## Pre-reading Task

1. What is the main use of storage hardware?
2. How many types of storage hardware are there?

## Reading

# Storage Hardware

1  Storage hardware provides **permanent** storage of information and programs for **retrieval** by the computer. The two main types of storage devices are disk drives and memory. There are several types of disk drives: hard, floppy, magneto-optical, and compact. Hard disk drives store information in magnetic **particles embedded** in a disk. Usually a permanent part of the computer, hard disk drives can store large amounts of

lasting

recovery

units
inserted

information and retrieve that information very quickly. Floppy disk drives also store information in magnetic particles embedded in **removable** disks that may be **floppy** or **rigid**. Floppy disks store less information than a hard disk drive and retrieve the information at a much slower rate. Magneto-optical disc drives store information on removable discs that are sensitive to both laser light and magnetic fields. They can typically store as much information as hard disks, but they have slightly slower retrieval speeds. Compact disc drives store information on pits burned into the surface of a disc of reflective material. CD-ROMs can store about as much information as a hard drive but have a slower rate of information retrieval. A digital video disc (DVD) looks and works like a CD-ROM but can store more than 15 times as much information.

*detachable*
*soft*
*hard*

2      Memory refers to the computer chips that store information for quick retrieval by the CPU. Random access memory (RAM) is used to store the information and instructions that operate the computer's programs. Typically, programs are transferred from storage on a disk drive to RAM. RAM is also known as **volatile** memory because the information within the computer chips is lost when power to the computer is turned off. Read-only memory (ROM) contains **critical** information and software that must be permanently available for computer operation, such as the operating system that directs the computer's actions from start up to shut down. ROM is called nonvolatile memory because the memory chips do not lose their information when power to the computer is turned off.

*unstable*

*important*

3      Some devices serve more than one **purpose**. For example,      *use*

floppy disks may also be used as input devices if they contain information to be used and processed by the computer user. In addition, they can be used as output devices if the user wants to store the results of computations on them.



Removable storage hardware (GenDisk 2.5inc USB2.0 and Ethernet (NDAS) enclosure for notebook hard drives)

Hardware (Computer) (2005)

## Section One: Comprehension Exercises

### A. True or False Statements

Based on the information given in the passage, decide whether the following statements are true or false.

......... 1. In terms of information retrieval, the hard disk is the fastest.

......... 2. In terms of size, the floppy disk is the smallest.

......... 3. Hard disk drives store information on pits burned into the surface of a disc of reflective material.

......... 4. The first paragraph talks about disk drives whereas the second discusses memory.

......... 5. A floppy disk can be used as both an input and output device.

## B. Multiple Choice Comprehension Questions

Choose the best choice based on the information given in the passage.

1. Hard, floppy, magneto-optical and compact are different types of
   ............

   a. storage hardware
   b. disk drives
   c. memory
   d. a and b

2. Which of the following is a permanent part of the computer?

   a. hard disk
   b. floppy disk
   c. magneto-optical disk
   d. compact disk

3. Which statement is true?

   a. A DVD looks like a CD-ROM.
   b. A DVD works like a CD-ROM.
   c. A DVD can store more than 15 times as much information as that of a CD-ROM.
   d. all of the above

4. Critical information and software that must be permanently available for computer operation, such as the operating system, is stored on the
   ............

   a. RAM
   b. ROM
   c. volatile memory
   d. a and c

5. The term "volatility" refers to ............

   a. the fact that the information is not lost when the power is turned off
   b. the fact that the information is lost when the power is turned off
   c. the information and instructions that operate the computer's programs
   d. critical information and software that must be permanently available for computer operation

## C. Oral Reproduction

Give your own version of the reading passage in the class.

## Section Two: Language Practice

### A. Parts of Speech Exercises

Use the correct form of the words given in the blank spaces.

**1. availability, unavailable, available, avail**

a. Our university has a limited number of computers. Consequently, it is not always easy to find one ........... for use.

b. The success of this course depends on the ........... of the tutors to help the students in their computer assignments.

c. I am ........... to answer your programming questions any time you wish, so please make an appointment.

d. Students are encouraged to ........... themselves of the full range of computer facilities in this department.

