Explore — Impact of Computing Innovations
Written Response Submission Template

Submission Requirements

2. Written Responses

Submit one PDF document in which you respond directly to each prompt. 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 the first four prompts (2a–2d) combined must not exceed 700 words.**

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.

(Approximately 100 words)

Insert response for 2a in the text box below.

The computing innovation that is being represented is the Amazon Echo. Amazon Echo is a speaker that a user controls with their voice, allowing them to play music and search for all types of information (1). For music, the Echo can play anything from Amazon Music or other music apps such as Spotify or Pandora at the user's request, using speakers to project the music at 360 degrees (1). The Echo can recognize your voice from any direction with its seven microphones and can be turned on with the word "Alexa" (1). The Echo can also be used to order pizza, request for an Uber ride, or control the lights in the house (1). The computational artifact shows some of the functions of Amazon Alexa, such as playing music, checking the weather, searching Bing, or purchasing items from Amazon.

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.

(Approximately 100 words)

Insert response for 2b in the text box below.

I used PowerPoint as the template to show the functions of the app. I imported pictures of the logo and the Amazon Echo device. I then used text bubbles to show the conversations that are possible between the owner of the device and the device itself. I found pictures online of the different apps that the Echo can use, such as Spotify, the weather app, Bing, and Amazon. This shows that Amazon Echo has many functions, which keep growing. The user just has to say Alexa's name and the device will turn on and listen to what the user asks or commands.

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.

(Approximately 250 words)

Insert response for 2c in the text box below.

One beneficial effect that the Amazon Echo has on society is that it adds to and encourages the idea of people having smart homes. A smart home is typically defined as a home that has many appliances that are accessible and controllable over the Internet using the owner's devices. Smart home devices like the Amazon Echo will add convenience to homes because the user can control these items from anywhere and the devices are easily controllable, such as the Echo being controllable by voice command (10). These devices also add efficiency to the home by doing things such as automatically turning off lights or setting specific timers (10). The use of devices like the Amazon Echo can have a negative effect on society by adding to humankind's growing reliance on technology. Amazon Echo already has and will continuously add many functions. If we rely solely on technology, there can be a major issue if the technology randomly malfunctions. We might not know what to do since we are so used to the technology doing the tasks for us. This can take away from society's ability to think and function for themselves.

2d. Using specific details, describe:

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

(Approximately 250 words)

Insert response for 2d in the text box below.

The main data that Amazon Echo uses is what the user says to the device. When the user requests for Alexa, the device starts to record a clip of audio (6). This audio is then sent to a specific server that can process what was said, allowing the Echo to respond to the user (6). For example, if the user said “Alexa, set an alarm for 7:45 A.M.”, the Echo would start recording when the user said “Alexa”, send the command to a server to be interpreted, and then set an alarm on the device’s clock. The response is the data that the Amazon Echo outputs, which can vary from the weather to music. To turn the device on, the user must say the word “Alexa”. To sense this, the device must be already listening beforehand so that it can start processing the question asked immediately after it is triggered (6). This raises the data privacy concern of if the device is constantly recording and storing what we are saying when around it, even if it is not on. In theory, Amazon Echo could have everything you have ever said while around the device stored on its servers. There have already been court battles relating to the audio recorded on the device. There was a murder case in which the prosecutor requested that Amazon release any information the Echo recorded around the time of the murder (3). Amazon refused to release the information because of a privacy concern.

References

2e. Provide a list of at least three online or print sources used to create your computational artifact and/or support your responses 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 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 citations for the sources you used, 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.

1) "Amazon Echo." *Amazon*. Web. 13 Mar. 2017. <https://www.amazon.com/Amazon-Echo-Bluetooth-Speaker-with-WiFi-Alexa/dp/B00X4WHP5E>.
2) *Amazon*. Web. 8 Mar. 2017. <https://images-na.ssl-images-amazon.com/images/I/71tvwXSZYaL.png>.
3) CNN Wire Service. "Alexa, Can You Help with This Murder Case? Arkansas Prosecutor Seeks Data from Murder Suspect's Amazon Echo." *FOX6Now*. Cable News Network, 28 Dec. 2016. Web. 19 Mar. 2017. <http://fox6now.com/2016/12/28/alexa-can-you-help-with-this-murder-case-arkansas-prosecutor-seeks-data-from-murder-suspects-amazon-echo/>.
4) *Google User Content*. Web. 8 Mar. 2017. <https://lh3.googleusercontent.com/UrY7BAZ-XfXGpfkeWg0zCCeo-7ras4DCoRalC_WXXWTK9q5b0Iw7B0YQMsVxZaNB7DM=w300>.
5) *Home Assistant*. Web. 7 Mar. 2017. <https://home-assistant.io/images/supported_brands/amazon-echo.png>.
6) Moynihan, Tim. "Alexa and Google Home Record What You Say. But What Happens to That Data?" *Wired*. Conde Nast, 05 Dec. 2016. Web. 15 Mar. 2017. <https://www.wired.com/2016/12/alexa-and-google-record-your-voice/>.

7) *NY Daily News*. Web. 7 Mar. 2017. <http://assets.nydailynews.com/polopoly_fs/1.2615289.1461701229!/img/httpImage/image.jpg_gen/derivatives/article_750/amazon-echo.jpg>.
8) *Turner Duckworth*. Web. 8 Mar. 2017. <http://www.turnerduckworth.com/media/filer_public/86/18/86187bcc-752a-46f4-94d8-0ce54b98cd46/td-amazon-smile-logo-01-large.jpg>.
9) Web. 8 Mar. 2017. <https://fthmb.tqn.com/Tb0unFyb2jJJ_J5UrnDxbdMge04=/735x0/filters:no_upscale()/about/bing-logo-5807269b5f9b5805c22e8d57.png>.
10) Writer, Leaf Group. "The Advantages of a Smart House." *Home Guides | SF Gate*. SF Gate, 07 Aug. 2010. Web. 19 Mar. 2017. <http://homeguides.sfgate.com/advantages-smart-house-8670.html>.