**AP CSP Task Sample Responses – EXPLORE**

**2a. Provide information on your computing innovation and computational artifact.** *(Approximately 100 words)*

* 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, function, or effect.

**Sample responses to 2a:**

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| *A: The computing innovation being represented is Electronic Commerce or E-commerce. Ecommerce is any and all economic activity that occurs online (6). This can include banking, shopping, renting, and selling (6). The purpose of e-commerce is all about convenience. As the world today puts more devices in a user’s hands, e-commerce puts the store into that hand. It saves people from driving and waiting in lines, and instead allows them to purchase and complete all of their financial needs with a tap of the finger (2).* | *B: The computer innovation represented in my artifact is called the Ekso Skeleton, also referred to as the Ekso suit. The suit’s main purpose is to allow people with lower extremity weakness or paralysis to stand and walk again. The suit also sends data on the user’s progress to the user and their doctor so that they can see how the suit is helping. My computer innovation artifact explains how the Ekso skeleton functions by describing the main parts of the suit and how they work together to accomplish the task of helping the disabled walk so that the patient can heal more quickly than if they just stayed in wheelchairs permanently.* | *C: The computing innovation that my computational artifact is representing is Cyber Crime In Banking and how it can be prevented. The computing innovation’s intended purpose is to steal money from people’s credit cards and banking accounts by hacking them. This is actually very complicated, but really good hackers find a way to accomplish it. There are ways that this can be prevented. My computational artifact illustrates and explains the computing innovation’s intended purpose/effect by showing the negative effects of Cyber Crime In Banking, which is how people get robbed of the money in their banking accounts on the web. My artifact also shows the preventions for my computational artifact.* |
| *A:* The response earned a high score because the visual artifact clearly conveys the intended purpose of e-commerce in an effective creative manner through the choice of images representing time, money and energy, along with the impact represented through the before-and-after comparison. | *B:* The response earned a high score because the computing artifact is non-textual and uses richness of detail in various video snippets and voice over to effectively convey the intended purpose of the Ekso Skeleton, which is to allow people with lower extremity weakness or paralysis to stand and walk. | *C:* The response did not receive a score because the innovation described in the response is not a computing innovation. Cyber crime is not a computing innovation. |

**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)*

**Sample responses to 2b:**

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| *A: This artifact is revealing the effects of the innovation of Electronic Commerce. To best reveal this effect, a before and after picture was compiled. To do this, fireworks was used to create the images. The main e-commerce facilities affected were found on the internet and imported into the image. The main issues that were present (time, money and energy) were found in image forms and compiled into the "Before" image. These pictures were cropped and resized to scale and laid on the image. The vector tool connected the problems in the "Before" image and in the "After" image, it connected the solution and revealed how E-commerce not only solved the issues in the "Before" image, but expanded the commercial system.* | *B: To make my video, I used a screen recording application called "Screencast," where I recorded a video of me speaking over a slideshow that I made, using images and gif sets. I then published the video to my school Youtube account after the recording was complete. From my Youtube account, I downloaded the video into a file that was of an appropriate file type and file size that was listed on the submission requirements. I then attached the file to my final submission of my explore performance task.* | *C: To create my artifact I used a website creator which is the Wix Website Editor. To create this website I had to choose a template so I did not have to use any coding to create the site. When I chose my template I had several options to edit different things on the website. The first thing that I did was edit the title. I used tools such as cutting and inserting images and a video. I changed the background of the website and then inserted a video about how to protect yourself from being a victim of CyberCrime In Banking. I then typed paragraphs describing preventions and then describing the main functions of security.* |
| *A:* The response earned a high score because it identifies and describes the image selection editing tools used in multiple integrated steps. It includes a description of the technique of connecting images with a vector to highlight effects of e-commerce. | *B:* The response earned a medium score because it identifies Screencast, voice-over and YouTube as computing tools used in multiple integrated steps in the development process of a video with audio overlay. The response did not earn 9 points because it does not describe how any choices of techniques or features of tools enable the artifact to highlight aspects of the Ekso Skeleton. | *C:* The response earned a medium score because it identifies Wix Website Editor as the computing tool used to create the artifact. The response describes the multiple integrated steps of creating and editing the website using various available tools to cut and insert images and video in the webpage. The response did not earn 9 points because it does not describe how any choices of techniques or features of tools enhanced the artifact to highlight specific aspects of cyber crime. |