**2. depend, dependable, dependence, depending**

a. The length of time a programmer takes to make a program will vary ........... on the complexity of the problem and his ability and experience.

b. One can always ........... on the computer to obtain accurate answers.

c. The computer is probably the most ........... machine in the world today.

d. Too much ........... upon the computer is dangerous.

**3. difference, different, differentiate, differently**

a. There is not a very big ........... in flowcharting for a program to be written in PHP or Java.

b. There are many ........... computer manufactures today.

c. The buyer of a computer system must be able to ........... between the advantages and disadvantages of each.

d. The programmers often solve computer programs ........... .

**4. digital, digitized, digitized, digits**

a. A ........... camera records images digitally rather than on film.

b. There are three .......... in 323.

c. Data must be .......... so that they can be interpreted by computers.

d. A video film contains .......... video frames that when played rapidly produce motion film.

5. enlarged, large, largely, largest

a. The department of computation has the .......... number of computers at our university.

b. That region is .......... industrial.

c. The room has been .......... to accommodate more computer desks.

d. How .......... is that computer desk?

## B. Synonyms

Find a synonym for each of the given words from the passage. The number in the parentheses refers to the paragraph number. Remember that each word may have different meanings, but the meaning used in the passage is intended.

1. principal (1)      ..........

2. quantities (1)      ..........

3. normally (1)      ..........

4. seems (1)      ..........

5. moreover (3)      ..........

## C. Antonyms

Find an antonym for each of the given words from the passage. The number in the parentheses refers to the paragraph number. Remember that each word may have different meanings, but the meaning used in the passage is intended.

1. insensitive (1)      ..........

2. precisely (1)      ..........

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3. unlike (

4. tempora

5. rigid (3)

## D. Vocabu

Fill in

given b

critical,

retrieval

1. The acc

2. The ship

3. There w

4. The bull

5. The drye

6. Your pu

7. The curr

8. She has

9. Reducing

importan

10. These gi

## E. Scramb

Rearrar

1. In 2005

Samsung

2. A hard d

hard dis

encoded

3. In the 21

3. unlike (1) _____
4. temporarily (2) _____
5. rigid (3) _____

## D. Vocabulary Exercises

**Fill in the blanks with the appropriate forms of the words given below.**

critical, embedded, floppy, particle, permanent, purposes, immovable, retrieval, rigid, volatile

1. The accident has not done any _____ damage.
2. The ship was buried, beyond _____ at the bottom of the sea.
3. There was not a(an) _____ of evidence to support the case.
4. The bullet _____ itself in the wall.
5. The dryer has a(an) _____ filter.
6. Your puppy's _____ ears are very attractive.
7. The curriculum was too narrow and too _____
8. She has a highly _____ personality.
9. Reducing levels of carbon dioxide in the atmosphere is of _____ importance.
10. These gifts count as income for tax _____

## E. Scrambled Paragraph

**Rearrange the sentences below to form a unified paragraph.**

1. In 2005 the first mobile phones to include HDDs were introduced by Samsung and Nokia.
2. A hard disk drive (HDD), commonly referred to as a hard drive or hard disk, is a non-volatile storage device which stores digitally encoded data on rapidly rotating platters with magnetic surfaces.
3. In the 21st century, applications for HDDs have expanded beyond

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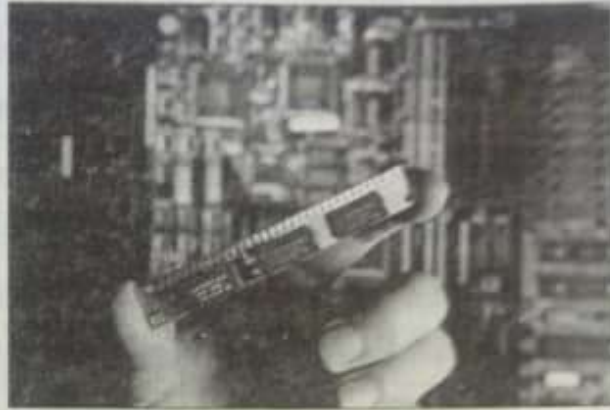
## Pre-reading Task

