M319: AP Computer Science Principles Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explore Performance Task

Practice (2D) Template Date: \_\_\_\_\_\_ Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explore PT — Analyzing Data and Information  
Written Response Template

## 2. Written Responses

Submit one PDF document in which you respond directly to each prompt. Complete your responses to 2D and 2E. 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 responses will eventually be combined with further research and writing to create a 700 word research paper.

### Computing Innovation

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.

Your response must:

* not exceed 250 words
* explicitly name the **type** of data the innovation uses
  + Fingerprints, temperature, audio, signals, text, etc.

### References

The user of an electric wheelchair uses a joystick, which can move forward, backwards, left, right, and anywhere in between [1]. Depending on the joystick placement, it will hit a trigger that creates an electrical signal for the computer to correspond to the placement [2]. The computer transforms the signal to bytes for direction and rotations per minute, and sends electricity to the motors [2]. Depending on the necessary rotations per minute of the wheelchair, both wheels will receive different amounts of electricity, which is consumed by the motor turn it, and rotate the wheels [1]. This moves the user of the wheelchair. This is great for the user of the wheelchair, but caution is needed as the on-board computer is accessible by anyone. This is a data security concern, as there is no built in security system for most electric wheelchairs, which means that after someone turns the wheelchair on, anyone can use the wheelchair, change the data on the wheelchair and much more. In other words, the computer is unable to recognize if any unauthorized people are using the electric wheelchair, allowing for people to steal any electric wheelchair. This also creates a data privacy concern, as if people have access to the on-board computer, they are able to see and change personalized settings for the wheelchair [12]. Some people customize their wheelchair, as hospitals us some to take care of patients. This means that if an intruder got into an electric wheelchair’s settings, they could severely hurt someone by changing it.

2E.Provide a list of at least two online or print sources used to support your response to the prompt in this performance task.

* At least one source must have been created after the end of the previous academic year (May 2018).
* For each online source, include the permanent URL. Identify the author, title, source, the date you retrieved the source, and, if possible, the date the reference was written or posted using MLA8 guidelines. You may use [www.easybib.com](http://www.easybib.com)
* For each print source, include the author, title of excerpt/article and magazine or book, page number(s), publisher, and date of publication.
* Include citations for the sources you used, list the sources in alphabetical order, and number each source accordingly.
* Each source must be relevant, credible, and easily accessed.

*(Note: No word count limit for this answer)*

Insert response for 2E in the text box below.

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| --- |
| [1] Rossen, Camilla Blach, et al. “Everyday Life for Users of Electric Wheelchairs – a Qualitative Interview Study.” *Everyday Life for Users of Electric Wheelchairs - A Qualitative Interview Study*, VIA University College, 17 Mar. 2012, <https://www.researchgate.net/profile/Camilla_Rossen/publication/> 221712715 \_Everyday\_life\_for\_users\_of\_electric\_wheelchairs\_-\_A\_qualitative\_ interview \_study/links /58bd6498a6fdcc2d14ea2167/Everyday-life-for-users-of-electric-wheelchairs-A-qualitative-interview-study.pdf  [2] Gannon, Mary. “How Do I Choose a Joystick Controller for My Mobile Machine?” *Mobile Hydraulic Tips*, Mobilehydraulictips.com, 28 June 2019, www.mobilehydraulictips.com/how-do-i-choose-a-joystick-controller-for-my-mobile-machine/.  [3] Stenberg, G., Henje, C., Levi, R., Lindström, M. (2016) Living with an electric wheelchair: the user perspective. Disability and Rehabilitation: Assistive Technology, 11(5): 385-394, 14 Oct. 2019 http://dx.doi.org/10.3109/17483107.2014.968811  [4] “C.T.M. HS-2850 Compact Mid-Wheel Drive Power Chair.” *Discover My Mobility*, Discover My Mobility, lh6.googleusercontent.com/proxy/g7ukMcPBAqP4cHl3hQHZn-abkpBsW2CFHeTHhzABlrK7nie3QhfVV\_e4flopnB7lvIQzZZSJ3BMPEUOH7ZPWAWlukpU\_xNnztmvMQHETvgb82LY3xeVmJqgfWc0LN3T-tpii3Q.  [5] “Arts for All Abilities — Z Puppets Rosenschnoz.” *Arts for All Abilities*, Z Puppets Rosenschnoz, zpuppets.org/arts-for-all-abilities.  [6] Rossen, Camilla Blach, et al. “Everyday Life for Users of Electric Wheelchairs – a Qualitative Interview Study.” *Everyday Life for Users of Electric Wheelchairs - A Qualitative Interview Study*, VIA University College, 17 Mar. 2012, www.tandfonline.com/doi/abs/10.3109/17483107.2012.665976.  [7] “Power Folding Wheelchair Joystick.” *Quick N Mobile*, Quick N Mobile, quicknmobile.com/product/power-folding-wheelchair-joystick/.  [8] “Handicapped Person Socialization Stock Illustration.” *IStock*, IconicBestiary, 16 Dec. 2016, [www.istockphoto.com/vector/handicapped-person-socialization-gm629185698-111875971](http://www.istockphoto.com/vector/handicapped-person-socialization-gm629185698-111875971).  [9] Bellis, Mary. “A Man Playing Tennis Using a Wheelchair.” *History of the Wheelchair*, ThoughtCo., 1 July 2019, [www.thoughtco.com/history-of-the-wheelchair-1992670](http://www.thoughtco.com/history-of-the-wheelchair-1992670).  [10] Quigley, John. “Cities For All.” *Disabled Activists Are Building an Inclusive and Accessible Urban Future for Us All*, Medium.com, 11 Apr. 2018, [medium.com/@victorpineda/diaud-network-during-world-urban-forum-9-kuala-lumpur-178e78da4ee2](mailto:medium.com/@victorpineda/diaud-network-during-world-urban-forum-9-kuala-lumpur-178e78da4ee2).  [11] Muhasebenews. “Disabled Women on Right Smileing at Camera Whilst Entering Car for Mobilely Disabled People from the Back.” *Does the SCT Arise in the Purchase of Vehicles for the Disabled (First Acquisition)?*, Muhasebe7News, 27 Mar. 2017, [www.muhasebenews.com/engellilerin-arac-aliminda-ilk-iktisabinda-otv-dogar-mi/](http://www.muhasebenews.com/engellilerin-arac-aliminda-ilk-iktisabinda-otv-dogar-mi/).  [12] INV, Author. “Considering a power wheelchair? – What you need to know” *INVACARE*, <https://www.passionatepeople.invacare.eu.com/power-wheelchair/> |