

Beijing National Day School
Department of Mathematics & Computer Science

AP Computer Science Principles

Test 4: Global Impact

Location: Room 308, Aspiration Building

Assigned Date: Wednesday, May 2nd, 2018

Submission Due Date: Friday, May 4th, 2018

English Name: _____

Pinyin Name: _____

Mr. Alwin Tareen, May 2018

Exam Record

Single MC _____ / 11 pts

Double MC _____ / 21 pts

Total: _____ / 32 pts

Grade: _____

Section I: Single Selection Multiple Choice (11 points)

- Decide which is the best of the choices given, and select the correct answer by placing an “X” in the corresponding box.
- You must select **one choice** per question to earn credit.

- (1^{pt}) 1. Which of the following is **NOT** an example of cyberbullying? 1 pt
- A middle school student starts an embarrassing rumour about a peer on Twitter. Other students retweet the rumour, until the subject of the tweet refuses to come to school.
 A college student sends threatening texts to another student multiple times a day.
 An anonymous user on an Internet chat site continuously encourages others to insult a fellow user.
 A group of high school students set up a private Facebook page that they use to make their weekend plans.
- (1^{pt}) 2. Which of the following have been made significantly easier by widespread access to information online? 1 pt
- Making educated decisions about medical problems, such as whether or not to visit a doctor with certain symptoms.
 Finding the results of a small research study in a different country.
 Locating a job opening with certain specifications anywhere in the world.
 All of the above.
- (1^{pt}) 3. A certain technology is used to monitor the vital body functions of a patient. Small nodes are used to gather data before being saved on a computer. Users can then get data on the patient by reading the output from the node on the computer. What kind of technology is this? 1 pt
- Smart grid
 Sensor network
 Cloud computing
 TCP/IP
- (1^{pt}) 4. Which of the following describes the impact of assistive technology? 1 pt
- Assistive technology finds the quickest route for packets to travel in order to decrease traffic on the Internet.
 Assistive technology helps programmers by suggesting helper procedures as code is written.
 Assistive technology resolves human disabilities such as issues with learning and attention.
 Assistive technology allows disabled people to be more independent by making every day tasks more accessible and easier to handle.
- 4 pts

- (1^{pt}) 5. Amazon Mechanical Turk is a website that allows “Requesters” to ask Internet users to perform tasks that a computer can’t do, such as transcribing written text, labelling objects in photos, and identifying duplicate entries in an online database. This is an example of crowdsourcing in order to:

1 pt

- organize information that already exists.
- access a large online labor force.
- gather feedback and input from the crowd.
- ask the crowd to help solve a complex problem.

- (1^{pt}) 6. An app is created that reminds users to take their medication at specific times throughout the day. This program is an example of:

1 pt

- smart grids.
- assistive technology.
- widespread access to the Internet.
- authentication.

- (1^{pt}) 7. Which of the following is **NOT** a potential benefit of smart transportation?

1 pt

- Better security and more efficient enforcement of traffic laws.
- Faster emergency response time in the event of an accident.
- Improved travel time estimations and more accurate driving directions.
- Significant amount of money can be saved on infrastructure.

- (1^{pt}) 8. Which of the following is **NOT** an example of crowdsourcing?

1 pt

- Erica needs someone to type subtitles for videos that she has made. She posts the job opening on a freelancing website to find employees to do this.
- Johanna needs an activity to use as an introduction for her statistics lesson, but she can’t think of anything. She posts her lesson in an online forum for statistics teachers, to see if anyone else has an idea.
- Maria wants to find out how to start her own business, so she uses Google to find websites and videos with more information.
- Scott is trying to create a database of lesson plans for social studies teachers. He creates a website where teachers can post lessons they have tried and tag them according to standards and topics.

- (1^{pt}) 9. Which of the following statements is **NOT** true of how email has changed the way people communicate?

