Explore PT - Written Response Template

Assessment Overview and Performance Task Directions for Students

Computational Artifact

Prompt 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)

My computing innovation is the Ultimaker 3 3D Printer's SD card reader.
The purpose of the innovation was to allow users to print any .gcode file, without requiring the computer to connect to the printer, while the function of the card reader is to activate a program,whenever a SD card is plugged in, and use the selected .gcode file to produce a model[6]. My computational artifact represents the function of the innovation through a diagram, showing the cycle that begins whenever a SD card is plugged in.

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 the tools and techniques will understand your process
(Must not exceed 100 words)

I used Google Draw to create my computational artifact. First, I found relevant pictures through an online search. Then, I copied and pasted them to the blank document. Afterwards, I placed arrows and captions, explaining each part in sequencential order, so that the diagram gives a clear explanation as to the computing innovation's function. The diagram starts with the downloading of a desired model's .gcode file and ends with the 3D printer printing the desired model.

Computing Innovation

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

One benficial effect the computing innovation had on culture, specifically people in need of prosthetics, is the fact that prosthetics became more affordable, worked more efficiently and became more comfortable for the user [1]. Another beneficial effect the innovation had on culture, mainly people in need of healthcare, is the fact that healthcare has greatly improved. Healthcare improved through the innovation's ability to allow more freedom in the creation of the 3D models. This led to more implants for hearts, hips, and joints being produced, thus saving more lives at a better rate[1].

One harmful effect the computing innovation had on the economy, specifically businesses that produce cheap products, is that some companies are losing money because people can simply print something they want or print the parts to make something they want, right from the comfort of their home. Another harmful effect innovation had, mainly for people living in densely populated areas, was that it became a safety hazard when it was discovered that it was possible to make fully working weapons with it and that, because they were plastic, pass through any metal detector with it and go unnoticed. According to the article, "The Good, the Bad and the Ugly of 3D Printing Technology " someone did just that. The model was pulled but, only after it was downloaded by the masses. With the card reader, all the person had to do was obtain the file and they could pass it around, without being detected.

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)

The data the innovation uses is the .gcode file, that stores the desired model.
The innovation consumes the selected .gcode file and then produces the desired model. The innovation produces the desired model by activating the program that assists the reader, and guiding the printer as the printer produces the model.
One data security concern the innovation has caused is the fact that information could possibly be stolen using the innovation's main function and purpose. The purpose and function of the innovation have left the user's data to be at risk. The SD card reader cannot distinguish files that are corrupted or have malware, so either kind of dangerous file can be ran on the printer. This could mean that if at one point the printer was connected to the computer, the computer could be infected by this malware hiding in the printer. The other found possibility is that the printer could be infected with malware from being connected to the internet, and recieving a file. Depending on the malware's purpose and function, the next time the user plugs in an SD card into the reader, the malware will transfer onto the card and infect the computer, the next time a file is downloaded[3].

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.

[1] Boissonneault, Tess. "10 Ways 3D Printing Is Positively Impacting the World." *3D Printing Media Network*, 3D Printing Media Network, 8 Aug. 2018, www.3dprintingmedia.network/ways-3d-printing-impacting-world/(Accessed 12/19/2018)

[2] *Gopro_4.Png*., https://wistia.com/support/getting-started/importing-from-a-gopro (Accessed 1/8/2019)

[3]Nachreiner, Corey. "The Security Issues 3D Printing Should Solve before Going Mainstream." *Help Net Security*, WatchGuard Technologies, 3 Aug. 2018, www.helpnetsecurity.com/2018/08/08/security-issues-3d-printing/.(Accessed 1/4/2019)

[4]*Robo-Hand-3d-Printed-Teenager-3.Png*.,https://www.3ders.org/articles/20140206-teen-uses-3d-printer-to-make-a-robohand-for-third-grade-boy.html (Accessed 1/8/2019)

[5] *Rotate-Button.png*., https://ultimaker.com/en/resources/45871-anatomy-of-an-ultimaker-3 (Accessed 1/8/2019)

[6] Unknown. "What Is a Card Reader and How to Use It on Laptop / PC." *How to Recover*, 5 Feb. 2018, howtorecover.me/memory-card-reader-how-use-laptop-pc.(Accessed 12/19/2018)

[7]Unknown. "2018 3D Printer G-Code Commands – Tutorial & Manual." *All3DP*, 24 Sept. 2018, all3dp.com/g-code-tutorial-3d-printer-gcode-commands/. (Accessed 12/20/2018)

[8] *usb_slot.Png*.,https://ultimaker.com/en/resources/45871-anatomy-of-an-ultimaker-3(Accessed 1/8/2019)

[9] Yueh, Linda. "The Good, the Bad and the Ugly of 3D Printing Technology ." *Financial Times*, Financial Times, 16 Aug. 2018, www.ft.com/content/782461c8-9fe1-11e8-b196-da9d6c239ca8. (Accessed 12/19/2018)

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