Chapter 2
Information Technology and AISs

Discussion Questions

2-1. An AIS is best viewed as a set of interacting components that must all work together to accomplish data gathering, storage, processing, and output tasks. For example, computer hardware runs software, and each would be "lost" without the other. Similarly, software must have data to provide useful information. And all these components would be useless without people and procedures to maintain them, gather them, run them, and use them properly.

2-2. An understanding of information technology (IT) is important to accountants for many reasons. Some examples:
   a) Much of today's accounting tasks are performed with computers. Thus, it is essential that the modern accountant possess a basic understanding of a computer's functions, capabilities, and limitations.
   b) Accountants often help clients make hardware and software decisions. A knowledge of IT concepts is critical to these efforts.
   c) Accounting information systems that are computerized must still be audited. It is impossible to audit such systems without a firm understanding of IS concepts.
   d) Accountants are often asked to sit on evaluation committees when changes to existing accounting systems are contemplated. An understanding of how a computer operates enables the accountant to participate more intelligently in such committees.
   e) Accountants are often asked to assist in the design of new computerized accounting information systems. Computer technology often plays an important role in this design work.
   f) Most accounting systems require controls to assure the accuracy, timeliness, and completeness of the information generated by such systems. An understanding of how computer technology contributes to these objectives, and also how computer technology can thwart these objectives, enables the accountant to evaluate computer controls in an automated accounting environment.
   g) Those accountants who understand how to use computer hardware and software will have the easiest time in performing such tasks as auditing, budgeting, database use, and so forth. Thus, the more accountants understand about information technology, the easier it is to get hired, noticed, and/or promoted.
   h) A great deal of accounting data are gathered, transmitted, processed, and distributed via the Internet. A fundamental understanding of the information technology that drives these activities is therefore essential to the accountants that help perform these activities.

2-3. Data transcription refers to the transformation of data from source documents into machine-readable "computerized" input. Data transcription is unnecessary in manual accounting information systems because there is no computer. However, data transcription is critical to those computerized accounting information systems that collect data with manually-prepared source documents.

Data entry personnel typically transcribe data by copying them onto computer-readable media such as CDs, or more commonly, keying data directly into computers (e.g., when a bank clerk helps a customer make a deposit). Thus, data transcription is usually labor intensive and therefore costly. Data transcription also has the potential to insert errors into data and/or to
delay or “bottle-neck” operations. Designers of effective accounting information systems are willing to incur such costs because the benefits of the computerized processing from these systems make them cost-effective. However, data-preparation time and costs can be saved, and transcription delays avoided, if an AIS gathers data that are already in machine readable form (e.g., through automatic tag readers, bar codes, or magnetized-strip cards).

2-4. Computer input equipment includes computer keyboards, computer mice, bar code readers, POS devices, MICR readers, OCR readers, magnetic strip readers, and such specialized microcomputer input devices as computer mice, joysticks, web cams, and microphones. A growing amount of accounting data is also now input via mobile devices such as cell phones and PDAs. The chapter describes the functioning of each of these devices in detail.

2-5. This question asks students to voice their personal opinions about red-light cameras—the ones that automatically issue traffic tickets when drivers run red lights. This question should therefore generate lively discussion. Many drivers hate them—for example, arguing that winter conditions made it difficult to stop or that such systems are more motivated by ticket revenues than by concerns for safety. Local government officials typically argue the opposite—i.e., that such systems merely enforce driving laws already on the books, serve a safety function, and save local residents money by generating revenues that could otherwise only be raised by other taxes.

2-6. The three components of the central processing unit are: (1) primary memory, (2) arithmetic/logic unit, and (3) control unit. As its name suggests, the primary memory of the CPU temporarily stores data and programs for execution purposes. The arithmetic-logic units of most central processors have special-purpose storage memories called registers that perform arithmetic operations (such as addition, subtraction, multiplication, division and exponentiation) and logical operations (such as comparisons and bit-manipulating functions). Finally, the control sections of central processing units act as an overseer of operations, interpreting program instructions and supervising their execution.