1 pt

- Writing style has become shortened; as email becomes a more common way of communicating, a new language of abbreviations and shorthand sentences is forming.
- People don’t communicate as much as they used to; email is so efficient that communication has decreased.
- It is more efficient to contact people across the globe; there is no “long distance” cost of sending an email to another country, and time differences do not matter.
- Conversations can be asynchronous; discussions can continue at the convenience of each party, instead of all at once.

5 pts

- (1^{pt}) **10.** A scientific research group suspects that a certain strand of DNA could help them identify cancer patients. Specifically, they suspect that patterns in DNA strands might lead them to groundbreaking conclusions about how cancer patients should be treated. The researchers want to use crowdsourcing to help them make some conclusions. Which of the following would be the **BEST** way to crowdsource this problem?

- The researchers could post their thesis online and ask for any online users to read the thesis and comment with any ideas and suggestions.
- The researchers could create a game where users find patterns in the strands of DNA. The researchers could then study the patterns that users found.
- The researchers could use the Internet to find other scientists who have already studied DNA strands.
- None of the above.

- (1^{pt}) **11.** Carol is a lab technician who thinks there might be patterns in DNA that could give important clues as to how likely it is that a person develops cancer. She creates a website with this information and publishes large amounts of data. She asks fellow scientists to look at the data and report any patterns they find that match hers. Carol hopes that these scientists can help her find more patterns in the DNA. Which of the following would be the **MOST** helpful change for Carol to make, in order to ensure that this setup is successful?

- Publish her theory in a medical journal.
- Use Google's web crawlers to connect her website to more websites, increasing traffic.
- Represent the DNA strands as short puzzles that require no scientific background to find patterns.
- Double the amount of data published on the website.

1 pt

1 pt

2 pts

2 pts

Section II: Double Selection Multiple Choice (21 points)

- Place an “X” in the box corresponding to the correct answer.
- You must select **two choices** per question to earn credit. No partial credit will be awarded if only one correct choice is selected.

(1^{pt}) 1. What are the negative effects of global positioning systems(GPS) and other related technologies?

- Directions given by many GPS devices are not descriptive enough.
- GPS systems are often out of date, and therefore do not have current maps and directions.
- Drivers become reliant on GPS directions and struggle to navigate without them.
- The on-screen directions from a GPS are distracting, and can cause drivers to get into accidents.

(1^{pt}) 2. For entrepreneurs that want to start a business, Kickstarter is the perfect place to begin. When a user creates a Kickstarter account, they can post information about their business idea, and request funds to get started. Other users can show support by asking questions, spreading the word, and donating money in exchange for rewards. This is an example of crowdsourcing in order to:

- organize information that already exists.
- access a large online labor force.
- gather feedback and input from the crowd.
- ask the crowd to help solve a problem.

(1^{pt}) 3. Which of the following are examples of how video conferencing has changed the business world?

- Employees can work remotely from home, saving the company money on facilities.
- Companies have fewer safety issues and travel costs, as the employees do not have to travel across the country or world.
- Video conference calls are less engaging than traditional conference calls.
- Businesses have gone under, because of their lack of technology like video conferencing software.

(1^{pt}) 4. Fold-it, a puzzle video game about folding proteins, presents users with known proteins in a tutorial, then gives the player a real-life protein puzzle. The best solutions generated by gamers are researched by scientists, to determine if there are any real world applications. Which of the following are the most significant benefits of this example of crowdsourcing?

- Gamification makes a demanding computational process fun and enjoyable.
- The video game is educational; users can learn about proteins as they play through the game. Fold-it increases awareness of this important research topic.
- Using non-scientists to create the folding patterns allows researchers to gather more data, faster than they could on their own.
- Scientists can use the results of the game to create new biological innovations and eliminate disease.

