《大学计算机基础与人工智能素养》复习提纲

**第1章 计算机基础**

**计算机 ，是一种以高速进行运算，具有内部存储能力，由程序控制操作过程的自动电子装置。是20世纪最重大的发明之一。 A computer is an automatic electronic device that performs calculations at high speed, has internal storage capabilities, and is controlled by a program during the operation process. It is one of the most significant inventions of the 20th century.**

世界上第一台计算机名叫埃尼阿克（ENIAC：Electronic Numerical Integrator And Computer，电子数字积分计算机 ），1946年2月诞生于美国的宾夕法尼亚大学。The world's first computer was called ENIAC, born in February 1946 at the University of Pennsylvania in the United States.

微型计算机指的是个人计算机（Personal Computer，PC），简称微机。其主要特点是采用微处理器（Micro Processing Unit，MPU）作为计算机的核心部件，并由大规模、超大规模集成电路构成。

A microcomputer refers to a personal computer (PC), abbreviated as a microcomputer. Its main feature is the use of a microprocessor (MPU) as the core component of the computer, and it is composed of large-scale and ultra large scale integrated circuits.

计算机的应用领域The application fields of computers

* 科 学计算scientific computing
* 信息处理 information processing
* 实时控制 (过程控制)Real time control (process control)
* 计算机辅助系统Computer-aided system
  + CAD（Computer Aided Design）
  + CAM（‌Computer Aided Manufacturing）
  + CBE（Competency-Based Education）
  + CAT（Computer Aided Testing）
* 系统仿真simulation
* 人工智能(智能模拟) Artificial Intelligence (Intelligent Simulation)
* 办公自动化(OA)office automation
* 数据通信data communication
* 电子商务e-commerce

**冯·诺依曼计算机的基本特征Basic characteristics of von Neumann computer**

* ① 采用二进制数表示程序和数据；Using binary numbers to represent programs and data;
* ② 能存储程序和数据，并能由程序控制计算机的执行；Capable of storing programs and data, and being able to control the execution of computers through program control;
* ③ 具备运算器、控制器、存储器、输入设备和输出设备5个基本部分。 It has five basic components: arithmetic unit, controller, memory, input device, and output device.
* 一个完整的现代计算机系统包括硬件系统和软件系统两大部分A complete modern computer system consists of two main parts: hardware system and software system：
* 硬件系统包括了计算机的基本部件和各种具有实体的计算机相关设备The hardware system includes the basic components of a computer and various physical computer related devices；
* 软件系统则包括了用各种计算机语言编写的计算机程序、数据和应用说明文档等。Software systems include computer programs, data, and application documentation written in various computer languages.

将连接各部件的信息通道称为系统总线（BUS，简称总线）。The information channel that connects various components is called the system bus (BUS).

* 依据所传送信号的性质，总线由Based on the nature of the transmitted signal, the bus consists of：

地址总线AB（ Address BUS）

数据总线DB（ Data BUS）

控制总线CB（ Control BUS）

CPU是一个体积不大而集成度非常高、功能强大的芯片，也称为微处理器。微处理器是微型计算机的心脏，它决定计算机的性能和档次。

A CPU is a small yet highly integrated and powerful chip, also known as a microprocessor. The microprocessor is the heart of a microcomputer, determining its performance and grade.

为了协调这种矛盾，目前的微机系统均采用了分层次的存储器结构，一般可将存储器分为三层：主存储器（Memory）、外存储器（Storage）和高速缓冲存储器（Cache）。In order to coordinate this contradiction, current microcomputer systems adopt a hierarchical memory structure, which can generally be divided into three layers: main memory, external memory, and cache memory.

**① 只读存储器read-only memory(ROM)**

ROM是一种只能读出不能写入的存储器，其信息通常是厂家制造时在脱机情况或者非正常情况下写入的。掉电后，ROM中的信息不会消失。ROM is a type of memory that can only be read but not written, and its information is usually written by the manufacturer during offline or abnormal conditions. After power failure, the information in ROM will not disappear.