**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)*

**Sample responses to 2c:**

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| *A: As Electronic Commerce has grown and developed, it has open many opportunities to businesses to expand and reach more customers, but even with this positive growth, there has been some harmful effects on society and the economy.*  *Businesses have been able to expand infinitely over the internet because of e-commerce. With the creation of e-commerce came convenience. As the smartphone popularity grew along with more and more individuals getting access to the internet, the world of shopping and working on finances was right at the tip of a finger (5). The problems were that it would take time, money, and energy to visit these places, send in a letter, or call (3). With the smartphone or the computer, you would not have to worry about either of the three main problems (5). Even with that, stores are able to grow through the E-commerce. Stores have been able to gain advertising and create more revenue through solving these three problems (5).*  *With this mass expansion, it has caused some issues. The first is the transition of customers into the household. It has become a social problem that people are going out to stores less because they are able to do most of their activities inside their home (5). Shopping being one of them. Since there is a huge transition of shoppers to online sales, storefronts have been going out of business leaving many empty stores across the United States (5). This has led to unemployment and individuals being laid off for a computer who can do the work of many workers (5). There has been a big theft problem with E-commerce. As most individuals become comfortable with imputing their information online with credit cards and private information, sites are created to pose as shopping websites, but they steal your information (1). This is not just intentional, but retailers like Target have experienced issues with thieves hacking into these stores and stealing credit card information, stealing thousands of dollars from individuals (1).* | *B: One benefit of this innovation is that it will help people who are not able to use their legs anymore to be able to walk again. As the technology of the suit improves more as time goes by and more work is put in it, the Ekso skeleton will be able to help more people as it moves into public and becomes available for consumers to purchase. Everyone from veterans who were injured in battle to people who have suffered from a stroke will be able to use the suit to get out of their wheelchairs and strengthen their bodies so their healing can be accelerated. Patients who are also wheelchair bound, which has many medical complications that comes with using them for extended periods of time, will not have to completely rely on their chairs. A negative that the suit has is its price, which was estimated by the CEO of Ekso to be an average cost of $100,000. Since the suit is so expensive, they will most likely be bought solely by rehab facilities and reused by multiple people. Without being able to afford their own suits, some people won't be able to walk as much as they want, most likely being limited to using a suit in a rehab facility for only an hour about three times a week at the most. Some paralyzed folk who may not have the insurance coverage to have access to personalized physical therapy that have these suits may miss out on the opportunity to use this device to help them walk again and to recover more quickly.* | *C: One beneficial effect that the computing innovation has had on society and or the economy is the prevention of CyberCrime In Banking has helped prevent rising accounts of the use of hacking to steal money from people's banking accounts. It has given people safety tips on how to protect what they do with their banking information online, and provided ideas of sources to look out for. And also that Carriers should have restricted access. One harmful effect that the innovation has had is that it has stolen money from people's banking accounts. People find ways to hack into other people banking accounts and steal and transfer money. This has the potential to basically destroy banking accounts in society. The hackers would use unknown software to access banking accounts. The hackers also subvert the software, which is basically infractured hijacking. Another harmful effect is that it destroys certain software that may not be able to be repaired. Also data can be breached. Websites are being brought down but the system may not be brought down. The hacker compromises the system and basically gets into it and controls it. When data is breached it is known that it is a cyber crime.* |
| *A:* The response earned a medium score because it identifies the beneficial effect of stores creating more revenue as well as the harmful effect of unemployment. The response describes the impact on economy as related to the harmful effect but it does not relate any impact to society, economy, or culture as related to the beneficial effect. | *B:* The response earned a low score because it identifies the beneficial effect in society of helping people to walk, but the response does not earn 10 points because it does not identify a harmful effect. The cost of the Ekso suit is an obstacle and will prevent some individuals from using it, but cost is not a direct harmful effect of the Ekso suit. | *C:* The response did not receive a score. Since cyber crime is not a computing innovation, the response cannot appropriately address beneficial or harmful effects of the computing innovation. |

**2d. Using specific details, describe:** *(Approximately 250 words)*

* 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.