Microprocessor speeds are measured in megahertz (MHz) or gigahertz (GHz)—the number of pulses per second of the system’s timing clock. In larger computers, speed is measured in millions of instructions per second (MIPS) or millions of floating point operations per second (MFLOPS). Processor speeds are rarely important to accounting systems because the speed of the processor drastically exceeds the speeds for input and output operations. Most computers are I/O bound, meaning that their CPUs mostly wait for data to be input or output.

2-7. The three types of printers mentioned in the text include dot-matrix printers, inkjet printers, and laser printers.

Dot-matrix printers
Advantages:
- Inexpensive
- Flexible
- Able to print on multipart paper (i.e., make “carbon copies”)

Disadvantages:
- Slow print speeds
- Very low print resolutions

Ink-Jet Printers
Advantages:
• Higher print resolutions than most dot-matrix printers
• Can print in multiple colors
• Can print photographic prints, and continuous graphs
• Selected models can perform faxing, copying, and scanning functions
• Comparatively inexpensive compared to laser printers

Disadvantages:
• Lower speeds (compared to laser printers)
• Can print single copies only (not carbon copies)
• Ink cartridges are comparatively expensive

Laser Printers
Advantages:
• High output quality
• Fastest print speeds
• Selected models can perform faxing, copying, and scanning functions

Disadvantages:
• Comparatively higher costs for both printers and toner cartridges
• Can print single copies only

2-8. Secondary storage devices provide a permanent, non-volatile medium for storing and retrieving accounting data. Examples include permanent hard disks, removable disks such as zip disks, CD-ROM disks, DVDs, flash (USB) drives, cartridge tape, and flash memory sticks (e.g., the type used in cameras). Secondary storage is important to AISs because the primary memory of a computer is too small and too volatile to meet the permanent-storage requirements of the typical accounting information system. In addition, such secondary storage media as CD-ROMs and USB drivers are removable and therefore useful for backup, mailing, and distribution tasks. These media and their relative advantages and disadvantages are described at length in the chapter.

2-9. Image processing refers to storing graphic images in computer files (usually of business documents) and manipulating them electronically. Examples of image processing applications mentioned in the text include: insurance companies (storing claims forms and accident reports), banks (storing check images), hospitals (storing medical scans), and the IRS (storing tax returns). Other examples include catalog applications (storing merchandise images), personnel applications (storing employee pictures), and legal applications (storing mortgages, deeds, wills and other legal documents). Four advantages of image processing that are mentioned in the text and are important to AISs are: (1) fast data capture, (2) archiving efficiency (the ability to store hundreds of thousands of documents on a small medium), (3) processing convenience (the ability to retrieve, catalog, sort, or otherwise organize images quickly and efficiently), and (4) accessibility (the ability to provide the same images to several users at once). This last, file-sharing advantage is also important for collaborative tasks in professional offices.

2-10. Data communications protocols are the standards by which computer devices communicate with one another. Examples of such standards include the packet size, the baud rate, the duplex setting, the type of transmission (synchronous versus asynchronous), and the type of parity used (odd, even, or none). Communication protocols are important because they enable computers to transmit digital data over different types of communications media, and also to interpret data after the transmission takes place. For instance, if the parity bit for a character
were different than the parity bit at the time it was transmitted, the character would either be
different or unreadable.

2-11. *Local Area Networks (LANs)* are collections of computers, file servers, printers, and
similar devices that are all located in a small area (e.g., the same building), and that are all
connected to one another for communications purposes. The advantages of LANs are
described in the chapter, and include: (1) ability to facilitate communication among LAN
members, and between LAN members and the Internet, (2) sharing computer equipment, (3)
sharing computer files, (4) saving software costs, and (5) enabling unlike computer equipment to
communicate with one another.

2-12. *Client/server computing* is an alternate to mainframe/host computing. In centralized
computing systems, the mainframe computer or minicomputer performs most, if not all, of the
processing and database tasks, which are also mostly centralized. In client/computing,
processing may be performed by the server computer or the client (typically, a microcomputer),
and database information is usually copied onto several file servers.