1 pt

1 pt

1 pt

1 pt

4 pts

- (1pt) 5. The following are several examples of problems that people may face in their everyday life. Which of the problems could be solved with smart technology? 1 pt
- A young couple frequently spends too much money on heating and electric.
 - A student is unable to access the Internet from her country home.
 - An office building has experienced an increase in malicious software installation, viruses, and worms.
 - Heavy traffic during rush hour makes it difficult for emergency response vehicles to get to their destinations in a timely manner.
- (1pt) 6. Which of the following descriptions of modern life are most accurate about how that area has been impacted by the Internet? 1 pt
- Education: teachers can create global classrooms by connecting their students with information from all over the world.
 - Health: people in developing countries have access to information about illnesses, but lack the means to get the help they need.
 - Commerce: the competition from e-commerce has made traditional companies improve their business models and increase sales.
 - Entertainment: it is much easier for unknown comedians, musicians, actors and artists to become famous, than it used to be.
- (1pt) 7. How has cloud computing changed the way people collaborate? 1 pt
- Multiple users can work on one document at the same time. This decreases the chance of changes being lost in many different versions of the same document.
 - All documents can be saved in one central location. This means that collaborators can access materials from anywhere to work with others.
 - Collaborators have access to more data than before, increasing the amount of analysis that can be done in one group.
 - Cloud computing has made online collaboration safe, secure, and password protected.
- (1pt) 8. Which of the following areas of modern life have been impacted by the Internet? 1 pt
- Education: because of the vast amount of content on the Internet, it is more difficult to find and consume quality educational content.
 - Health: patients have more resources to monitor their own health and get answers to medical questions without visiting a doctor.
 - Commerce: the increase in e-commerce has allowed companies to ease up on advertising efforts.
 - Entertainment: it is more difficult for creators of movies, TV shows, and books to publish their creative works while protecting the ownership of the intellectual property.
- (1pt) 9. Which of the following are possible with the use of wireless sensor networks? 1 pt
- Monitoring traffic to identify if cars should be rerouted to avoid backups.
 - Directing web traffic through networks that are less bogged down in order to decrease lag time.
 - Monitoring weather conditions to prevent forest fires or other natural disasters.
 - Identifying and blocking dangerous URLs in a network.
- 5 pts

- (1^{pt}) **10.** The Internet has influenced productivity in many good and bad ways. Which of the following statements about productivity and the Internet are **TRUE**? 1 pt

- The Internet helps productivity; communicating and collaborating with coworkers or peers is easier than ever before.
- The Internet harms productivity; there is no way to monitor who has accomplished tasks, making collaboration difficult and often one-sided.
- The Internet harms productivity; it is difficult to find helpful
- The Internet harms productivity; the Internet offers many distractions in the form of online forums, videos and music.

- (1^{pt}) **11.** Google Trends is increasingly being used to predict stock market behaviours, even though this tool was seen as almost useless several years ago. Which of the following reasons might account for the increase in usage of Google Trends? 1 pt

- Google's data is more accurate than other sources, which often have errors and oversights in the databases.
- Google's data is updated in real time so there is little lag between events and the data that represents them.
- Google presents a higher volume of data than other sources.
- Google's data is easier to access than it was in the past.

- (1^{pt}) **12.** There are positive and negative aspects of locational technologies like global positioning systems. Which of the following statements about locational technologies are **TRUE**? 1 pt

- Locational technologies are good; they make it easier to navigate new places.
- Locational technologies are good; they are a great backup system in case a traditional map cannot be used.
- Locational technologies are bad; many common devices keep track of the location of users which infringes on rights to privacy.
- Locational technologies are bad; the geolocation data on devices like smartphones can be used to falsely accuse someone of a crime.

- (1^{pt}) **13.** Which of the following statements about smart grids is **TRUE**? 1 pt

- The grid identifies which networks are overrun with activity and directs web traffic away from these areas.
- The grid keeps track of traffic patterns, allowing smart cars to navigate the roads efficiently and effectively.
- The grid allows for communication between utilities and customers in order to make energy use more efficient and cost effective.
- The grid can prevent blackouts and other potential crises due to usage spikes.