**② 随机存储器Random access memory(RAM)**

RAM可随时进行读出和写入，是对信息进行操作和存储的场所，也就是计算机的工作区域。RAM空间越大，计算机所能执行的任务越复杂，相应的计算机的功能越强。关机、掉电或重新启动后，RAM中的内容自动消失，且不可恢复。RAM can be read and written at any time, and is the place where information is operated and stored, which is the working area of the computer. The larger the RAM space, the more complex the tasks that the computer can perform, and the corresponding computer functions are stronger. After shutting down, losing power, or restarting, the contents of RAM automatically disappear and cannot be restored.

**高速缓冲存储器(Cache)**

高速缓冲存储器Cache是为了提高DRAM与CPU之间的传输速率，在CPU和主存储器之间增加了一层静态存储器SRAM。SRAM的存取速度要比DRAM快，但制造成本较高。增加Cache ，目的是提高CPU的读写速度，而不是增加内存的容量。Cache is a static memory layer (SRAM) added between the CPU and the main memory to improve the transfer rate between DRAM and CPU. SRAM has a faster access speed than DRAM, but its manufacturing cost is higher. Increasing cache is aimed at improving CPU read and write speed, rather than increasing memory capacity.

外存储器External storage

辅助存储器属于外部设备，也称为外存，常用的有硬磁、光盘、磁带, USB闪存驱动器（U盘，USB Flash Drive）等。Auxiliary storage belongs to external devices, also known as external storage. Commonly used ones include disks, CDs, tapes, USB Flash Drive, etc.

存储容量storage capacity

1Byte=8bit

1KB=1024B

1MB=1024KB

1GB=1024MB

1TB=1024GB

1PB=1024TB

1EB=1024PB

1ZB=1024EB

1YB=1024ZB。

常用的输入设备Commonly used input devices

1.键盘keyboard

2.鼠标mouse

3.扫描仪scanners

4.摄像头cameras

常用的输出设备Commonly used output devices

1.显示器 Monitor

2.打印机Printer

**系统软件**是指控制和协调计算机各设备，支持应用软件开发和运行的系统，是无需用户干预的各种程序的集合，主要功能是调度、监控和维护计算机系统，负责管理计算机系统中各种独立的硬件，使得它们可以协调工作。 System software refers to a system that controls and coordinates various computer devices, supports the development and operation of application software, and is a collection of various programs that do not require user intervention. Its main function is to schedule, monitor, and maintain computer systems, responsible for managing various independent hardware components in the computer system, so that they can work in coordination.

**应用软件**是为用户的某种实际应用或解决某种特殊问题而编制的各种程序，它具有较强的实用性和针对性。

Application software is a variety of programs designed for users' practical applications or to solve specific problems, with strong practicality and specificity.

**计算机病毒**是计算机操作者有意或无意制造的一种特殊的计算机程序，并不是生物病毒，因此它不能感染计算机操作者。计算机病毒具有**破坏性、传染性、潜伏性、寄生性和自我繁殖性**等特点。

Computer viruses are a special type of computer program intentionally or unintentionally created by computer operators, and are not biological viruses, so they cannot infect computer operators. Computer viruses have characteristics such as destructiveness, infectivity, latency, parasitism, and self reproduction.

计算机病毒程序寄生在程序或数据中，发作时控制用户的计算机、修改计算机中的正常程序和数据等，使计算机不能正常使用、用户数据丢失及泄密等。

Computer virus programs parasitize in programs or data, controlling the user's computer, modifying normal programs and data in the computer, causing the computer to malfunction, user data loss, and leakage.

对付计算机病毒的最佳策略是预防，常见的预防措施有以下几种The best strategy to deal with computer viruses is prevention, and common preventive measures include the following:

（1）不使用来历不明、无法确定是否带有病毒的软盘、光盘和U盘等。

Do not use floppy disks, CDs, and USB drives of unknown origin that cannot be confirmed to have viruses.

（2）不非法复制软件，不使用盗版软件。

Do not illegally copy software, do not use pirated software.