Client/server systems offer several advantages. These include the ability to: (1) substitute the
inexpensive processing capabilities of microcomputer hardware and software for comparatively
expensive mainframe or minicomputer processing capabilities, (2) reduce data communications
time and costs, and (3) utilize thin-client systems. Some disadvantages are: (1) the problem of
maintaining multiple copies of important databases on several servers, (2) the additional tasks
required to keep server databases current, (3) more difficult backup and recovery, (4) increased
difficulty when changing application software from one package to another, and (5) a potential
need for greater user training. The security and auditability of client server systems are usually
also more complex.

2-13. These days, almost any vendor that offers remote services could be classified as a
cloud computing vendor. This includes those companies that perform basic payroll services
such as Intuit, tax preparers that prepare tax returns remotely such as H. & R. Block, and even
those universities that offer distance-education courses on the Internet. Cloud computing
vendors offer the major advantages of other outsourcing suppliers along with near-
instantaneous electronic speed (no more need for a courier service!). But cloud computing isn’t
always cheaper, faster, or better. Moreover, the quality of a vendor’s work is not automatically
guaranteed simply because it provides online services, and “security” is also a concern because
the owner loses control of data. Finally, subscribers that become dependent upon their vendors
run an added risk should data failures or data breaches occur.

2-14. Windowing operating systems such as Windows Vista and Windows XP are
operating systems that use *graphical user interfaces (GUIs)* with menus, icons, and other
graphics elements. These elements enable users to select processing options and perform
computing tasks without the need to memorize system commands. In contrast, command-driven
operating systems such as DOS and UNIX force users to remember system commands because
available options are not usually listed or displayed onscreen.

*Multitasking* capabilities enable operating system to perform more than one task on a single-user
computer. Most windowing operating systems are multitasking systems that allow users to
operate several concurrent sessions in separate windows, and to switch back and forth among
them as needs dictate. Multitasking operating systems enable users to work more efficiently and
perhaps be more productive. Windowing operating systems, GUIs, and multitasking operating
systems are also important to AISs because so many other microcomputer accounting programs
require them. For example, Peachtree, Solomon, Great Plains, Excel, Access, and Word software all run under Microsoft’s Windows operating system. These programs are used by accountants as personal and professional productivity tools, and also by auditors and the clients of CPA firms for similar reasons.

2-15. Four classes of application software are: (1) personal productivity software, (2) commercial productivity software, (3) accounting software, and (4) communications software. Other types of application software include database software, software for academics (e.g., grade-book management software), medical diagnostic software, game-playing software, software that processes marketing data, production data, and personnel data, and enterprise resource planning (ERP) software.

Personal productivity software enables users to create and manipulate word documents (word processing software), create and manipulate spreadsheets (spreadsheet software), create and manipulate databases (database management systems software), create and maintain calendars, or maintain personal budgets and finances (personal finance software). Commercial productivity software enables users to plan and track resources on large projects (project management software), design consumer or industrial products (CAD software), control manufacturing processes (CAM software), or create presentations (presentation graphics software).

Accounting software performs the familiar accounting tasks involved in payroll, accounts receivable, accounts payable, and inventory control. Chapter 7 of this text discusses integrated accounting packages in detail and Chapter 8 discusses the transaction cycles involved in these applications. Communications software enables users to email one another, transmit data to and from distant computers, and access the Internet and World Wide Web. Finally, ERP software enables businesses to transmit, manipulate, and integrate financial data on a corporate wide basis.

2-16. Computer programmers create the capabilities of each and every computer application by writing computer instructions in a programming language that a computer can understand and execute. Fortran (an acronym for “formula translation”) was one of the first such languages, and excels in translating mathematical expressions into computer code. COBOL (Common Business Oriented Language) enables users to write programming instructions in English-like code and is comparatively self-documenting. RPG (Report Program Generator) is good for creating simple reports from existing databases and is widely supported by IBM on minicomputers. Some of the newer programming languages mentioned in the text include C++, which excels at bit manipulations and assembler tasks, HTML (HyperText Markup Language), which programmers use to create web pages, JAVA, programmers can use to create interactive websites, and Visual Basic, which enables programmers to develop interactive windows programs with easily-manipulated, event-driven programming tools.

