M1 Computer Science Exam S2 2024-25

First Name	Total
Last Name	**/40**

Listening Comprehension /10

1. What did play allow ancient humans to do?

2. What were clockwork-powered machines called?

3. What creation was inspired by these machines?

4. Where did that creation eventually lead?

5. What are we unconsciously doing when we play?

Reading Comprehension **/10**

Instructions: Read the following text and answer the comprehension on the following page.

AI is automating our jobs—but values need to change if we are to be liberated by it

AI will undoubtedly help solve vast problems, while generating vast fortunes for technology companies and investors. However, the rapid spread of generative AI and machine learning will also automate vast portions of the global workforce, eviscerating white-collar and blue-collar jobs alike. And while millions of new jobs will surely be created, it is not clear what happens when potentially billions more are lost. Amid the breathless promises of productivity gains from AI, there are rising concerns that the political, social and economic consequences from mass labor displacement will deepen inequality, put pressure on public safety nets, and contribute to social conflicts.

The coming AI disruption

The idea that machines would one day replace human labor is hardly new. It features in novels, films and countless economic reports stretching back over centuries. Fast forward to today, and AI capabilities are advancing faster than almost anyone expected. In November 2022, OpenAI launched ChatGPT, which dramatically accelerated the AI race. A detailed McKinsey analysis estimated that "Gen AI and other technologies have the potential to automate work activities that absorb up to 70% of employees' time today." Brookings found that "more than 30% of all workers could see at least 50% of their occupation's tasks disrupted by generative AI." These studies point to a common outcome: AI will profoundly impact the world of work.

While it is tempting to compare the impacts of AI automation to past industrial revolutions, it is also short-sighted. AI is arguably more transformative than the combustion engine or Internet because it represents a fundamental shift in how decisions are made and tasks are performed. It is not just a new tool or source of power, but a system that can learn, adapt, and make independent decisions across virtually all sectors of the economy and aspects of human life. Precisely because AI has these capabilities, improves exponentially, and is not confined by geography, it is already starting to outperform humans. It indicates the arrival of a post-human intelligence era.

Ironically, coding and software engineering jobs are among the most vulnerable to the spreading of AI. While there are expectations that AI will increase productivity and streamline routine tasks with many programmers and non-programmers likely to benefit, some coders confess that they are becoming too dependent upon AI suggestions (which undermines problem-solving skills).

Anthropic, one of the leading developers of generative AI systems, recently launched an Economic Index based on millions of anonymized uses of its Claude chatbot. It reveals massive adoption of AI in software engineering: "37.2% of queries sent to Claude were in this category, covering tasks like software modification, code debugging, and network troubleshooting."

Meanwhile, the creative sectors also face significant disruption as AI-generated writing and synthetic media improve. The demand for human journalists, copywriters, and designers is already falling just as AI-generated content (including so-called "slop": the growing amount of low-quality text, audio and video flooding social media) expands. And in education, AI tutoring systems, adaptive learning platforms, and automated grading could reduce the need for human teachers, not only in remote learning environments.

Some have confidently argued that, as with past technological shifts, AI-driven job losses will be balanced by new opportunities. AI enthusiasts add that it will mostly handle repetitive or boring tasks, freeing humans for more creative work—like giving doctors more time with patients,

teachers more time to engage with students, lawyers more time to concentrate on client relationships, or architects more time to focus on innovative design. But this historical comfort overlooks AI's radical novelty: for the first time, we're confronted with a technology that is not just a tool but an autonomous agent, capable of making decisions and directly shaping reality. The question is not just what we can do with AI, but what AI might do to us.

AI will certainly save time. Machine learning already interprets scans faster and cheaper than doctors. But the idea that this will give professionals more time for creative or human-centered work is less convincing. AI may make diagnosis quicker, but there is little reason to think it will loosen the grip of a system designed to maximize output rather than human connection. Nor is there much reason to expect AI to liberate office workers for more creative tasks. Technology tends to reinforce the values of the system into which it is introduced. If those values are cost reduction and higher productivity, AI will be deployed to automate tasks and consolidate work, not to create breathing room. Workflows will be redesigned for speed and efficiency, not for creativity or reflection. Unless there is a deliberate shift in priorities—a move to value human input over raw output—AI is more likely to increase pressure than to decrease it. That shift seems unlikely anytime soon.

No one is prepared

Businesses are under pressure to adopt AI as fast and deeply as possible, for fear of losing competitiveness. That's, at least, the hyperbolic narrative that AI companies have succeeded in putting forward. And it's working: a recent poll of 1,000 executives found that 58% of businesses are adopting AI due to competitive pressure and 70% say that advances in technology are occurring faster than their workforce can incorporate them.

Another new survey suggests that over 40% of global employers planned to reduce their workforce as AI reshapes the labor market. Lost in the rush to adopt AI is a serious reflection on workforce transition. Financial institutions, consulting firms, universities and nonprofit groups have sounded alarms about the economic impact of AI but have provided few solutions other than workforce up-skilling and Universal Basic Income (UBI). Governments and businesses are wrestling with a basic challenge: how to manage the benefits of AI while protecting workers from displacement.

AI-driven automation is no longer a future prospect; it is already reshaping labor markets. As automation reduces human workforces, it will also diminish the power of unions and collective bargaining furthering entering capital over labor. Whether AI fosters widespread prosperity or deepens inequality and social unrest depends not just on the imperatives of tech company CEOs and shareholders, but on the proactive decisions made by policymakers, business leaders, union representatives, and workers in the coming years.

The key question is not if AI will disrupt labor markets—this is inevitable—but how societies will manage the upheaval and what kinds of "new bargains" will be made to address its negative externalities. It is worth recalling that while the last three industrial revolutions created more jobs than they destroyed, the transitions were long and painful. This time, the pace of change will be faster and more profound, demanding swift and enlightened action.

At a minimum, governments must prepare their societies to develop a new social contract, prioritize retraining programs, strengthen social safety nets, and explore Universal Basic Income to help workers displaced by automation. They should also proactively foster new industries to absorb the displaced workforce. Businesses, in turn, will need to rethink workforce strategies and adopt human-centric AI deployment models that prioritize collaboration between humans and machines, rather than substitution of the former by the latter.

The promise of AI is immense, from boosting productivity to creating new economic opportunities and indeed helping solve big collective problems. Yet, without a focused and coordinated effort, the technology is unlikely to develop in ways that benefit society at large.

1. Why are software engineers considered vulnerable to AI, even though they work in the tech industry?

2. What critique does the article offer about AI giving people more time for creative work?

3. The article compares AI with past technological revolutions. In what way is AI fundamentally different?

4. Explain the quote: “Technology tends to reinforce the values of the system into which it is introduced.” How does this apply to AI?

5. What might a “new social contract” look like in response to AI-driven labor changes?

Essay on Creativity and the Work World **/20**

Instructions: Provide your answer to one of the questions below (underline the question you chose to answer). Write a 200–300-word response.

1. Has AI already begun to erode our creative and problem-solving skills? If so, what can be done about it?
2. Can AI truly “free” humans… or is it an illusion?
3. Can we expect AI to support human-centered values like creativity in a profit-driven system?
4. What responsibilities do societies have in shaping AI’s impact?

Scrap paper (Do not detach!)