Homework (1)

Deadline: 1404 / 02 / 05

English for Computing

Spring 1404

Tips

1. Using GPT is not allowed for answering the questions.
2. With each day of delay in submitting the answer sheet, you will lose 25% of your homework score.
3. Name your answer sheet using the format “ESP-SID-Name”.
4. Please upload your answer sheet in the appropriate section of the course page in CW.
5. Make sure you have written your name and student ID in your answer sheet.

Question 1

Read the passage below then answer the questions.

Over the past half-century, computers have become integral to daily life, transforming how we communicate, learn, and work. A typical personal computer (PC) consists of several key components housed within a chassis: the **motherboard**, which serves as the central circuit hub; the **central processing unit (CPU)**, often referred to as the "brain" of the machine; **memory modules** such as random-access memory (RAM), which temporarily store data; and **storage devices** like hard disk drives (HDDs), solid-state drives (SSDs), and **optical** drives that preserve information long-term. **Input devices**—ranging from keyboards and mice to more advanced sensors such as webcams and scanners—act as the "eyes" and "ears" of a PC, capturing user commands and data. Conversely, **output devices** like monitors, printers, and speakers serve as the display screens and audio interfaces through which the computer communicates results.

Modern PCs rely on **operating systems (OS)** such as Windows, macOS, or Linux to manage hardware resources and provide a **graphical user interface (GUI)** that enables intuitive interaction. GUIs use windows, **icons**, menus, and pointers to abstract complex commands into visually accessible elements. Beyond hardware and software, language-learning tools leverage computers to teach vocabulary and pronunciation using the **International Phonetic Alphabet (IPA)**, ensuring learners can accurately reproduce sounds regardless of their native script. For example, the IPA transcription **[kəmˈpjuːtər]** clarifies the pronunciation of "computer" for non-native speakers.

While computers offer immense benefits, **health and safety** considerations are paramount. Ergonomic best practices—such as adjusting chair height, positioning monitors at eye level, and taking regular breaks—help prevent repetitive strain injuries

and eye strain. Additionally, proper ventilation around disks and drives prevents overheating, and **grounding** measures protect against electrical hazards.

By understanding the anatomy of a typical PC, the role of input and output devices, the function of operating systems and GUIs, the use of IPA in vocabulary learning, and the principles of health and safety, students can both harness and interact safely with computers in academic and professional settings.

Part A

1. **List** the main hardware components of a PC mentioned in the passage and **describe** the function of each.
2. **Differentiate** between input and output devices, giving two examples of each.
3. **Explain** the role of a GUI in modern operating systems.
4. **Why** is the IPA important in computer-assisted language learning?
5. **Identify** two health and safety recommendations discussed in the passage.

Part B

For each sentence, identify the word from the text that it defines.

A. A software layer that manages hardware and provides a user interface.

B. The system of symbols representing speech sounds.

C. Non-volatile storage using flash memory.

D. The main processing unit of a computer.

E. The study of designing equipment for human use.

Part C

Complete each sentence with the correct term highlighted in bold from the text:

1. The _____ is the main circuit board that connects all PC components.
2. _____ drives use laser technology to read and write data on discs.
3. Proper _____ prevents damage from electrical surges by providing a safe path to ground.
4. In a GUI, _____ allow users to select actions via clickable symbols.

Part D

Short answer questions:

1. **Describe** one advantage of an SSD over an HDD.
2. **Explain** how proper ergonomic setup can reduce the risk of injury during prolonged computer use.

Question 2

Watch this video and answer the questions below about it.

A. What does the term “superposition” mean in the context of quantum computing?
B. What is the role of photons in reading the state of a qubit?
C. Explain what is meant by quantum state.
D. How do superconducting quantum computers differ from trapped ion quantum computers?

E. Do you believe that humans will be able to transform the world once again through quantum computers in the future? Why or why not? (Write a paragraph explaining your opinion.)

Question 3

Read the passage below then answer the questions.

Self-driving cars, also called **autonomous** or driverless cars, are cars that operate without human control. These cars use lasers, radar, and/or cameras in connection with computer software to navigate and operate the **vehicle**. There are several levels of self-driving cars. A level 0 car, the lowest level, is the type of car we have long been accustomed to, one that is entirely operated by a human driver. A level 5 car, the highest level, would be a car that operates without any human control at all. Such a car would not even need to include a steering wheel. In between are several levels of automation, some features of which are already common or becoming so. A level 1 car, for example, could have cruise control and/or automatic braking. A higher-level car would have additional features, such as assisted parking. As more automatic features are added, less driver control is required.