（3）不在网上任意下载不明软件。

Do not download unknown software online at will.

（4）上网过程中开启网络防火墙，不进入不明网站，网页中不随意单击不明链接。

During the internet browsing process, turn on the network firewall, do not enter unknown websites, and do not click on unknown links on web pages.

（5）安装正版杀毒软件及防火墙软件，并随时升级到最新病毒库，开启防病毒监控程序，定时对计算机系统进行查毒，发现病毒及时清除。

Install genuine antivirus and firewall software, upgrade to the latest virus database at any time, enable antivirus monitoring programs, regularly check the computer system for viruses, and promptly remove any viruses found.

* 按进位的方法进行计数，称为进位计数制。Counting based on the carry method is called the carry counting system.
* 为了电路设计的方便，计算机内部使用的是二进制计数制，即“逢二进一”的计数制，简称二进制（Binary）。For the convenience of circuit design, the computer uses the binary counting system internally, which is the "every two in one" counting system, abbreviated as binary.
* 1. 十进制（D）decimal
* 采用0~9共10个阿拉伯数字符号；逢十进一，借一当十。Using 10 Arabic numeral symbols ranging from 0 to 9; Every ten in one, borrow one as ten.
* 2. 二进制（B）binary
* 采用0~1共2个阿拉伯数字符号；逢二进一，借一当二。Using a total of 2 Arabic numeral symbols from 0 to 1; Every two in one, borrow one as two.
* 3. 八进制（0）octal
* 采用0~7共8个阿拉伯数字符号；逢八进一，借一当八。Using 8 Arabic numeral symbols ranging from 0 to 7; Every eight in one, borrow one as eight.
* 4. 十六进制（H）hexadecimal
* 采用0~9，A~F共16个符号；逢十六进一，借一当十六。Using a total of 16 symbols from 0 to 9, A to F; Every sixteen in one, borrow one as sixteen.
* 1. 二、八、十六进制转换成十进制: 按位权展开
* Convert binary, octal, and hexadecimal to decimal:unfolding by bit weight









**2. 十进制转化为二、八、十六（任意k）进制**

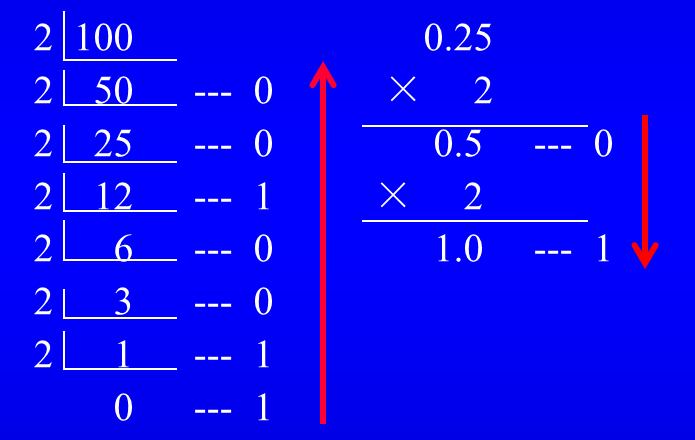
**Convert decimal to binary, octadecimal, hexadecimal (any k)**

整数部分：连除基数，逆序取余；

Integer part: Divide by cardinality, take the remainder in reverse order;

小数部分：连乘基数，顺序取整。

Decimal part: continuous multiplication base, rounded in order.



例:



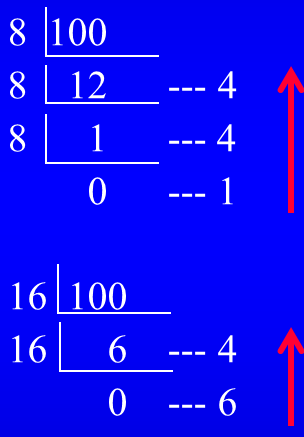
二进制数的算术运算Arithmetic operations on binary

加法运算Addition operation

规则rule：0+0=0；0+1=1；1+0=1；1+1=0（进位）

减法运算Subtraction operation

规则rule：0-0=0；1-1=0；1-0=1；0-1=1（借位）

 **2．字母和常用符号的编码Encoding of letters and common symbols**

ASCII代码（American Standard Code for Information Interchange，美国标准信息交换码）是使用最广泛的字符编码方案。ASCII code (American Standard Code for Information Interchange) is the most widely used character encoding scheme.

