


Input Peripherals Report - Computing

Bar Code Readers

Bar code readers are used almost everywhere in everyday life – the purpose of the input peripheral is to scan a barcode which contains information specific to the particular item being read. Once the item has been scanned, it may indicate that it has a certain value – if used at a supermarket checkout for example. The bar code reader works by emitting light at a precise frequency at the bar code, then a photodiode inside the bar code reader is used to measure the intensity of light reflected back from the bar code. Bar code readers appear in three forms, handheld for semi-automatic reading, fixed mount for automatic reading and reader gates which are typically used in industry to scan thousands of items per hour. The advantages of barcode readers are: Speed, in that a bar code label of twelve characters can be read in approximately the time it takes a keyboard operator to make two keystrokes. Also bar code readers are much more accurate than typing: for every 1,000 characters typed by a keyboard operator, there is an average of ten keying errors. With wands, barcode systems approach one error in every 3,000,000 characters, and with laser technology, they approach one error in 70 million entries. On the other hand, disadvantages are that: scratched or crumpled barcodes may cause problems being read, and if a wand type bar code reader is used, the wand must touch the bar code, if a bar code must be read more than once, it may become smeared or damaged and so, in essence, unreadable. A common business situation in which this input peripheral is used is at supermarket checkouts to scan items for payment.

A handheld barcode scanner is shown in the top right corner. It is a grey device with a red laser line projecting from the front. A barcode is visible on the surface being scanned.

Magnetic Ink Character Recognition

Magnetic ink character recognition is the common machine language for the paper based payment transfer system. Essentially, it is the language used for processing cheques. MICR works by using magnetic ink printed characters of a special design which can be recognized by high speed magnetic recognition equipment. This series of characters provides the receiving party with information needed for processing the check including: check number, bank routing number, checking account number and in some cases the amount of the check. Advantages of using MICR are: Documents are difficult to forge. Documents can still be read after being written on, folded, and after being stamped. However, the disadvantages of this input device are: the highly stylized font required to ensure character discrimination, limitation to numbers and only about four other characters, difficulty in scanning with hand held devices, and a very shallow depth of field. Obviously, the main business use for this is in cheques.

Swipe Card

Also known as Magnetic stripe cards, the swipe card is one of the most commonly used input peripherals. Swipe cards are used as credit cards, identity cards and transportation tickets. The purpose of the input device is to store information on the black magnetic stripe on the card. This can be financial – for credit cards, or simply a code – in the case of hotel room doors. The magnetic stripe on the back of the card can be "written" because the tiny bar magnets can be magnetized in either a north or South Pole direction. It is very similar to a piece of cassette tape fastened to the back of a card. Instead of motors moving the tape so it can be read, your hands provide the motion as you "swipe" a credit card through a reader or insert it in a reader at the gas station pump. The advantages of swipe cards are that they are easy to use, and finance is usually available interest free for the first month. Swipe cards avoid the need to carry around large amounts of cash (if they are credit cards) or provide identification etc. Disadvantages are that unscrupulous shop checkout staff could swipe the card through a machine which could capture your details, and then could be used to take money out of your bank account. The magnetic stripe on the card can also be affected by magnets, as bits can become rearranged and some data may be lost. The main business uses of swipe cards are: using them as credit cards (although now being phased out) or to access rooms in hotels.



Smart Cards

A smart card, chip card, or integrated circuit card (ICC), is defined as any pocket-sized card with embedded integrated circuits which can process information. This means that it can receive input which is processed - by way of the ICC applications - and delivered as an output.



The applications of smart cards include their use as credit or ATM cards, in a fuel card, SIMs for mobile phones, authorization cards for pay television, pre-pay utilities in household, public transport and public phone payment cards. Smart cards may also be used as electronic wallets. The smart card chip can be loaded with funds which can be spent in parking meters or on transport systems such as the London Underground. Smart cards work by using the embedded microchip to store and access information, unlike the magnetic stripe in swipe cards. Smart cards also have a series of additional advantages over magnetic stripe cards: They are able to store much more information and also active software that stores and processes data. Greater security: chips allow the use of cryptographic techniques that provide greater protection against fraud. Disadvantages of smart cards are that: specialist reading hardware is required to use the card (though this is available at most places in the UK now.) As with other cards, then can be easily lost due to their size however there are few to none disadvantages of smart cards as input methods. A specific business situation in which smart cards could be used is to pay for goods from a supermarket, etc.

Digitiser (Graphics Tablet)

A digitiser or graphics tablet is a computer input device that allows the user to hand-draw images and graphics, similar to the way we draw with a pen and paper. A graphics tablet consists of a flat surface upon which the user may "draw" an image using an attached stylus. The image generally does not appear on the tablet itself but, rather, is displayed on the computer monitor. Some tablets are intended as a general replacement for a mouse as the primary pointing and navigation device for desktop computers. Graphics tablets work by using a lattice of wires which are just underneath the tablet surface, which pick up signals from the stylus and co-ordinate its position and on some models, the pressure that the user is using on the tablet. The advantages of this input method are that drawings and sketches can automatically be converted to a digital translation without having to use a scanner, etc. It is much more accurate than touch sensitive screens, and is more natural to use. However, the disadvantages are that graphics tablets are generally quite expensive for the average user, with large sized tablets often costing hundreds of pounds.

