Performance Task: Explore – Impact of Computing Innovations

Overview

Computing innovations impact our lives in ways that require considerable study and reflection for us to fully understand them. In this performance task, you will explore a computing innovation of your choice. A computing innovation is an innovation that includes a computer or program code as an integral part of its functionality. Your close examination of this computing innovation will deepen your understanding of computer science principles.

Please note that once this performance task has been assigned as an assessment (rather than as practice), you are expected to complete the task with minimal assistance from anyone. For more clarification see the Guidelines for Completing the Through-Course Performance Tasks section.

You will be provided with a minimum of 8 hours of class time to develop, complete, and submit the following:

▶ **A computational artifact**

▶ **Written responses**

Scoring guidelines and instructions for submitting your performance tasks are available on the AP Computer Science Principles Course Home Page.

Note: Students in nontraditional classroom environments should consult a school-based AP Coordinator for submission instructions.

When completing the Explore – Impacts of Computing Innovations performance task, you will be expected to conduct investigations on a computing innovation. A computing innovation is an innovation that includes a computer or program code as an integral part of its functionality.

You must ensure you have identified relevant, credible, and easily accessible sources to support your creation of a computational artifact as well as to support your responses to the prompts. You can search for print or nonprint sources as part of your investigation. You can refer to a journal, Web page, or an expert that is being quoted as part of your written response. Avoid plagiarism by acknowledging, attributing, and/or citing sources throughout your responses.

General Requirements

This performance task requires you to select and investigate a computational innovation to:

▶ analyze a computing innovations impact on society, economy, or culture and explain how this impact could be beneficial and/or harmful;

▸ explain how a computing innovation consumes, produces, or transforms data; and

▸ describe how data storage, data privacy, or data security concerns are raised based on the capabilities of the computing innovation.

You are also required to:

▸ investigate your computing innovation using a variety of sources (e.g., print, online, expert interviews);

▸ provide in-text citations of at least three different sources that helped you create your computational artifact and/or formulate your written responses;

› At least two of the sources must be available online or in print; your third source may be either online, in print, or a personal interview with an expert on the computing innovation.

› At least two of the sources must have been created after the end of the previous academic year.

▸ produce a computational artifact that illustrates, represents, or explains the computing innovation's intended purpose, its function, or its effect; and

▸ provide written responses to all the prompts in the performance task about your computational artifact and computing innovation.

Submission Requirements

1. **Computational Artifact**

   Your computational artifact must provide an illustration, representation, or explanation of the computing innovation's intended purpose, its function, or its effect. The computational artifact must not simply repeat the information supplied in the written responses and should be primarily nontextual.

   Submit a video, audio, or PDF file. Use computing tools and techniques to create one original computational artifact (a visualization, a graphic, a video, a program, or an audio recording). **Acceptable multimedia file types include .mp3, .mp4, .wmv, .avi, .mov, .wav, .aif, or .pdf format. PDF files must not exceed three pages. Video or audio files must not exceed 1 minute in length and must not exceed 30MB in size.**

2. **Written Responses**

   Submit one PDF file in which you respond directly to each of the prompts below. **Clearly label your responses 2a–2e in order.** Your responses must provide evidence of the extensive knowledge you have developed about your chosen computing innovation and its impact(s). Write your responses so they would be understandable to someone who is not familiar with the computing innovation. Include citations, as applicable, within your written responses. **Your response to prompts 2a–2d combined must not exceed 700 words.** The references required in 2e are not included in the final word count.

Computational Artifact

2a. Provide information on your computing innovation and computational artifact.

- ◆ Name the computing innovation that is represented by your computational artifact.
- ◆ Describe the computing innovation's intended purpose and function.
- ◆ Describe how your computational artifact illustrates, represents, or explains the computing innovation's intended purpose, its function, or its effect.

(*Must not exceed 100 words*)

2b. Describe your development process, explicitly identifying the computing tools and techniques you used to create your artifact. Your description must be detailed enough so that a person unfamiliar with those tools and techniques will understand your process. (*Must not exceed 100 words*)

Computing Innovation

2c. Explain at least one beneficial effect and at least one harmful effect the computing innovation has had, or has the potential to have, on society, economy, or culture. (*Must not exceed 250 words*)

2d. Using specific details, describe:

- ◆ the data your innovation uses;
- ◆ how the innovation consumes (as input), produces (as output), and/or transforms data; and
- ◆ at least one data storage concern, data privacy concern, or data security concern directly related to the computing innovation.