常用字符有128个，编码从0到127。每个字符占一个字节，用低7位，最高位为校验位。There are 128 commonly used characters, encoded from 0 to 127. Each character occupies one byte, with the lower 7 bits and the highest bit as the checksum.

例：‘0’:48，‘A’:65，‘a’:97

**第2章 Windows 7操作系统**

鼠标操作Mouse operation

* 单击：用食指轻轻按下鼠标左键并立即放开，该操作通常用于选定对象。Click: Gently press the left mouse button with the index finger and release it immediately. This operation is usually used to select objects.
* 双击：用食指快速连续轻轻按下鼠标左键两下并立即放开，该操作通常用于打开对象或启动程序。Double click: Quickly and lightly press the left mouse button twice with the index finger and immediately release it. This operation is usually used to open objects or start programs.
* 右击：用中指轻轻按下鼠标右键并立即放开，该操作通常用于弹出快捷菜单。Right click: Gently press the right mouse button with the middle finger and release it immediately. This operation is usually used to pop up a shortcut menu.
* 拖动：将鼠标光标指向对象时按住鼠标左键并移动鼠标，当对象被拖到目标位置时放开左键。Drag: Hold down the left mouse button while pointing the mouse cursor at an object and move the mouse. Release the left mouse button when the object is dragged to the target position.

常用的桌面图标包括“计算机”、个人文件夹、“回收站”和“控制面板”。Common desktop icons include "Computer", "Personal Folder", "Recycle Bin", and "Control Panel".

在Windows 7中，启动程序的方法很多，根据应用程序在不同位置出现的链接，可采用不同的方法，常用的方法有：

In Windows 7, there are many ways to start programs, and different methods can be used based on the links that appear in different locations of the application. Common methods include:

双击桌面上的快捷方式图标Double click the shortcut icon on the desktop.

单击任务栏上快速启动区域中的程序图标Click on the program icon in the quick launch area on the taskbar

在“开始”菜单中单击选择Click on the 'Start' menu to select

在“运行”对话框输入程序、应用程序主程序名称并回车确定Enter the program and application main program names in the "Run" dialog box and press Enter to confirm

通过打开文件打开程序Open the program by opening the file

**程序窗口切换Program window switching**

要切换窗口，有如下四种方法There are four methods to switch windows：

单击任务栏中目标窗口的标识按钮Click the identification button of the target window in the taskbar

当目标窗口在屏幕上有可见部分时，在其可见区域内单击When the target window has a visible portion on the screen, click within its visible area

按Win+Tab组合键Press the Win+Tab key combination

按Alt+Tab组合键Press the Alt+Tab key combination

* 文件是计算机中数据信息的保存形式，而文件夹则是磁盘上组织程序和文档的一种手段。文件夹之间没有大小之分，可以进行嵌套使用，即文件夹中可以包含文件和其他文件夹。

Files are the form of storing data information in a computer, while folders are a means of organizing programs and documents on a disk. There is no size distinction between folders, and they can be nested, meaning that folders can contain files and other folders.

* 计算机中每个文件和文件夹都必须有自己的名称，且同一位置不能有同名文件或同名文件夹，不同位置则允许有同名文件或同名文件夹。

Each file and folder in the computer must have its own name, and there cannot be files or folders with the same name in the same location, while files or folders with the same name are allowed in different locations.

**选择文件、文件夹Select files and folders**

1）单个文件或文件夹的选择Selection of individual files or folders

直接用鼠标单击它或用键盘方向键将光标移到其上，使之高亮显示即被选中。

Simply click on it with the mouse or move the cursor over it with the keyboard arrow keys to highlight it and it will be selected.