1. How are the numbers represented in a binary system?
2. What is the unit of measurement in computer memory?

## Reading

# Computer Memory

1 Computer Memory refers to a **mechanism** that stores data for    procedure
use by a computer. In a computer all data consist of numbers. A
computer stores a number into a specific **location** in memory    place
and later **fetches** the value. Most memories represent data with    brings
the binary number system. In the binary number system,
numbers are represented by **sequences** of the two binary digits    series
0 and 1, which are called bits. In a computer, the two possible
values of a bit correspond to the on and off states of the
computer's electronic circuitry.

2    In memory, bits are grouped together so they can represent larger values. A group of eight bits is called a byte and can represent decimal numbers ranging from 0 to 255. The **specific** particular sequence of bits in the byte encodes a unit of **naturally** information, such as a keyboard character. One byte **typically** represents a single character such as a number, letter, or **using** symbol. Most computers operate by **manipulating** groups of 2, 4, or 8 bytes called words.

3    Memory **capacity** is usually **quantified** in terms of **size** kilobytes, megabytes, and gigabytes. Although the prefixes **measured** *kilo-, mega-,* and *giga-* are taken from the metric system, they have a **slightly** different meaning when applied to computer **a little** memories. In the metric system, kilo- means 1 thousand; mega-, 1 million; and giga-, 1 billion. When applied to computer memory, however, the prefixes are measured as powers of two, with kilo- meaning 2 raised to the 10th power, or 1,024; mega- meaning 2 raised to the 20th power, or 1,048,576; and giga- meaning 2 raised to the 30th power, or 1,073,741,824. Thus, a kilobyte is 1,024 bytes and a megabyte is 1,048,576 bytes. It is easier to remember that a kilobyte is approximately 1,000 bytes, a megabyte is approximately 1 million bytes, and a gigabyte is approximately 1 billion bytes.

4    The cheapest form of read/write memory in wide use today is the hard disk. Hard disks provide large quantities of inexpensive, permanent storage. You can buy hard disk space for pennies per megabyte, but it can take a good bit of time (approaching a second) to read a megabyte off a hard disk. Because storage



"This computer has a fast modem, the latest Pentium, increased RAM, a huge hard drive and broadband net connections. Only one problem... slow pointer fingers."

space on a hard disk is so cheap and plentiful, it forms the final stage of a CPU's memory hierarchy, called virtual memory.

Comer (2005)

## Section One: Comprehension Exercises

### A. True or False Statements

Based on the information given in the passage, decide whether the following statements are true or false.

........ 1. All memories in the computer system represent data with the binary number system.

........ 2. The particular sequence of bytes in the bit encodes a unit of information.

........ 3. The terms "kilo", "mega" and "giga" have the same meaning in both metric system and computer system.

........ 4. In the computer system, kilo- means 1 thousand; mega-, 1 million; and giga-, 1 billion.

........ 5. A kilobyte is approximately 1,000 bytes, a megabyte is approximately 1 million bytes, and a gigabyte is approximately 1 billion bytes.

### B. Multiple Choice Comprehension Questions

Choose the best choice based on the information given in the passage.

1. The ........... possible values of a bit match the on and off states of the computer's electronic circuitry.

a. two                                  b. three

c. four                                  d. five

2. Decimal numbers ranging from 0 to 255 can be represented by a

...........

73

b. byte

a. bit

d. megabyte

c. kilobyte

3. A single character such as a number, letter, or symbol can be represented by a ...........

a. bit

b. byte

c. kilobyte

d. megabyte

4. The terms "kilo", "mega" and "giga" when applied to computer memory are measured as powers of ...........

a. two

b. four

c. six

d. eight

5. A kilobyte is ........... bytes, a megabyte ........... bytes, and a gigabyte ........... bytes.

a. 1000; 1,000,000; 1,000,000,000

b. 1,024; 1,048,576; 1,073,741,824

c. 1,000,000,000; 1,000,000; 1000

d. 1,073,741,824; 1,048,576; 1,024

## C. Oral Reproduction

Give your own version of the reading passage in the class.