Problems

2-17. Classifying equipment:

<table>
<thead>
<tr>
<th>Item</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) CRT screen</td>
<td>output</td>
</tr>
<tr>
<td>b) ALU</td>
<td>CPU component</td>
</tr>
<tr>
<td>c) CD-ROM</td>
<td>secondary storage</td>
</tr>
<tr>
<td>d) keyboard</td>
<td>input</td>
</tr>
</tbody>
</table>

SM 1.5
e) modem  data communications
f) dot-matrix printer  output
g) audio speaker  output
h) POS terminal  input
i) MICR reader  input
j) laser printer  output
k) magnetic tape  secondary storage
l) flash memory  secondary storage
m) OCR reader  input
n) magnetic disk  secondary storage
o) ATM  input and output
p) primary memory  CPU component
q) ALU  CPU component

2-18. Defining acronyms:

<table>
<thead>
<tr>
<th>Item:</th>
<th>Meaning:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) POS</td>
<td>Point of sale</td>
</tr>
<tr>
<td>b) CPU</td>
<td>Central processing unit</td>
</tr>
<tr>
<td>c) OCR</td>
<td>Optical character reader</td>
</tr>
<tr>
<td>d) MICR</td>
<td>Magnetic ink character recognition</td>
</tr>
<tr>
<td>e) ATM</td>
<td>Automated teller machine</td>
</tr>
<tr>
<td>f) RAM</td>
<td>Random access memory</td>
</tr>
<tr>
<td>g) ALU</td>
<td>Arithmetic-logic unit</td>
</tr>
<tr>
<td>h) MIPS</td>
<td>Millions of instructions per second</td>
</tr>
<tr>
<td>i) OS</td>
<td>Operating system</td>
</tr>
<tr>
<td>j) MHz</td>
<td>Megahertz</td>
</tr>
<tr>
<td>k) pixel</td>
<td>Picture element</td>
</tr>
<tr>
<td>l) RGB</td>
<td>Red green blue</td>
</tr>
<tr>
<td>m) CD-ROM</td>
<td>Compact disk - read only memory</td>
</tr>
<tr>
<td>n) worm</td>
<td>Write once read many</td>
</tr>
<tr>
<td>o) modem</td>
<td>Modulator demodulator</td>
</tr>
<tr>
<td>p) LAN</td>
<td>Local area network</td>
</tr>
<tr>
<td>q) WAN</td>
<td>Wide area network</td>
</tr>
<tr>
<td>r) ERP</td>
<td>enterprise resource planning</td>
</tr>
<tr>
<td>s) WAP</td>
<td>wireless application protocol</td>
</tr>
<tr>
<td>t) wi-fi</td>
<td>wireless fidelity</td>
</tr>
<tr>
<td>u) ppm</td>
<td>pages per minute</td>
</tr>
<tr>
<td>v) dpi</td>
<td>dots per inch</td>
</tr>
<tr>
<td>w) NFC</td>
<td>near field communications</td>
</tr>
<tr>
<td>x) RFID</td>
<td>radio frequency identification</td>
</tr>
</tbody>
</table>

2-19.

a) one DVD disk capacity = 17 gigabytes
b) one hard disk capacity = 160 gigabytes
c) ten CD-ROM disks = 10 * 650 megabytes = 6,500 megabytes = 6.5 gigabytes

Conclusion: Choice (b) holds the most data.
2-20. Brian Fry Products

<table>
<thead>
<tr>
<th>character positions</th>
<th>field</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) 1-4</td>
<td>order number</td>
</tr>
<tr>
<td>b) 5-9</td>
<td>part number</td>
</tr>
<tr>
<td>c) 10-19</td>
<td>part description</td>
</tr>
<tr>
<td>d) 20-22</td>
<td>manufacturing department</td>
</tr>
<tr>
<td>e) 23-27</td>
<td>number of pieces started</td>
</tr>
<tr>
<td>f) 28-32</td>
<td>number of pieces finished</td>
</tr>
<tr>
<td>g) 33-34</td>
<td>machine number</td>
</tr>
<tr>
<td>h) 35-42</td>
<td>date work started (MM/DD/YYYY)</td>
</tr>
<tr>
<td>i) 43-46</td>
<td>hour work started</td>
</tr>
<tr>
<td>j) 47-54</td>
<td>date work completed (MM/DD/YYYY)</td>
</tr>
<tr>
<td>k) 55-58</td>
<td>hour work completed</td>
</tr>
<tr>
<td>l) 59-61</td>
<td>work standard</td>
</tr>
<tr>
<td>m) 62-66</td>
<td>worker number</td>
</tr>
<tr>
<td>n) 67-71</td>
<td>foreman number</td>
</tr>
</tbody>
</table>

