SV Name	Student Name	NEW TITLE FROM SV AFTER MODERATION	NEW CONTENT SYNOPSIS FROM SV AFTER MODERATION	ETAC	Moderation review
WAN HASZERILA BINTI WAN HASSAN	IDHAM FADLI BIN MAT ISA	Development of Smart Trash Bin system for Smart City using GSM Module	In Malaysia, dustbin wasted is collected at regular intervals by cleaning employees and the segregation of waste cannot be do in proper way. By using manual method, they are several weakness, such as the dustbin fills up really fast and spill out from the garbage bin especially in a crowded area. This will lead to an environment pollution. The dustbin will fill up very quickly when special period such as festival ,weekend and holidays .This happen because there is no flexible waste collection schedule in our current system. Therefore, the propose work will be based on Arduino Nano board and an ultrasonic sensor to monitor the fullness level of the dustbin and will give SMS alerts using a GSM module. The system is powered by lithium battery power bank supported by a solar cell panel. The system will provides an option of charging external portable devices using the power bank. The system will store usage events, recorded by PIR sensor, and fullness events on a memory card, which is also used to play audio message using a speaker, when the bin is being used.	Practice-oriented	Title and project synopsis are acceptable
WAN HASZERILA BINTI WAN HASSAN	NUR SYAIDATINA FARAHIN BINTI ANUAR	Development of River Cleaning Robot Using IoT Technology	The issue of water logging due to plastic, thermocole and metal is prompting bother development and it favors ailments like intestinal sickness, typhoid and so on. Cleaning the wastes by utilizing manual procedures would be insufficient as it regularly covers immense territory of works and endeavors with plausibility to getting influenced by different sicknesses from the irresistible microorganisms present in the sewage while cleaning manually. The proposed work is based on garbage gathering system viable and effective for tidying up waste from rivers, channels and lakes. The trash gathering system is explicitly coordinated to application for getting up a wide assortment of debris, including gliding litter, trash, logs, disposed tires and others. The integrated system incorporates the usage of IoT technology that has the ability to monitor and control the entire process. From the interest and need of cleaning contaminations in the conduits territory, the vessel has been created to suit the prerequisite of working at places other than seaward zone, giving more decisions for the utilization of cleaning garbage and waste from the water environment.	Practice-oriented	Title and project synopsis are acceptable
WAN HASZERILA BINTI WAN HASSAN	ALIAH AFIFAH BINTI HAIRUDIN	Development of Automated Passenger Counting and Monitoring for Intelligent Bus Transportation System using IoT	An Automated Passenger Counting System is a hardware and mobile-based application system. This work will involves the design and implementation of automated passenger counting which provides a solution to remove syndicate and corruption in the transportation sector. It will counts how many passengers are sitting on the seat and shows on the display screen in real time monitor and the authority can see the total number of passengers. No paper receipt is needed to ride on the bus. It enables transport authority to obtain accurate bus fare from bus drivers and helpers remotely instead manually counting where corruption happens. This system will consists of Arduino Uno, Bluetooth HC-05 module, pressure pad, potentiometer, data collection software module (Arduino IDE, Bluetooth terminal HC-05).	Practice-oriented	Title and project synopsis are acceptable
DR. MUHAMMAD INAM ABBASI	NURATIKAH BINTI MOHD RADZALI	Design and Analysis of Metallic Waveguides for X-band Radar Reflector Antennas	X-band frequency range is usually used for the Military and Civil radar applications. Usually these radars use the reflector antennas which have evolved from the huge parabolic reflectors to the recently proposed planar reflectors. The waveguides provide a crucial role in the performance characterization and optimization of such reflector antennas. A slight design or fabrication error can cause an adverse affect on the performance of the antenna as well as the radar. This work proposes the design, optimization and analysis of metallic waveguides for these X-band radar reflector antennas.	Practice-oriented	Title and project synopsis are acceptable
DR. MUHAMMAD INAM ABBASI	NURUL AMALINA BINTI RUMLI	Design of a broadband reflectarray antenna for X-band radar applications	Reflectarray antenna is a recently evolved antenna that combines the advantages of the high gain parabolic reflectors and electronically beam scanning phased array antennas. The reflectarray has the potential to be a low cost and simple solution in many high gain antenna applications including military and civil radars. However one of the limitations of the reflectarray antenna is its narrow bandwidth that limits its use in many applications. This work provides the design characterization and analysis of reflectarray antennas for bandwidth enhancement and its use in the X-band radar applications.	Practice-oriented	Title and project synopsis are acceptable
