POLITEKNIK MALAYSIA

BORANG INVENTORI PROJEK PELAJAR

PERKARA	MAKLUMAT *INFORMATION*
Program *Program*	DIPLOMA ELECTRICAL TECHNOLOGY DET 5C
Jabatan *Department*	KEJURUTERAAN ELECTRIK
Semester/ Tahun *Semester/ Year*	5
Tajuk Projek *Project Title*	SMART TROLLEY CASHIER
Jenis Projek *Type of Project*	SOFTWARE DAN HARDWARE (PRODUCT)
Kategori Kluster Penyelidikan *Category/ research Cluster*	Tanda " / " pada yang berkenaan: *Please tick " / " where applicable:* <table><tr><td></td><td>Sains tulen (*Pure Science*)</td></tr><tr><td></td><td>Sains gunaan (*Applied Science*)</td></tr><tr><td>/</td><td>Teknologi dan kejuruteraan (*Technology and Engineering*)</td></tr><tr><td></td><td>Sains kesihatan dan klinikal (*Clinical and Health Sciences*)</td></tr><tr><td></td><td>Sains sosial (*Social Sciences*)</td></tr><tr><td></td><td>Sastera dan sastera ikhtisas (*Arts and Applied Arts*)</td></tr><tr><td></td><td>Warisan alam dan budaya (*Natural Sciences and National Heritage*)</td></tr><tr><td></td><td>Teknologi maklumat dan komunikasi (*Information and Communication Technology*)</td></tr></table>
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Abstrak *Abstract*	Shopping trolley is the necessary tools for shopping in supermarkets or grocery stores. However, there are customers who are in a hurry to pay the desired stuff in the supermarket. Therefore, smart trolley cashier should be developed to solve these problems. Smart trolley cashier been equipped with motion sensor

	and buzzer to avoid fraud among customers. Bar code scanner and swipe card has been installed at the top of the trolley for customers to scan and pay by using debit card. Programming was developed as a system that control the course of the project, adding or reduce the purchase. Conclusion, consumers can shop and save their time while shopping without having queue to make the payment at the counter. In addition, customers can know the price of the stuff and make a pay easily by using debit card. Meanwhile, the supermarket owner can save the cost to hiring cashier.
Keyword *Keyword* (max 5 word)	Smart Trolley Cashier
Objektif Projek *Project Objectives*	• To develop a barcode scanner and swipe card reader that can be used in the system of sale and purchase in order to reduce long queue. • To design barcode scanner and swipe card reader system for paid on trolley. • To develop how programming language in arduino uno.
Skop Projek *Project scope*	• The dimension of the trolley is smaller than the trolley in supermarket, which can buy the stuff less than 20 item. • This project just can purchase by using a debit card. • The height and wide of the stuff can not 30x20 cm
IP No	
Dapatan *Finding* (*500 words max*)	This project is a software and hardware product. So we create a coding to complete this project 1. Barcode scanner reader Barcode scanners record and translate barcodes from the image you recognize into alphanumeric digits. The scanner then sends that information along to a computer database, either through a wired connection or wirelessly (depending on the model). Those digits refer to a particular item, and scanning the numbers and bars pulls up an entry in the database with further information such as the price, how many of this item in stock, a description of the item and possibly a picture for reference. Barcode scanners traditionally read the barcodes most people are familiar with. These include the 1D, or linear barcode, which appears as an image of parallel lines and spaces (usually a quiet zone). A quiet zone is a space to prevent the reader from picking up other information that is not wanted or needed in the barcode scan. The blank space doesn't send any scanning signal and so it is

referred to as a quiet space (or quiet zone).

For many years, 1D barcodes were the standard, and they are still in widespread use today despite their smaller capacity for information (they can only contain about 20-25 characters, though stacking the characters helps to increase that number). 2D barcodes store information both horizontally and vertically, resulting in exponentially larger storage capacity; however, an image scanner is required to read 2D barcodes, while a simple barcode scanner can only handle linear codes.

There are different kinds of barcode scanners, some scanners use lasers, while others use lights or cameras, to capture the barcode image and turn it into an electronic code. There are pen readers, which have no moving parts, just a light source and a photodiode to measure the lines and spaces on the 1D barcode. Laser scanners use lasers as the light source, and have fewer errors scanning from a greater distance than pen readers (thanks to mirrors and lenses). CCD readers measure ambient light rather than self-reflected light, and take several readings per scan to reduce errors. Camera-based readers take a photo of the barcode in order to read and decode it, and they are a decent, cheaper option. The most advanced scanner of all is the omni-directional scanner, which is a laser scanner with more mirrors and lenses to reduce errors. An omni-directional scanner can read ripped, crumpled or otherwise damaged barcodes at a faster rate than other, lesser laser scanners.

