Essay about input and output devices and computer components

Technology, Computer

The purpose of this paper Is to answer questions about various data input and output methods, various storage types and devices, and the speed of a computer. Each of the four questions Is divided Into a corresponding section below. In the Input device section, this paper focuses primarily on user Input, rather than the Input devices used to extract information entered by a user. In all of the presented cases, electronic scanning methods are the best method, and the method routinely used, to extract data and store it in repositories for compilation and analysis.

Input Scenarios Printed questionnaires and telephone surveys are commonplace in today's poll- obsessed society. Today, Individuals may receive questionnaires from sources ranging from the Census Bureau to Sears to AC Nielsen. Organizations deliver these questionnaires In a variety of formats and lengths, and require answers that use disparate measurement scales from Liker (bipolar) to unstructured. The style of survey used by an organization will vary greatly based on the subject matter and the goal of the survey.

Among the most popular assessments tools of service quality (a common questionnaire/survey topic) is SURVIVAL, an instrument designed by Berry, Pursuant, and Estimate (1994). Through numerous qualitative studies, they evolved a set of five dimensions ranked consistently by customers as central to service quality, regardless of the service industry. Most questionnaires and surveys use both bipolar Liker/tollbooth's and unstructured questions to allow the surveyor to benefit from the strengths of both quantitative and qualitative research.

The use of quantitative questions allows surveyors to obtain a high degree of reliability and validity using the selecting method, and enables others to more easily repeat or replicate the study. The alliterative questions provide background for customer responses, and help to identify any underlying issues highlighted by the quantitative research. Triangulation, in this case the combination of qualitative and quantitative methods, allows us to overcome the weakness of using only one research technique. Both printed questionnaires and telephone surveys that assess service quality, therefore, require some type of manual data input (answers).

The only difference is the method used to enter the data into the survey form. In surveys of any size, printed questionnaires either allow for on-line submission or follow a printed format hat allows users to fill In pre-defined answers to questions. Surveys that Include qualitative methods have one or more sections that allow the user to either type or write comments In an unstructured format. In telephone surveys, the surveyor almost universally uses a Web-based form or a computer program to enter data from the In all cases, the keyboard and mouse are the most effective input devices.

The use of electronic forms for data input, whether by the respondent or a telephone surveyor, places the data into a readily-usable format. Printed surveys that use fill-in forms can e scanned electronically using a mark scanning device and the data entered automatically into a readily-usable format. The keyboard and pointing device, or a standard fill-in printed form, avoid handwriting errors, misspellings, transcription problems or other issues inherent when using non-standard formats for data input.

Respondents and surveyors also need little training to fill-in a bubble or a square on a printed form or to use a keyboard or pointing device to fill out an electronic form (Nickering, 2001). When accuracy and efficiency are paramount, bank checks also benefit from electronic input. The traditional method of handwriting checks is inefficient and prone to errors or tampering issues. Organizations have increasingly shifted to the best practice of electronic entry of bank check information. In this case, the keyboard and pointing device are the best method of input for bank check data.

With this method, users can fill in pertinent information in a simple form or visual representation of the check. The back-end program can then check the validity of the data, enter the data onto the check and properly record the check in the bank account register. Since the sass, the Federal Reserve has encouraged banks to use electronic presentment of checks, where paper checks are electronically scanned using a scanner and recognition software backed up by keyboard-entered data from the bank (Federal Reserve System, 2004). As with bank checks, businesses can fill out retail invoices and price tags by hand.

However, with the advent of frequently changing market-based pricing, electronic inventory systems and the growth of " big box" retail stores carrying tens of thousands of items, businesses increasingly find the handwritten method impracticable. The best practice depends on the exact application of the retail tag. Companies often enter pricing data electronically using keyboard and pointing devices. Although less common

for pricing applications, retailers may enter pricing information using optical scanning devices, such as bar code scanners.

At retail checkout counters, retailers regularly use optical scanning devices to read bar code data rather than relying on manual keypad entry of pricing or product codes. The optical scanning devices are the best practice, when available, since they eliminate input errors inherent in human-entered keyboard or keypad data. Long documents that require input into an electronic system present a special halogen for businesses. In most cases, the best practice is the use of optical scanning devices, such as scanners rather than manually re-entering data.

Documents can be quickly and easily converted to electronic images using scanners. While not always possible, scanners equipped with optical character recognition (OCCUR) software can recognize printed characters and convert documents from images best approach. OCCUR technology depends greatly on the quality of the source document and the quality of the scanner and OCCUR software itself. In some cases, OCCUR software may only provide a way to speed the bulk of data input. A user with a keyboard and pointing device would either enter all of the data, or review the OCCUR translation to ensure accuracy.