* 相邻的多个对象常用选择方法Common selection methods for adjacent multiple objects

方法一：单击文件列表窗格的空白区域，按下鼠标左键并拖动，用出现的矩形框选要选择的图标，然后释放鼠标按钮。

Method 1: Click on the blank area of the file list pane, press and drag the left mouse button, use the rectangle box that appears to select the icon you want to choose, and then release the mouse button.

方法二：先单击要选择对象列表中的第一个或最后一个对象，然后按住键盘上的Shift键不放，再单击要选择对象列表中的最后一个或第一个对象并释放Shift键。

Method 2: First, click on the first or last object in the list of objects to be selected, then hold down the Shift key on the keyboard, and then click on the last or first object in the list of objects to be selected and release the Shift key.

* 不相邻的多个文件、文件夹对象的常用选择方法Common selection methods for non adjacent multiple file and folder objects

先单击选择要选择对象中的任一个，按住键盘上的Ctrl键不放，再分别单击其他要选择的对象直至选择完毕，并放开Ctrl键。

First, click to select any of the objects to be selected, hold down the Ctrl key on the keyboard, then click on the other objects to be selected until the selection is complete, and release the Ctrl key.

**第3章 Word 2016文字处理软件**

**插入字符insert character**

在编辑Word文档时，要在某一位置插入字符，可将插入点移至要插入字符内容的位置，然后通过输入设备输入新的字符。

When editing a Word document, to insert a character at a certain position, you can move the insertion point to the position where you want to insert the character content, and then enter the new character through the input device.

**删除字符Delete character**

* **Delete/Del**：删除键（右删除键），删除右边（后边）的字符，击一次删一个字符。
* Delete/Del: Delete key (right delete key), delete the characters on the right (back) side, click once to delete one character.
* **Ctrl＋Delete**：删除光标右侧的一个单词。
* Ctrl+Delete: Delete a word to the right of the cursor.
* **Backspace**：退格键（左删除键），删除光标左边（前边）的字符，击一次删一个字符。
* Backspace: Backspace key (left delete key), delete the character to the left (front) of the cursor, click once to delete one character.
* **Ctrl＋Backspace**：删除光标左侧的一个单词。
* Ctrl+Backspace: Delete a word to the left of the cursor.