2-19. Go the AICPA website and identify the top ten information technologies for the current year. At the time this answer key was prepared, they were:

1) electronic data interchange (EDI - hardware)
2) database accounting software
3) local area networks (hardware and software)
4) client/server computing (hardware)
5) open systems (hardware and software)
6) downsizing (hardware, but also people)
7) continuous auditing (software)
8) image processing (hardware and software)
9) decision support systems (software)
10) expert systems (software)

Some current important trends and topics not mentioned are such items as computer viruses, the Internet and the World Wide Web, electronic commerce, Internet taxation, software piracy, privacy on the Internet, and the Telecommunications Act of 1996.

2-22. An RFID system for a state's toll roads.

<table>
<thead>
<tr>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Account Title</strong></td>
<td><strong>Amount</strong></td>
</tr>
<tr>
<td>a. Cash</td>
<td>20.00</td>
</tr>
<tr>
<td>b. Cash</td>
<td>100.00</td>
</tr>
<tr>
<td>c. Transponder Deposits</td>
<td>900.00</td>
</tr>
<tr>
<td>d. Transponder Deposits</td>
<td>25.75</td>
</tr>
<tr>
<td>e. Owner's Equity</td>
<td>10.00</td>
</tr>
</tbody>
</table>

2-23. This problem requires students to select a type of computer hardware of interest and to write a one-page report. We recommend requiring students to use a spreadsheet with which to embed pictures of three different hardware examples in separate cells. We found that the
results are interesting and fun to grade, and that some of our students were surprised to learn that they can embed pictures in spreadsheets.

Case Analyses

2-24. Savage Motors (Software Training)

<table>
<thead>
<tr>
<th>Department</th>
<th>No. of Employees</th>
<th>Word Processing</th>
<th>Spreadsheets</th>
<th>Database</th>
<th>Presentation Graphics</th>
<th>Accounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>112</td>
<td>1150</td>
<td>750</td>
<td>900</td>
<td>500</td>
<td>700</td>
</tr>
<tr>
<td>Operations</td>
<td>82</td>
<td>320</td>
<td>2450</td>
<td>650</td>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>Accounting</td>
<td>55</td>
<td>750</td>
<td>3600</td>
<td>820</td>
<td>250</td>
<td>2500</td>
</tr>
</tbody>
</table>

Answers for Part 1:

<table>
<thead>
<tr>
<th>Department</th>
<th>No. of Employees</th>
<th>Word Processing</th>
<th>Spreadsheets</th>
<th>Database</th>
<th>Presentation Graphics</th>
<th>Accounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>112</td>
<td>10.3</td>
<td>6.7</td>
<td>8</td>
<td>4.5</td>
<td>6.3</td>
</tr>
<tr>
<td>Operations</td>
<td>82</td>
<td>2.9</td>
<td>21.9</td>
<td>5.8</td>
<td>0.9</td>
<td>4.5</td>
</tr>
<tr>
<td>Accounting</td>
<td>55</td>
<td>6.7</td>
<td>32.1</td>
<td>7.3</td>
<td>2.2</td>
<td>22.3</td>
</tr>
</tbody>
</table>

Answers for Part 2:

Sales: 1,150  Word Processing
Operations: 2,450  Spreadsheets
Accounting: 3,600  Accounting

Answers for Part 3:

<table>
<thead>
<tr>
<th>No. of Employees</th>
<th>Word Processing</th>
<th>Spreadsheets</th>
<th>Database</th>
<th>Presentation Graphics</th>
<th>Accounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totals:</td>
<td>249</td>
<td>2,220</td>
<td>6,800</td>
<td>2,370</td>
<td>850</td>
</tr>
<tr>
<td>Averages:</td>
<td>8.9</td>
<td>27.3</td>
<td>9.5</td>
<td>3.4</td>
<td>14.9</td>
</tr>
</tbody>
</table>

Answer to Part 4:

![Average software usage by application and department](chart.png)
2-25. Backwater University

1. One possible solution is to use a coupon system for students. With this system, students would be given meal coupons rather than ID cards, and the coupon itself “pays” for the meal. Another possibility is to install a local area network in the dining facilities, and use point-of-sale (POS) terminals to check students through the lines. For this latter option, it would probably make sense to use student ID cards with magnetic stripes for faster throughput. A third solution, similar to the second, is to use fingerprint recognition software and a database of authorized students to check them through the lunch lines. Students will probably develop several additional alternatives for this question.