4 pts

- (1^{pt}) **14.** The following are several examples of problems that a new business might face. Which of the problems could be solved by cloud computing?

- An app developer can only access his teammates' code if he is in the same building as them.
- A small business is running out of storage space on the local server.
- The server in an office building is slow, preventing a publishing company from downloading large files.
- An artist is having copyright issues when she tries to use another artist's work in her own.

1 pt

- (1^{pt}) **15.** In recent years, more people are using smartphones and tablets instead of desktop computers. Which of the following describes the effects of moving from stationary desktop PCs to mobile devices?

- Networks have become overrun with traffic from mobile devices, making connecting to the Internet a slow process.
- Apps and websites have been developed that are useful in business, school, and daily life.
- Electronic communication occurs almost constantly, resulting in asynchronous conversations and collaboration.
- The quick shift to mobile devices will eventually cause a shift back to stationary PCs, since big data cannot be analyzed on mobile devices.

1 pt

- (1^{pt}) **16.** The following are several examples of problems that people may face in their everyday life. Which of the problems could be solved with sensor networks?

- Citizens that live near a very large river often need to evacuate their homes and offices due to flooding.
- Several university students are struggling to access their school's WiFi during peak hours.
- An elderly couple hear noises outside their home at different times of night. They are worried that someone might be trying to break in.
- A small business is trying to prevent hackers from accessing files.

1 pt

- (1^{pt}) **17.** Social media sites have evolved quickly to give users new ways to interact with others online. Which of the following are ways in which communication has changed due to social media?

- Conversations can be asynchronous.
- Information about other people can be extremely easy to find online.
- News is no longer distributed through a limited number of sources.
- Internet users see more ads and have more interactions with corporate groups.

1 pt

4 pts

- (1^{pt}) **18.** Smart grids have the potential to change human capabilities, but there are good and bad aspects of them. Which of the following statements are **TRUE** of smart grids?

- Smart grids are good; they will keep homeowners better informed about their energy decisions, helping them save money and be more efficient.
- Smart grids are good; they will make current systems more resilient, automatically rerouting energy in the case of an environmental emergency.
- Smart grids are bad; the power system will be less reliable once smart grids are put in place all over the country.
- Smart grids are bad; they are expensive for homeowners to install and maintain.

	1 pt
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- (1^{pt}) **19.** Many web and smartphone applications have changed the way people view health and medicine. Cellscope, for example, is an app that can be used as a microscope to test for ear infections. Many apps also monitor heart rate, sleep patterns, caloric intake, and exercise intensity. Which of the following statements **BEST** describe the way that these apps might be changing medicine?

- The apps often motivate patients to take better care of themselves and make better choices.
- Patients can more fully understand their symptoms, diagnosis, and the actions taken by their doctor.
- Job openings in the medical profession have slowed, due to lack of demand from patients.
- There is a smaller gap between patients of high and low socioeconomic status.

	1 pt
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- (1^{pt}) **20.** Email, Simple Message Service(SMS), and chat have forced users to write with a different style. Which of the following are guidelines that one must consider when communicating using email, SMS, or chat?

- Be careful what you say online, since messages can hardly ever be erased completely, once sent.
- Messages can be as long as you want, so don't edit down what you want to say.
- Never use emoticons in your online communication.
- The recipient of your message can't read your facial expressions, so make sure your tone is clear.

	1 pt
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- (1^{pt}) **21.** Which of the following are the best examples of smart buildings?

- A building allows devices to automatically connect to the WiFi network without requiring a password.
- A building is constructed with a high speed Internet connection, allowing for fast and efficient wireless networks throughout the building.
- A building uses a control system to automatically turn lights on and off, based on a pre-determined schedule.
- A building senses the humidity on each floor, and changes the level of air conditioning in order to keep the humidity at a specific level.

	1 pt
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	4 pts
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