# Explore – Impact of Computing Innovations
# Written Response Submission Template

Please see Assessment Overview and Performance Task Directions for Student for the task directions and recommended word counts.

**Computational Artifact**

2a) The computing innovation represented by my computational artifact is Apple Pay. The purpose of this innovation is to allow users to make secure purchases with their phones. It achieves this by sending a Device Account Number over an encrypted NFC connection instead of using credit card information. My computational artifact illustrates and explains the purpose and function of Apple Pay by showing images of the intended purpose of Apple Pay and explaining how it is achieved.

2b) When I was creating my artifact. I used Google Slides to make a slide presentation, and added images to it. I found the images using Google Images, using the tools of google images to get only images labeled for reuse with modification. I then used Screencastify to record my screen and my voice for my video.

**Computing Innovation**

2c) Through the use of Apple Pay, less people have access to the user's credit card number making it much more difficult to steal the user's credit card information, proving very beneficial for those who use Apple Pay. In addition, a person's fingerprint is required to pay, making it even more secure [1].

Unfortunately, Apple Pay exacerbates one of the problems of credit cards, which ease the pain of paying by dissociating people with the money they are spending [2]. This can prove harmful when it causes people use apple pay to buy things they cannot afford.

2d) When adding a new card to the digital wallet, Apple creates a Device Account Number in place of the credit card number that is stored with the bank, on the device, and on Apple's servers, and then erases the credit card number from its database. When paying with Apple Pay, the paying device transmits the user's Device Account Number over an encrypted NFC connection to the terminal. The Device Account Number is then sent to the bank and verified [1]. Although Apple Pay does allow increased security, it does have its own security concerns. When registering a new card on an unsecured public Wi-Fi network, a cybercriminal can spoof a user's mobile wallet registration system in which the user must enter their card's data. Malware is also a security concern as it can be used to steal credit card information [3].

**References**

2e)

1. "How Does Apple Pay Work and Is It Secure?" TechAdvisory.org, 1 November 2017, http://www.techadvisory.org/2017/11/how-does-apple-pay-work-and-is-it-secure/. Accessed 18 April 2018.

2. Joe Pinsker. "How Apple Pay Gets People to Part With More of Their Money." The Atlantic, 5 April 2015, https://www.theatlantic.com/business/archive/2015/04/apple-pay-and-the-pursuit-of-the-perfectly-painless-transaction/389405/. Accessed 18 April 2018.

3. Brady Porche. "3 Major Mobile Payment Security Risks, and How to Avoid Them." CreditCards.com, 14 December 2017, https://www.creditcards.com/credit-card-news/mobile-payment-security-risks.php. Accessed 25 April 2018.

Image Citations

Templates, Hloom. "Visa and MasterCard Credit Card Closeup." *Flickr*, Yahoo!, 13 Aug. 2016, www.flickr.com/photos/95051110@N07/28886680351. Accessed 27 April 2018.

pixabay.com/en/cyber-security-encryption-security-2537786/. Accessed 27 April 2018.

Iphonedigital. "Con Apple Pay Podrás Comprar Desde El Navegador Safari." *Flickr*, Yahoo!, 3 Apr. 2016, www.flickr.com/photos/iphonedigital/26177960506. Accessed 28 April 2018.

commons.wikimedia.org/wiki/File:Apple-payment-square.jpg. Accessed 28 April 2018.