## Section Two: Language Practice

### A. Parts of Speech Exercises

Use the correct form of the words given in the blank spaces.

1. coded, coding, decode, encoded

   a. Do you have any ........... sheets left?

   b. I ........... my program yesterday but did not have time to run it.

   c. You have to ........... this information so that it can be processed by a computer.

   d. The computer sometimes has to ........... the information so that it can be comprehensible to human beings.

2. **measurable, measure, measured, measurement**

a. Because the computer equipment was bulky years ago, the area used for a computer installation had to be .......... out carefully.

b. The number of employees a computer company has can be seen as a .......... of its success in the business world.

c. How can you .......... the computer knowledge of a human being?

d. In the computer world, everything can be considered .......... .

3. **refer, referable, reference, referred**

a. The edge of the punched cards were cut off so as to give the user a .......... point in placing the cards in the card reader.

b. The person who punched cards was .......... to as a keypunch operator.

c. You should .......... to the computer manual whenever you have a problem.

d. These symptoms may be .......... to a virus infection on your system.

4. **representation, representatives, represented, representing**

a. In the computer, the letters of the alphabet are .......... in terms of 0s and 1s.

b. The Morse Code is composed of dots and dashes .......... the letters of the alphabet and numbers.

c. The binary .......... of the decimal number 10 is 1010.

d. The committee includes .......... from the computer field.

5. **sequence, sequences, sequential, sequentially**

a. The control unit of the central processing unit (CPU) directs the .......... operations of the system.

b. Data must be presented .......... to the processor unless the computer is programmed otherwise.

c. A program must be a detailed account of the .......... the processor must follow to solve the problem.

d. He described the .......... of events leading to the invention of the new CPU.

## B. Synonyms

Find a synonym for each of the given words from the passage. The number in the parentheses refers to the paragraph number. Remember that each word may have different meanings, but the meaning used in the passage is intended.

1. information (1)    ...........
2. dual (1)    ...........
3. conditions (1)    ...........
4. stands for (2)    ...........
5. succession (2)    ...........

## C. Antonyms

Find an antonym for each of the given words from the passage. The number in the parentheses refers to the paragraph number. Remember that each word may have different meanings, but the meaning used in the passage is intended.

1. vague (1)    ...........
2. impossible (1)    ...........
3. off (1)    ...........
4. multiple (2)    ...........
5. largely (3)    ...........

## D. Vocabulary Exercises

Fill in the blanks with the appropriate forms of the words given below.

capacity, fetch, location, manipulating, mechanism, particular, quantify, sequence, slightly, typically

1. The college has established an effective student support ...........

2. What is the exact .......... of the ship?

3. The inhabitants have to walk a mile to .......... water.

4. He described the .......... of events leading up to the robbery.

5. Is there a .......... type of book he enjoys?

6. Mothers .......... worry about their children.

7. Computers are very efficient at .......... information.

8. The theater has a seating .......... of 2000.

9. The risks to health are impossible to ...........

10. "Are you worried?" "Only ..........."

## E. Scrambled Paragraph

**Rearrange the sentences below to form a unified paragraph.**

1. It is one of the fundamental components of all modern computers, and coupled with a central processing unit (CPU).

2. Computer storage, computer memory, and often casually memory refer to computer components, devices and recording media that retain digital data used for computing for some interval of time.

3. It implements the basic Von Neumann computer model used since the 1940s.

4. In contemporary usage, memory usually refers to a form of solid state storage known as random access memory (RAM) and sometimes other forms of fast but temporary storage.

5. Computer storage provides one of the core functions of the modern computer, namely information retention.

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## F. Advanced Dictionary Use: How to Use the Information Dictionary.

LISTENING AND PRONUNCIATION - REMEMBERING WORDS YOU HEAR, LOOKING THEM UP IN YOUR DICTIONARY AND