	■ A B C D E	■ A B C D E	■ A B C D E	■ A B C D E	■ A B C D E	■ A B C D E					
	16	51	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	86	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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	18	53	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	88	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	19	54	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	89	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	■ 20	55	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	90	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	A B C D E	A B C D E	A B C D E	A B C D E	A B C D E	A B C D E					
	21	56	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	91	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	22	57	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	92	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	23	58	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	93	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	■ 24	59	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	94	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	25	60	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	95	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	A B C D E	A B C D E	A B C D E	A B C D E	A B C D E	A B C D E					
	26	61	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	96	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	27	62	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	97	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	■ 28	63	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	98	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	29	64	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	99	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	30	65	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	100	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	31	66	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
	32	67	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					
	33	68	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>					