(*Must not exceed 250 words*)

References

2e. Provide a list of at least three online or print sources used to create your computational artifact and/or support your responses through in-text citation to the prompts provided in this performance task.

- ◆ At least two of the sources must have been created after the end of the previous academic year.
- ◆ For each online source, include the complete and permanent URL. Identify the author, title, source, the date you retrieved the source, and, if possible, the date the reference was written or posted.
- ◆ For each print source, include the author, title of excerpt/article and magazine or book, page number(s), publisher, and date of publication.
- ◆ If you include an interview source, include the name of the person you interviewed, the date on which the interview occurred, and the person's position in the field.
- ◆ Include in-text citations for the sources you used.
- ◆ Each source must be relevant, credible, and easily accessed.

Preparing for the Explore Performance Task

Prior to your teacher administering this task, you should:

▸ understand that a computing innovation (i.e., an innovation that that includes a computer or program code as an integral part of its functionality) has a meaningful personal or community emphasis is an appropriate choice, as long as it fulfills the requirements to complete all the prompts in the performance task;

▸ practice searching and evaluating sources relevant to computing innovations; all sources cited must be relevant, credible, and easily accessible;

▸ practice clearly explaining the impact the intended use of a computing innovation has on society, economy, and culture, clearly justifying both beneficial and harmful effects;

▸ practice demonstrating your knowledge of computer science and understanding of how data is input, output, and transformed in your analysis of the data used by the computing innovation.

▸ practice making connections between the data used by a computing innovation and a security, privacy, or storage concern.

▸ obtain the meaning and purpose of creating a computational artifact; your creation must provide an illustration, representation, or explanation of the computing innovation's intended purpose, its function, or its effect;

▸ have exposure to the use of a variety of computational tools that can be used to create effective computational artifacts;

▸ understand which computational artifacts would be considered effective and ineffective.

> *Effective artifacts include:*

> › visual, graphical, and/or audio content to help a reader understand the purpose, function, or effect of a computing innovation; and

> › the use of communications media, such as animations, comic strips, infographics, and/or public service announcements, to illustrate the purpose, function, or effect of a computing innovation.

> *Ineffective artifacts include:*

> › artifacts that repeat information previously supplied in the written responses;

> › multislide presentations with paragraphs of text or bullets;

> › artifacts that have not been created by the student; and

> › artifacts that focus on advertising the computing innovation's functionality instead of the purpose of the innovation.

▸ practice writing responses based on relevant and credible sources and include in-text citations; and

▸ practice appropriate acknowledgment of sources used in the creation of your computational artifact.

Guidelines for Completing the Explore Performance Task

You must:

▸ be aware of the performance task directions, timeline, and scoring criteria;

▸ support your written analysis of your computing innovation when responding to all the prompts by using details related to the knowledge and understanding of computer science you have obtained throughout the course and your investigation;

▸ provide evidence to support your claims using in-text citations;

▸ use relevant and credible sources to gather information about your computing innovation;

▸ provide acknowledgments for the use of any media or program code used in the creation of your computational artifact that is not your own; and

▸ allow your own interests to drive your choice of computing innovation and computational artifact.

You may:

▸ follow a timeline and schedule for completing the performance task;

▸ seek clarification from your teacher or AP Coordinator pertaining to the task, timeline, components, and scoring criteria;

▸ seek clarification from your teacher or AP Coordinator regarding submission requirements;

▸ as needed, seek assistance from your teacher or AP Coordinator in defining your focus and choice of topics; and

▸ seek assistance from your teacher or AP Coordinator to resolve technical problems that impede work, such as a failing workstation or difficulty with access to networks, or help with saving files or making movie files.

You may not:

▸ collaborate on the Explore performance task;

▸ submit work that has been revised, amended, or corrected by another individual;

▸ submit work from a practice performance task as your official submission to the College Board to be scored by the AP Program; or

▸ seek assistance or feedback on answers to prompts.