2. Swipe card reader

A card reader is a data input device that reads data from a card-shaped storage medium. The first were punched card readers, which read the paper or cardboard punched cardsthat were used during the first several decades of the computer industry to store information and programs for computer systems. Modern card readers are electronic devices that can read plastic cards embedded with either a barcode, magnetic strip, computer chip or another storage medium.

A memory card reader is a device used for communication with a smart card or a memory card. A magnetic card reader is a device used to read magnetic stripe cards, such as credit cards.[1] A business card reader is a device used to scan and electronically save printed business cards.

Magnetic stripe technology, usually called mag-stripe, is so named because of the stripe of magnetic oxide tape that is laminated on a card. There are three tracks of data on the magnetic stripe. Typically the data on each of the tracks follows a specific encoding standard, but it is possible to encode any format on any track. A mag-stripe card is cheap compared to other card technologies and is easy to program. The magnetic stripe holds more data than a barcode can in the same space. While a mag-stripe is more difficult to generate than a bar code, the technology for reading and encoding data on a mag-stripe is widespread and easy to acquire. Magnetic stripe technology is also susceptible to misreads, card wear, and data corruption. These cards are also susceptible to some forms of skimming where external devices are placed over the reader to

intercept the data read.

3. Infrared sensor module

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measures only infrared radiation, rather than emitting it that is called as a passive IR sensor. Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These types of radiations are invisible to our eyes, that can be detected by an infrared sensor. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR LED. When IR light falls on the photodiode, The resistances and these output voltages, change in proportion to the magnitude of the IR light received.

An infrared sensor circuit is one of the basic and popular sensor module in an electronic device. This sensor is analogous to human's visionary senses, which can be used to detect obstacles and it is one of the common applications in real time. This circuit comprises of the following components

- LM358 IC 2 IR transmitter and receiver pair
- Resistors of the range of kilo ohms.
- Variable resistors.
- LED (Light Emitting Diode).

	we suggest using RFID for replace the barcode scanner and sensor infrared.

What is Automatic Identification?

Automatic identification, or auto ID for short, is the broad term given to a host of technologies that are used to help machines identify objects. Auto identification is often coupled with automatic data capture. That is, companies want to identify items, capture information about them and somehow get the data into a computer without having employees type it in. The aim of most auto-ID systems is to increase efficiency, reduce data entry errors, and free up staff to perform more value-added functions, such as providing customer service. There are a host of technologies that fall under the auto-ID umbrella. These include bar codes, smart cards, voice recognition, some biometric technologies (retinal scans, for instance), optical character recognition, and radio frequency identification (RFID).

What is RFID?

Radio frequency identification, or RFID, is a generic term for technologies that use radio waves to automatically identify people or objects. There are several methods of identification, but the most common is to store a serial number that identifies a person or object, and perhaps other information, on a microchip that is attached to an antenna (the chip and the antenna together are called an RFID transponder or an RFID tag). The antenna enables the chip to transmit the identification information to a reader. The reader converts the radio waves reflected back from the RFID tag into digital information that can then be passed on to computers that can make use of it. Back to Top

How does an RFID system work?

An RFID system consists of a tag, which is made up of a microchip with an antenna, and an interrogator or reader with an antenna. The reader sends out electromagnetic waves. The tag antenna is tuned to receive these waves. A passive RFID tag draws power from field created by the reader and uses it to power the microchip's circuits. The chip then modulates the waves that the tag sends back to the reader and the reader converts the new waves into digital data.

Are there any health risks associated with RFID and radio waves?

RFID uses the low-end of the electromagnetic spectrum. The waves coming from readers are no more dangerous than the waves coming to your car radio. Back to Top |

	Why is RFID better than using bar codes?

RFID is not necessarily "better" than bar codes. The two are different technologies and have different applications, which sometimes overlap. The big difference between the two is bar codes are line-of-sight technology. That is, a scanner has to "see" the bar code to read it, which means people usually have to orient the bar code towards a scanner for it to be read. Radio frequency identification, by contrast, doesn't require line of sight. RFID tags can be read as long as they are within range of a reader. Bar codes have other shortcomings as well. If a label is ripped, soiled or falls off, there is no way to scan the item. And standard bar codes identify only the manufacturer and product, not the unique item. The bar code on one milk carton is the same as every other, making it impossible to identify which one might pass its expiration date first. |
| Gambar berkaitan projek

Picture related to project (700kb) |

Figure 1

Figure 2 |
| Rating/Level | Jabatan/ Politeknik/ Kebangsaan/ Antarabangsa
Departments / Institutes / National / International |
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