2. No additional hardware is required for the coupon plan, although a centralized database of students on a microcomputer system would be useful for printing coupons each month. In contrast, the two LAN systems will require a file server, POS or biometric scanning terminals, and at least one administrative computer for inputting ID information for those students approved for a specific type of meal plan.

3. The software required for the coupon system would maintain a central database of student data, including identifying information about the student and the type of meal plan desired. A coupon-printing system could print coupons with student names on each one once a month. The software for the POS or biometric systems would also maintain a centralized list of students, plus information indicating whether or not a student used his or her card for a specific meal (thus controlling the multi-meal problem mentioned in the case).

4. Good information systems pay for themselves quickly. Thus, when evaluating the desirability of either system, the analysis should show that the proposed system is cost effective. The costs of the proposed system include the hardware, software, and personnel mentioned above. The benefits of a proposed system include reduced customer lines at the entrance to the dining facilities, better control of student funds and plans, and perhaps even reduced cashiering labor. More discussions about such system analyses are found in later chapters of the book.

2-26. Bennet National Bank

1. The special information that must be coded on the magnetic strip of the card would include, but would not necessarily be limited to:
   a) special bank code
   b) customer's credit card number
   c) customer's savings account number
   d) customer's checking account number
   e) expiration date of card
   f) issue date of the card
   g) date of last use for automatic withdrawal purposes
   h) the number of withdrawals on date of last withdrawal
   i) secret passcode

2. The tests of conformity with bank policy and locations for such tests would be:
   a) correct passcode test performed by client
   b) Bennet credit card test performed by client
   c) current credit card test performed by client
d) stolen credit card test performed by bank’s CPU using central files
e) amount of usage test performed by client
f) overdrawing of account test performed by bank’s CPU using central files

2-27. Prado Roberts Manufacturing

1. Four advantages of mainframe computer systems are:
   • The available speed, power, and memory which is needed to perform the largest, most complex tasks without the complexity and concerns of networks.
   • Multi-user capabilities, enabling hundreds or even thousands of users to access the same computer and files simultaneously.
   • The mainframe programs, partially because they have existed for a long time, are debugged, and, therefore, cheaper than new microcomputer software.
   • A more centralized computing environment which leads to better control of applications, program development, data files, computer operations, and quality standards with greater uniformity.

   Three disadvantages of mainframe computer systems are:
   • Such systems may not be user friendly,
   • Such systems may require a high level of expertise to operate and require highly trained, expensive IT staff.
   • There may be time delays in developing and implementing new systems as the programs are complex.

2. Factors and/or activities that prolong the lives of mainframe computer systems are:
   • Systems that were originally developed in-house have now been debugged and work properly.
   • The availability of parallel processing and emerging software capabilities.
   • The high cost of replacing custom systems.

   Two reasons why companies may not want to retire their mainframe computer systems are:
   • These companies have enormous investments in mainframe platforms that would have to be written-off on the financial statements.
   • Many users rely on mainframes to perform their most vital computing functions which may require more memory, processing power, and data files than those available on microcomputers.

3. Five advantages of microcomputer/client-server systems are:
   • They are more user-friendly, thus, making it easy for employees to use.
   • They more easily meet rapidly changing business needs with new systems applications.
   • Microcomputer standalone capabilities that allow users to continue to perform computer tasks even if the host or server is disabled.
   • Microcomputer low acquisition and maintenance costs, which continue to decline over time.
   • Many software applications available in the marketplace.

   Two disadvantages of microcomputer/client-server systems are:
   • The loss of central control. Security is more difficult relative to remote stations, the server, and data files.
• Personnel are tempted to use microcomputer work stations for personal purposes.