**Sample responses to 2d:**

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| *A: The data this innovation uses is personal information (credit cards, names, pin numbers) that is translated into binary. This data is traded between companies (2). When the credit card information is put into a website that store gets your information and then it is sent to their financial system to be tracked (4). Investments are another form of e-commerce where your funds can be transferred between different companies and banks (4).*  *E-commerce consumed data such as your credit card information, bank account information and personal information to get access to your money in an electronic way (4). The money is not virtual but the almost "check" from your account is sent around online until it reaches the final recipient of the purchase or money transfer (4).*  *This in turn cases some data privacy issues. It has had more problems recently than ever before with individuals private information being stolen through the E-commerce system. Malicious individuals will create their own money transfer systems and convince people into believing that their money is going to a good cause or a certain "deal" at a store and they are actually giving the money to these other individuals (5). Also, in the transfer of the information packets along their route, the packets can be stolen and the credit card information can be decrypted and stolen for another individual's usage (5).* | *B: The Ekso Skeleton uses a computer that is installed with a Step Generator program to control the step­like form of the suit that is first set to a normal gait and can be adjusted to more challenging modes that the patient's physical therapist can set it to so the patient can continually improve their walking and heal more quickly. The computer on the suit gathers quantitative data on the patient's walking and transforms that data into statistics. The device information is displayed on a secure web page that the therapist and patient can view, filter, and export. Though this kind of application can be helpful for the therapist to control and improve the patient's recovery, there is a security concern that comes with the data being put onto a web page. A hacker could possibly find a way to access the web page and gather private information on the patients that use the device and information about the device itself. Patient privacy may be harder to maintain when all of a patient's medical recovery progress is put on a page that uses the Internet, which is a place where hackers can get into private accounts and onto private pages.* | *C: The data that is used by Cyber Crime In Banking is threat data. The hackers use malicious software to get into the banking accounts. The hacker consumes data which is the input by they breach the system and then the outcome for this is the system is hijacked and money is removed from banking accounts. You will actually know when a system is breached. When the system is hacked it does not go down. The website may go down though. Cyber Crime In Banking is not an easy task and the hackers use a malicious system to do this task. Another input could be all of the knowledge the hacker has for the task of hacking and the output could be the hacking occurring and then the information being hacked into leading to the hijacking of the banking account. A data privacy concern would be that there is actually no privacy when it comes to Cyber Crime In Banking because once you are hacked the hacker basically has all of your information. So basically the person would have to look out for suspicious activity and try to keep their accounts as safe as possible. A security concern is that the hackers may still pass the security that is used to protect the accounts.* |
| *A:* The response earned a high score because it identifies credit cards, names, and pin numbers as personal data used as input in e-commerce, which is then sent as output to other companies. Data privacy is described in detail as a concern and is connected to e-commerce. | *B:* The response earned a medium score because it identifies quantitative information on the patient's walking as data used by the Ekso suit. The response does not earn 12 points because hacking is identified as a privacy concern, but the response does not indicate how the hacked data is affected or used. | *C:* Since cyber crime is not a computing innovation, the response did not receive a score. |

**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.**

**Sample responses to 2e:**

**A:**

1 Ackerman, Mark S., and Donald T. Davis, Jr. "Security and Privacy in E-Commerce." *Electronic Commerce Management for Business Activities and Global Enterprises Competitive Advantages* (n.d.): 366-402. Web. 1 Feb. 2016.

2 "ARTICLES." *How Exactly Does Ecommerce Work.* Eqiunox, n.d. Web. 09 Feb. 2016. <[**http://www.equinox.ie/articles/ecommerce/how-exactly-does-ecommerc-work.html**](http://www.equinox.ie/articles/ecommerce/how-exactly-does-ecommerc-work.html)>.

