Programs, Bias & Crowdsourcing

Name: _____ Period: ____ Date: _____

Objectives

- Explain how programs extract information and insight from data (DAT-2.D, DAT-2.E).
- Explain how bias can exist in data and in computing innovations (IOC-1.D).
- Explain how people solve problems at scale through crowdsourcing and citizen science (IOC-1.E).

Directions: Answer each section.

Section 1: Using Programs to Gain Insight

1. Name two tools or processes a program can use to help find information in a large data set.

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2. A visualization tool lets you see a pattern that was invisible in a spreadsheet of numbers. Why are **visualizations** useful when working with data?

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3. "Transforming every element of a data set" is one way programs process data. Give an example (e.g., converting every temperature from Fahrenheit to Celsius).

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4. Why is working with data described as **iterative and interactive**?

Section 2: Bias in Data and Algorithms

5. Give two places bias can enter a computing innovation.

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6. A face-recognition app works well for some groups and poorly for others. Explain how the **data used to build it** could cause this.

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7. What should responsible programmers do about bias in their algorithms?

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Section 3: Solving Problems at Scale

8. Define **crowdsourcing**.

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9. Define **citizen science** and give an example of how it could help researchers.

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10. How does widespread access to public data help people identify problems and develop solutions?

Section 4: Unintended Impacts

11. Computing innovations are sometimes used in ways their creators never intended. Give one example of an unintended use (beneficial or harmful) of a data-driven innovation.

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12. Can a programmer anticipate *every* way their innovation might be used? What is a responsible programmer's obligation anyway?

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