**选择文本select text**

**1．选择任意连续区域Select any continuous area**

* 方法：可单击要选定文字开始处，然后在结尾处按住Shift键并单击。
* Method: You can click at the beginning of the text you want to select, then hold down the Shift key at the end and click.
* **2．选定一个字、词Select a word or phrase**
* 在某字或词上双击，即可选定该字或词语。
* Double click on a word or phrase to select it.
* **3．选定一个句子Select a sentence**
* **按住Ctrl键**，在一个句子中的任意位置单击鼠标左键。
* Hold down the Ctrl key and click the left mouse button anywhere in a sentence.
* **4．选定一个矩形区域Select a rectangular area**
* 先按住Alt键，再将鼠标指针移到欲选区域的一角，按住鼠标左键拖至另一对角。
* First hold down the Alt key, then move the mouse pointer to one corner of the desired area, hold down the left mouse button and drag to the other corner.
* **5．选定一行Select a row**
* 将鼠标指针移到要选择文本行的最左侧（选定栏），当鼠标指针形状变为向右倾斜的空心箭头时单击鼠标，则该行被选中。
* Move the mouse pointer to the far left of the text line you want to select (selection bar), and click the mouse when the shape of the mouse pointer changes to a hollow arrow tilted to the right, and the line is selected.
* **6．选定一个段落Select a paragraph**
* 方法一：将鼠标指针置于此段文字任意行的左侧（选定栏）并双击鼠标左键。
* Method 1: Place the mouse pointer to the left of any line of this text (selection bar) and double-click the left mouse button.
* 方法二：将鼠标指针置于此段中的任意位置并三击鼠标左键。
* Method 2: Place the mouse pointer at any position within this section and click the left mouse button three times.
* **7．选定连续的多行Select consecutive multiple rows**
* 在选定栏按住鼠标左键并拖动。如果待选定区域超出当前屏幕窗口，用鼠标拖动很难准确操作，此时可采用前面讲的用Shift键选择方法方便完成选择。
* Hold down the left mouse button in the selection bar and drag. If the selected area exceeds the current screen window and it is difficult to operate accurately by dragging with the mouse, the Shift key selection method mentioned earlier can be used to facilitate the selection.
* **8．选定连续的多个段落Select multiple consecutive paragraphs**
* 在选定栏双击选定当前段后不放开鼠标左键，继续在选定栏上向上或向下拖动鼠标至要选的段落的结束处。
* Double click the current paragraph in the selection bar without releasing the left mouse button, and continue dragging the mouse up or down on the selection bar until the end of the paragraph to be selected.
* **9．选定不连续文本Select discontinuous text**
* 在Word 2016中，先选中部分文本，然后按住Ctrl键的同时再利用其他选择方法配合，可以选中不连续的文本。
* In Word 2016, first select a portion of text, then hold down the Ctrl key while using other selection methods to select discontinuous text.
* **10．选定全文Select Full Text**
* 方法一：在文档左侧的选定栏处三击鼠标左键。
* Method 1: Click the left mouse button three times on the selection bar on the left side of the document.
* 方法二：按住Ctrl键并在选定栏内单击鼠标左键。
* Method 2: Hold down the Ctrl key and click the left mouse button in the selected column.
* 方法三：按组合键Ctrl＋A。
* Method 3: Press the Ctrl+A key combination.
* **格式刷Format Painter**
* 可以将已有字符对象的“格式”通过“格式刷”复制到其他字符对象上。You can copy the "format" of an existing character object to other character objects through a "format brush".
* **文本框Text box**
* 在“插入”功能区单击“文本框”按钮，弹出“文本框预设样式列表”，单击所需文本框样式后，文档中立即出现预设文本框轮廓。也可以单击“绘制文本框”或“绘制竖排文本框”按钮，手动绘制文本框轮廓，然后在文本框中输入所需的文本。Click the "Text Box" button in the "Insert" ribbon to bring up the "Text Box Preset Style List". After clicking on the desired text box style, the preset text box outline will immediately appear in the document. You can also click the "Draw Text Box" or "Draw Vertical Text Box" button to manually draw the outline of the text box, and then enter the desired text in the text box.
* 文本框被选中时，功能区出现 “绘图工具 格式”功能集，利用其中的命令可对文本框进行效果设置，以增强文本框的效果。When a text box is selected, the "Drawing Tool Format" feature set appears in the ribbon, and the commands in it can be used to set the effect of the text box to enhance its effect.
* 在“形状样式”组中单击“形状填充”按钮，在打开的列表中集成了可对文本框设置背景颜色、渐变填充色、指定图片填充和纹理填充等的命令。Clicking the "Shape Fill" button in the "Shape Styles" group integrates commands for setting background color, gradient fill color, specifying image fill, texture fill, and more for text boxes in the opened list.
* 文本框可以像图片一样进行旋转。默认情况下文本框内的文本随文本框一同旋转，但可以在“设置形状格式”对话框中进行文本是否跟随旋转控制。Text boxes can rotate like images. By default, the text inside the text box rotates along with the text box, but you can control whether the text follows the rotation in the "Format Shape" dialog box.
* 将插入点置于文档的任意处，或选中需要更改文字方向的对象，在“页面布局”功能区或“绘图工具 格式”功能区中单击“文字方向”按钮，在打开的“文本方向预设效果”列表中单击所需的样式，对象中的文本立即调整为所选样式。Place the insertion point anywhere in the document, or select the object that needs to change the text direction. Click the "Text Direction" button in the "Page Layout" or "Drawing Tool Format" ribbon, and click the desired style in the "Text Direction Preset Effects" list that opens. The text in the object will immediately adjust to the selected style.
* 将插入点移至需插入艺术字的位置，单击“插入”功能区中的“艺术字”按钮，打开“艺术字样式列表”，单击选择所需的艺术字样式，并在艺术字输入框中输入艺术字字符。选中艺术字后在功能区中为艺术字改变字体、字号等字符效果。
* Move the insertion point to the position where the artistic character needs to be inserted, click the "Artistic Character" button in the "Insert" ribbon, open the "Artistic Character Style List", click to select the desired artistic character style, and enter the artistic character in the artistic character input box. After selecting the artistic character, change the font, size, and other character effects for the artistic character in the ribbon.
* 插入艺术字后，既可以改变艺术字的大小，也可以移动其位置After inserting artistic characters, you can change their size or move their position