3 Li, Peixian. "Issues of Security and Privacy in Electronic Commerce." *Computer Science Virginia.* N.p., n.d. Web. 1 Feb. 2016. <[**www.cs.virginia.edu/~pl9a/resume/ECommerce.doc**](http://www.cs.virginia.edu/~pl9a/resume/ECommerce.doc)>.

4 Olkowski, David J., Jr. "Information Security Issues in E-Commerce." *SANS.* SANS Institute, 26 Mar. 2001. Web. 1 Feb. 2016.

5 Silviu Vlad Mirescu, Titu Maiorescu University, Bucharest, Romania. *THE PREMISES AND THE EVOLUTION OF ELECTRONIC COMMERCE* (n.d.): n. pag. Scientific Papers. Journal. Web. 1 Feb. 2016. <[**http://www.scientificpapers.org/wpcontent/files/1121\_The\_premises\_and\_the\_evolution \_of\_electronic\_commerce.pdf**](http://www.scientificpapers.org/wpcontent/files/1121_The_premises_and_the_evolution%20_of_electronic_commerce.pdf)>.

6 "What Is E-Commerce?" *WiseGEEK.* N.p., n.d. Web. 09 Feb. 2016.

A: The response earned a high score because it provides three complete references which are cited and attributed within the text.

**B:**

Source 1:

Author: Doctor, Rina Marie. "Ekso Is A Bionic Exoskeleton That Spells Hope For Spinal Cord Injury Patients: How It Works." Source: Tech Times, Written: 05 Sept. 2015, Retrieved: 29 Jan. 2016. <[**http://www.techtimes.com/articles/82237/20150905/ekso­is­a­bionic­exoskeleton­that­spells­hope­for­spinal­cord­injury­patients­how­it­works.htm**](http://www.techtimes.com/articles/82237/20150905/ekso%C2%ADis%C2%ADa%C2%ADbionic%C2%ADexoskeleton%C2%ADthat%C2%ADspells%C2%ADhope%C2%ADfor%C2%ADspinal%C2%ADcord%C2%ADinjury%C2%ADpatients%C2%ADhow%C2%ADit%C2%ADworks.htm)>.

Source 2:

Author: Dostis, Melanie. "Wearable Bionic Suit Aims to Make Wheelchairs Obsolete." Source: NY Daily News, Written: 15 Nov. 2015, Retrieved: 29 Jan. 2016. <[**http://www.nydailynews.com/news/world/wearable­bionic­suit­aims­wheelchairs­obsolete­article­1.2435617**](http://www.nydailynews.com/news/world/wearable%C2%ADbionic%C2%ADsuit%C2%ADaims%C2%ADwheelchairs%C2%ADobsolete%C2%ADarticle%C2%AD1.2435617)>.

Source 3:

Author: Kharpal, Arjun. "The Wearable Robot That Helps People Walk Again." Source: CNBC, Written: 29 Apr. 2015, Retrieved: 29 Jan. 2016. <[**http://www.cnbc.com/2015/04/29/the­bionic­suit­that­helps­paralyzed­people­walk­again.html**](http://www.cnbc.com/2015/04/29/the%C2%ADbionic%C2%ADsuit%C2%ADthat%C2%ADhelps%C2%ADparalyzed%C2%ADpeople%C2%ADwalk%C2%ADagain.html)>.

B: The response earned a medium score because it provides 3 references. It did not earn 3 points because the references are not cited within the text of the response.

**C:**

"Cyber Crimes in India Likely to Double to 3 Lakh in 2015: Report." *Timesofindia­economictimes.* N.p., n.d. Web. 23 Feb. 2016.

"Banks Hit by Largest Ever Cyber­crime: Are We at the Mercy of Hackers?" *This Is Money.* N.p., n.d. Web. 23 Feb. 2016.

"The Great Bank Robbery: Carbanak Cybergang Steals $1bn from 100 Financial Institutions Worldwide." *The Great Bank Robbery: Carbanak Cybergang Steals $1bn from 100 Financial Institutions Worldwide.* N.p., n.d. Web. 23 Feb. 2016.

"Wix Login." *Wix Login.* N.p., n.d. Web. 23 Feb. 2016.

C: The response earned a low score because the references provided are incomplete.