Advocates of self-driving cars **tout** their many advantages. At the top of the list is safety. Over 90 percent of traffic accidents are caused by human error, a problem that self-driving cars **eliminate**. Unlike human drivers, self-driving cars are not easily distracted, do not fall asleep at the wheel, and do not drive at unsafe speeds. In addition, these cars use **sensors** and software to observe traffic and weather conditions **constantly** and to **adjust** their driving **accordingly**. Thus, more self-driving cars on the road means fewer **collisions**.

An added advantage is that self-driving cars can lead to lower car insurance and health care costs.

Self-driving cars are also convenient for **commuters**. Who wouldn't prefer to spend their morning drive to the office reading, talking on the phone, catching up on work, or even napping rather than steering a car through traffic **congestion**? Efficiency is another advantage. Self-driving cars use GPS to find the quickest route, can detect delays and accidents, and quickly reroute if necessary. This not only results in quicker trips but also in a reduction of **emissions**, much of which is generated by cars sitting in traffic. This is especially important in **urban** areas, which are well-known for traffic congestion. Finally, self-driving cars lead to greater independence for people such as the elderly and disabled who may have difficulty operating a vehicle.

Self-driving cars also have their **critics**, of course. One possible disadvantage is that the convenience of self-driving cars for individuals could lead to more cars on the road. This, in turn, could lead to increased levels of emissions unless, of course, the cars are electric. Other problems include the high cost of purchasing the cars, the possibility of hackers gaining control of the cars, and the loss of jobs for truck and taxi drivers. Of course, technology also presents its own **challenges**. Rain and snow can **interfere** with sensors on the car, blocking the ability to detect nearby activity and objects. Road signs and traffic signals would need to be **upgraded** to be easily readable by a car's sensors. A fully autonomous car would need to have a human's ability to identify and **predict** the behavior of different objects in the road. A pedestrian, a deer, and a bicycle, for example, each act in different and often unpredictable ways.

Engineers continue working to develop and improve the self-driving abilities of cars. Meanwhile, various uses for these cars are being put to the test. Some see their future not so much for individual transportation as for other uses. Robo-taxis, that is, fully automated taxis or ride-sharing services, are one possibility that could actually eliminate the need for individual ownership of cars. Self-driving delivery trucks and self-driving vans and buses for public transportation are other areas where the technology could be **applied**. However, things develop, one thing is clear—in some form or other, self-driving cars are part of the future of transportation.

Part A

Complete the summary using the bold words from the passage.

Self-driving cars are **.....** that do not require human drivers. **.....** of these cars say that they are safe because they **.....** the possibility of human error. They are also safe because they can quickly **.....** to changing road conditions. Self-driving cars are good for **.....** because they offer a more relaxing ride to work. On the other hand, there are also many possible disadvantages to self-driving cars. For one thing, they might actually result in more, not fewer, cars on the road, causing increased problems of traffic **.....**. More traffic means more **.....** , polluting our air if the cars are not electric. There are also many difficulties with technology that need to be worked out. It is hard to **.....** how self-driving cars will be used in the future.

Part B

Choose the best option.

1. In the passage, the term **“Level 5 autonomy”** implies:
   a) Vehicles that can operate with minimal human assistance
   b) Vehicles restricted to specific environments
   c) Complete independence from human control under all conditions
   d) The highest speed capacity for autonomous vehicles

2. The phrase **“reduce traffic congestion”** most nearly means:
   a) Increase fuel efficiency
   b) Decrease the number of road accidents
   c) Lower the number of vehicles on the road at a given time
   d) Make cars travel faster on highways

3. The word **"interfere"** in the context of weather conditions most likely means:
   a) Collaborate with vehicle systems
   b) Complicate or obstruct sensor functionality
   c) Provide assistance to the radar
   d) Cause engine overheating

4. Which of the following best describes **“predictive technology”** as mentioned in the passage?
   a) Tools used to map out traffic routes
   b) Algorithms used for entertainment purposes
   c) Systems that foresee and respond to potential obstacles or events
   d) Mechanical systems for manual driving support

5. The author mentions **“commuters”** in order to:

   a) Highlight how only office workers benefit from self-driving cars

   b) Explain why the transportation industry is declining

   c) Show a target group that could gain convenience and productivity

   d) Describe the developers of autonomous vehicle systems

Good luck!

English for Computing education team