**第4章 Excel 2016电子表格数据处理软件**

公式是指对工作表中的数值进行计算的等式。公式要以等号（＝）开始，后跟参与运算的运算符和运算数。其中，运算符根据运算数的类型和运算的需要进行选取；运算数则可以是函数、单元格引用和常量。

A formula refers to an equation used to calculate the values in a worksheet. The formula should start with an equal sign (=), followed by the operator and operand involved in the operation. Among them, operators are selected based on the type of operand and the needs of the operation; The operands can be functions, cell references, and constants.

**第5章 PowerPoint 2016演示文稿软件**

**一、新建幻灯片New Slide**

方法一：按组合键Ctrl＋M，即可快速在当前幻灯片的后面插入一张“标题和内容”版式的空白幻灯片。

Method 1: Press Ctrl+M to quickly insert a blank slide with the "Title and Content" layout after the current slide.

方法二：在“普通视图”下，将鼠标定位在左侧的幻灯片窗格中，然后按下回车键（Enter），可快速当前幻灯片的后面插入一张“标题和内容”版式的空白幻灯片。

Method 2: In "Normal View", position the mouse in the left slide pane and press Enter to quickly insert a blank slide in the "Title and Content" layout after the current slide.

方法三：在“开始”功能区的“幻灯片”组中单击“新建幻灯片”按钮，可插入一张“标题和内容”版式的空白幻灯片；单击该按钮下的 按钮，系统展开幻灯片版式列表，选择所需版式，即可插入所选版式的幻灯片。

Method 3: Click the "New Slide" button in the "Slides" group of the "Start" ribbon to insert a blank slide in the "Title and Content" layout; Click the button below to expand the slide layout list, select the desired layout, and insert the slides of the selected layout.

方法四：在幻灯片的右键菜单中选择“新建幻灯片”命令，可在当前幻灯片的后面插入一张“标题和内容”版式的空白幻灯片。

Method 4: Select the "New Slide" command in the right-click menu of the slide to insert a blank slide with the "Title and Content" layout after the current slide.

**第6章 计算机网络基础知识**

计算机网络是利用通信设备和线路将地理位置不同的、功能独立的多个计算机系统连接起来，以功能完善的网络软件实现网络的硬件、软件及资源共享和信息传递的系统。

A computer network is a system that uses communication devices and lines to connect multiple geographically located and functionally independent computer systems, and uses fully functional network software to achieve hardware, software, and resource sharing and information transmission of the network.

**计算机网络的分类**

**Classification of Computer Networks**

**1．局域网LAN**

局域网LAN（Local Area Network）是在一个建筑物、一个校园或一个公司内的网络，适用于在一个较小地理范围内将计算机、外部设备通过传输媒体连接起来，以实现区域信息资源共享。

A local area network (LAN) is a network within a building, campus, or company that connects computers and external devices through transmission media within a small geographic area to achieve regional information resource sharing.

**2．广域网WAN**

广域网WAN（Wide Area Network）涉及很大的地理环境，经常跨一个国家或一个大洲。国际互联网就是典型的广域网。Wide Area Network (WAN) involves a large geographical environment, often spanning across a country or a continent. The Internet is a typical WAN.

