

AP CSP Summer Assignment: *The Impact of Computing*

Due: The First Day of Class

Overview: This summer, you'll explore how computing affects society — ethically, socially, and economically. This is your first unit of material for AP Computer Science Principles, and it will explore Big Idea 5. Big Idea 5 is all about how computing innovations shape and are shaped by our world. You'll engage with a mix of media and respond to prompts that challenge your thinking and require clear, evidence-based writing. If you run into any problems or have any questions about the assignment or the course, reach out to Ms. Gandy at Sommer.Gandy@imgacademy.education.

Submission Instructions

- Submit a typed document (PDF or Word Doc) with all responses.
 - Pages documents are NOT permitted. You must submit a PDF, .doc, or .docx file. Work submitted as .pages will earn a zero, and a late penalty assessed while resubmitting.
- Include your name.
- Be sure to proofread for clarity and thoughtfulness!
- Your file should be named with the convention that we will use in the class throughout the year. (LastName_APCSP Summer Assignment)

Part 1: Watch and Reflect

For each of the videos, watch and answer the questions provided for each. You will then write an overall reflection of how the topics discussed in the videos relate to a bigger picture of the impact on computing innovations.

Video 1: *How Computers Have Changed the World*

- **Link:** <https://www.youtube.com/watch?v=YXNcFJNkjDU>
 - What major changes in communication and culture has computing enabled?
 - How has computing influenced how people interact with information and each other?
 - What are some of the ethical issues raised by the use of computing in social media?

Video 2: *The Social Dilemma (Trailer)*

- Optional- Watch the full Netflix documentary]

- **Trailer Link:** <https://www.youtube.com/watch?v=uaaC57tcci0>
 - How do algorithms shape our behavior? What are the potential risks?

Video Section Reflection Questions:

- Write a paragraph (~150 words) in response to each of the following questions:
 - How has computing influenced how people interact with information and each other?
 - What are some of the ethical issues raised by the use of computing in social media.

Part 2: Read and Respond

Read each of the provided articles and answer the reflection questions. It would be an excellent idea to take notes on the articles while you work to make sure that you are getting the most out of what you are reading.

Article 1: *The Pros and Cons of Facial Recognition Technology*

- **Link:** <https://www.brookings.edu/articles/police-surveillance-and-facial-recognition-why-data-privacy-is-an-imperative-for-communities-of-color/>
- **Summary:** This article discusses the increasing use of facial recognition technology (FRT) by law enforcement agencies and its implications for privacy, especially within communities of color. It highlights concerns about potential biases in FRT systems and the risks of surveillance overreach. The authors advocate for stronger federal privacy protections and the implementation of fairness and accuracy assessments for these technologies.
- **Reflection Questions:**
 - What are the primary benefits and concerns associated with the use of facial recognition technology in law enforcement?
 - How might biases in FRT systems disproportionately affect communities of color?
 - What measures are suggested to ensure fair and ethical use of FRT?

Article 2: *Understanding the Digital Divide in America*

- **Link:** <https://www.pewresearch.org/short-reads/2021/06/22/digital-divide-persists-even-as-americans-with-lower-incomes-make-gains-in-tech-adoption/>
- **Summary:** This article examines the ongoing digital divide in the United States, focusing on disparities in internet access and technology adoption among different

income groups. Despite overall gains in technology use, significant gaps remain, particularly among lower-income households. The article explores factors contributing to these disparities and their implications for education, employment, and daily life.

- **Reflection Questions:**
 - What factors contribute to the digital divide in the United States?
 - How does limited access to technology impact individuals in lower-income households?
 - What strategies could be implemented to bridge the digital divide and promote digital equity?

Article 3: *AI's Climate Impact Goes Beyond Its Emissions*

- **Link:** <https://www.scientificamerican.com/article/ais-climate-impact-goes-beyond-its-emissions/>
- **Summary:** This article examines how artificial intelligence (AI) influences climate change beyond its direct energy consumption. While AI systems require significant electricity, their applications can either exacerbate or mitigate climate change. For instance, AI can optimize energy grids to reduce waste but can also be used in ways that increase environmental harm. The article emphasizes the importance of directing AI development toward sustainable practices.
- **Reflection Questions:**
 - In what ways can AI contribute to combating climate change?
 - What are the potential negative environmental impacts of AI applications?
 - How can policymakers and technologists ensure that AI developments align with climate sustainability goals?

Part 3: Choose a Computing Innovation

Select a real-world computing innovation that you are personally interested in (e.g., self-driving cars, CRISPR gene editing, artificial intelligence, or blockchain. This is not an exhaustive list, so please feel free to expand beyond it.)

According to College Board, a **computing innovation** is an innovation that includes a computer or program code as an integral part of its functionality. It does not have to be a physical device, but can be software, an algorithm, or data-driven system. The program code or computer must play a crucial role in making the innovation work—it is not just incidental. Innovations can affect or relate to communication, culture, economics, education, health, safety, entertainment, and more. Devices that do not have a computer

or computing element that is core to its function would not be considered a computing innovation.

Respond in writing (~200 words)

- What is your chosen computing innovation?
- How does it work (basic idea)?
- What are its benefits?
- What are its potential risks or ethical concerns?

Final Reflection

Answer the following prompts in a 1-page written response:

- What surprised you the most about computing's impact on society?
- How do you see computing shaping your future career, goals, or interests?
- Which ethical concern (privacy, equity, access, etc.) do you think is most important to address in the next decade, and why?

Rubric:

Section	Criteria	Points
Part 1: Watch and Reflect (Videos + Reflection)	<ul style="list-style-type: none">- Thoughtfully answers each video prompt using evidence from the videos (6 pts)- Writes clear and well-organized reflections (~150 words each) showing understanding of how computing influences interaction and ethics (4 pts)	10 points
Part 2: Read and Respond (3 Articles)	<ul style="list-style-type: none">- Clearly summarizes each article's main points (3 pts)- Accurately addresses all reflection questions with specific evidence and reasoning (6 pts)- Demonstrates understanding of the broader impacts of computing (1 pt)	10 points
Part 3: Computing Innovation	<ul style="list-style-type: none">- Clearly identifies a computing innovation that fits the College Board definition (2 pts)- Explains how it works in an understandable way (3 pts)- Describes benefits with real-world relevance (2 pts)- Identifies and explains risks/ethical concerns (3 pts)	10 points
Final Reflection	<ul style="list-style-type: none">- Responds to all three prompts with thoughtfulness and personal insight (6 pts)- Uses examples from earlier parts of the assignment where appropriate (2 pts)- Well-organized writing (~1 page) with minimal errors (2 pts)	10 points
Presentation & Effort	<ul style="list-style-type: none">- Submitted on time, following instructions (file format, name, etc.) (2 pts)- Overall clarity, grammar, proofreading, and completeness (3 pts)- Shows genuine effort and engagement with the assignment (5 pts)	10 points