Although accuracy may be harder to ensure, full text scans do allow advanced searching and cataloguing that simple image scans of documents prevent. Output Scenarios A handheld computer (PDA, calculator, tablet PC) typically has a built-in liquid crystal display screen. This is the best output

device for the handheld, though some also support connection to a standard screen used with a computer. The on-board display is the best output device for handheld devices because the on-board display is tuned ND designed for use with the handheld device and does not require the inconvenience of carrying an external display unit.

Color photographs used to require high-end printers designed specifically for photography. With the constant improvement of inkiest and laser printers, special photo processing printers are no longer required. Most low and mid-range printers sold today can, with the use of photographic paper, print photo-quality images. With the improved quality that matches photo processing printers, color inkiest and laser printers are the best output devices for color photographs. The standard printers offer far more convenience, since many consumers already own one and do not have to make a trip to a photo processing store.

Similarly, quality printing of resumes, memoranda, statistical reports and company annual reports used to require high-end printers. Larger companies may still use printing companies to print and bind annual reports due to the volume of reports distributed at annual shareholders' meetings. However, with the improved quality, speed and capabilities of color inkiest and laser printers, these output devices make the best output device for most types of printed material. Storage The computing industry uses two different definitions of primary and secondary storage.

Nickering (2001) uses the terms to differentiate between volatile and non-volatile storage on a computer. Primary storage contains data currently being processed and used by the computer and its running programs. The primary storage system is faster than " secondary storage" of hard drives, CD-Rooms or specialty storage units such as flash drives, tapes or Zip disks. Unlike secondary storage, primary storage is volatile and all primary storage information is lost when the computer is powered down.

Secondary storage devices, as defined by Nickering, are non-volatile and store information not currently being processed by the computer. The computing industry has a second definition of primary and secondary storage that refers only to Nickelodeon's " secondary storage. " In this definition, primary devices refer to the computer's main storage device, such as an DID or CICS hard drive. Secondary devices, under this definition, are any non-primary storage device, such as a tape drive, writable CD-Rooms or removable flash drives.

Each type of storage media has different applications. Hard drives are the best choice or large volume, primary data storage. Regardless of the hard drive technology, the hard drive sacrifices speed for storage capacity and density when compared to volatile storage devices such as RAM. RAM, on the other hand, is not typically used for file system data storage because of its non-permanent nature. Because of its high-speed connection to the computer's CPA], RAM makes the best choice for Nickelodeon's primary storage.

RAM typically can store and retrieve data at speeds that exceed 4 to 5 times that of the fastest hard drives. Writable CD-ROOM media, tape drives and flash drives make good choices for secondary storage devices (using either definition). These devices are often removable and, with the exception of magnetic tapes, offer higher reliability than hard drives that are dependent on moving parts. Computer users often depend on these devices to store backup or archive information, or to carry data that must be easily portable from site-to-site.

Defining Computer Speed Like data storage, the computer industry uses several different definitions of " speed" when discussing computer performance. The theoretical " speed" of a computer, in purely technical terms, is defined by the actual clock rate of the various components: CPU speed, bus/switch backplane bandwidth and speed, memory bus speeds, hard drives. Most users define " speed" by measuring application performance or usability under normal conditions. Viewed from a technical standpoint, the type of RAM (registered, unregistered, DIR, STREAM, etc. , the size of level 1 and level 2 cache on the CPU and the memory bus speed dictate the actual speed. The amount of RAM does not affect speed. However, from a usability standpoint, users will commonly report an increase in " speed" when they add additional RAM. In this case, users are more properly reporting usability or reference and not actual differences in speed. The clock speed of a CPA], memory bus, EPIC bus, switch fabric directly impacts the speed of a computer in both technical terms and in terms of user perceptions.

Differences between architectures and combinations of various components obviously have a significant impact that is beyond the scope of discussion in this paper. Barring performance bottlenecks caused by capacity issues, when all other in terms of usability. In reality, the clock speeds of various components do not operate in a vacuum and the clock speed alone does not indicate the overall speed of he computer. The storage of data on various types of media (hard drives, CD-ROOM, floppy, flash, etc.) does not affect the actual speed of a computer.

However, the various media will often create differences in a user's perception of a computer's " speed. " In today's computers, hard drives typically offer the fastest access to data when all other things are held equal. CD-Rooms, while faster than ever before, typically perform more slowly than hard drives or flash-based media. Media that offers faster access to stored data will result in a user perceiving a " faster" computer. The speed increase also depends on the type of hard drive, CD-ROOM or flash drive technology used in the computer.

For example, hard drives generally rely on one of five major technologies: DID, CICS, Serial ATA, fiber channel or SAC. Each offer advantages and disadvantages and differences in speed. Individual drives differ in speed as well, based on drive size, number of platters and variables. Conclusion Today's business and home consumer has a range of input and output devices and computer hardware available. Each device and type of hardware offers distinct advantages in accuracy, convenience, quality and performance.

Users must carefully select the proper technology for their needs and understand the underlying components that determine the speed and usability of their computing platforms.