**3．城域网MAN**

介于局域网和广域网之间的就是城域网MAN（Metropolitan Area Network），通常分布在一个城市范围内，覆盖距离一般在10km以内，通常采用与局域网相似的技术，传输主要采用光纤，传输速率在100Mb/s以上。MAN网的主要作用是承担骨干网，通过它将位于同一城市内不同地点的主机、数据库以及局域网等相互连接起来。

Between local area networks and wide area networks is the Metropolitan Area Network (MAN), which is usually distributed within a city and covers a distance of less than 10km. Similar technologies to local area networks are commonly used, with fiber optic transmission mainly used and transmission rates above 100Mb/s. The main function of MAN network is to serve as the backbone network, connecting hosts, databases, and local area networks located in different locations within the same city.

互联网（Internet）也称为因特网，是由美国ARPANET网发起来的，它是当前世界上最大的开放网际网，连接了世界上不同国家与地区无数不同硬件、不同操作系统与不同软件的计算机，即由众多的计算机网络互连而成的互联网络。The Internet, also known as the Internet, originated from the ARPANET network of the United States. It is the largest open Internet in the world at present. It connects numerous computers with different hardware, operating systems and software in different countries and regions in the world, that is, the Internet formed by the interconnection of numerous computer networks.

**2）用域名地址表示Represented by domain name address**

使用有意义的字符串来代替IP地址，即域名地址。为了使每台互联网主机的名字具有惟一性，互联网采用了分层的、基于域的命名系统。Use meaningful strings to replace IP addresses, i.e. domain addresses. In order to make the name of each Internet host unique, the Internet uses a hierarchical, domain based naming system.

域是同一类事物的集合，例如国家、政府部门、学校等就是不同层次的域。像文件系统一样，域名系统也是一个倒树型结构：最上层是顶级域，每个顶级域包含一个或多个子域，每个子域又包含一个或多个下一级子域，依次类推，最下一层没有子域的就是底层域。底层域包含一个或若干个互联网主机（服务器）。A domain is a collection of the same category of things, such as countries, government departments, schools, etc., which are domains at different levels. Like a file system, the domain name system is also an inverted tree structure: the top layer is the top-level domain, each top-level domain contains one or more subdomains, each subdomain contains one or more subdomains of the next level, and so on. The bottom layer without subdomains is the underlying domain. The underlying domain contains one or more Internet hosts (servers).



**第7章 人工智能**

**人工智能的核心技术**

**The core technology of artificial intelligence**

* 机器学习：介绍监督学习、无监督学习和强化学习等基本概念
* Machine Learning: Introduction to Basic Concepts such as Supervised Learning, Unsupervised Learning, and Reinforcement Learning
* 深度学习：解释深度神经网络的工作原理和应用场景
* Deep Learning: Explaining the Working Principles and Application Scenarios of Deep Neural Networks
* 自然语言处理：讨论自然语言理解、生成和翻译等技术
* Natural Language Processing: Discussing Technologies for Natural Language Understanding, Generation, and Translation
* 计算机视觉：介绍图像识别、物体检测和人脸识别等应用
* Computer Vision: Introduction to Applications such as Image Recognition, Object Detection, and Facial Recognition
* 机器人技术：从无人机到扫地机器人，从医疗机器人到服务机器人，它们正逐渐渗透到各个行业领域，成为人类工作和生活的重要助手。
* Robot technology: From drones to floor cleaning robots, from medical robots to service robots, they are gradually penetrating into various industries and becoming important assistants for human work and life.
* 语音识别：在智能手机、智能家居、智能车载系统等领域，语音识别技术都得到了广泛应用。
* Speech recognition: Speech recognition technology has been widely applied in fields such as smartphones, smart homes, and smart car systems.

考试形式：在线闭卷 Exam format: Online closed book

考试平台：智慧树 Exam platform: Smart Tree

考试时长：120分钟 Exam duration: 120 minutes

考试时间：12月27日15：00-17：00

Exam time: December 27th, 15:00-17:00

试卷题型Exam question types：

1. 单选题（30小题，共60分）Single choice question (30 questions, 60 points in total)
2. 多选题（5小题，共10分）Multiple Choice Questions (5 questions, 10 points in total)
3. 判断题（15小题，共30分）True or False (15 questions, 30 points in total)