DR. MUHAMMAD INAM ABBASI	CHE WAN UMI AISHA BINTI CHE WAN AHMAD RUZI	Design of a circularly polarized microstrip antenna for UWB applications	UWB antennas can be used in many application while circular polarization given them an added advantage that is required in specific applications. Many researchers have proposed different techniques to achieve the circular polarization. However, in most of the proposed techniques the circular polarization is achieved at a cost of degradation of other antenna performance parameters. This work proposes a detailed investigation of an optimized technique to achieve circular polarization without affecting the antenna performance.	Practice-oriented	Title and project synopsis are acceptable
DR. MUHAMMAD INAM ABBASI	AINA FARISAH BINTI RAHMAT	Development of a low cost water based transparent antenna for Sub 6 GHz 5G Communication Systems	5G communication systems provides many potentials and challenges for the antenna designers. One of the challenges is to develop the transparent antennas in order to provide the freedom of antenna integration with other components. Many researchers have proposed different techniques for the design of transparent antennas. However, most of the proposed techniques use high cost materials that makes the antenna and overall system, expensive. Therefore, in this work the development of a low cost water based transparent antenna for Sub 6 GHz 5G Communication Systems has been proposed.	Practice-oriented	Title and project synopsis are acceptable
MD ASHADI BIN MD JOHARI	ABDUL HAFIZ BIN AHMAD ZAINI	DEVELOPMENT OF OPTICAL MICROFIBER SENSOR FOR HUMIDITY DETECTION	Humidity refers to how much water vapor is in the air. This project aims to design and develop the humidity sensor based from optical microfiber technology for medical industry. The optical microfibers possess outstanding optical and mechanical properties such as higher resilience to water and corrosion, the resistance to electromagnetic interference and nuclear radiation, and the ability to perform well in a low-temperature environment along with its high sensitivity. The main purpose of this project is particularly directed at the medical industry. The medical industry standard requires a higher precision of measurement, along with the lower interference in radio frequency (radiation) in order to precisely obtain the information of the patients without any environment interference.	Practice-oriented	Title and project synopsis are acceptable
MD ASHADI BIN MD JOHARI	MUHAMMAD AFIQ IQBAL BIN FADZLI	DEVELOPMENT OF OPTICAL MICROFIBER LOOP SENSOR FOR HUMIDITY APPLICATION	This project is to develop the performance of fiber optic sensor for medical industry to detect air moisture. Besides, the purpose of this project is also to analyze the effect of bending of a circular fiber with a loss of dB, because bending the cable will cause the light beam to escape from the fiber optic cable, which will cause higher losses. The humidity sensor on the medical ventilator is useful for pumping warm and humid air to keep the patient comfortable. Plus, this humidity sensor can reduce costs and improve results without compromising quality of drugs in pharmaceuticals section.	Practice-oriented	Title and project synopsis are acceptable
MD ASHADI BIN MD JOHARI	MOHAMMAD ASYRAF ZAKWAN BIN LAJIM	DEVELOPMENT OF OPTICAL MICROFIBER SENSOR FOR SODUIM ALGINATE DETECTION	This project is to develop and analyze the performance of the microfiber optic sensor to detectsodium alginate concentrations. This technology is beneficial and can be used in a wide array of fields because of its property that is immune to RF and microwave radiation paired with its high sensitivity. The purpose of this project is specifically aimed at the medical industry that requires targeted sensitive reading of a sodium alginate level of concerntrations.	Practice-oriented	Title and project synopsis are acceptable
MD ASHADI BIN MD JOHARI	MUHAMMAD DANISH BIN KHAIRUL HISHAM	DEVELOPMENT OF OPTICAL MICROFIBER SENSOR FOR SODIUM HYPOCHLORITE LIQUID CONCENTRATION	This project is to observe the execution of the fiber optic sensor in different concentration of sodium hypochlorite. Besides, this project requires SMF28 optical cable under test, a laser source with wavelength of 1550nm, Optical Spectrum Analyzer (OSA) and five different sodium hypochlorite concentration at 10%, 20%, 30%, 40% and 50%. The experiment will be done for three times for each solution and the results that will be obtained is the reading of loss (dB) at the peak of the spectrum from the OSA device. At the end of the project, one optical concentration with high sensitivity is formed.	Practice-oriented	Title and project synopsis are acceptable

TS. ELIYANA BINTI RUSLAN	MUHAMMAD HELMI BIN AZMAN	Development of Durian Tree Irrigation System using Arduino Platform	The project is about the irrigation system that can be applied at the Durian orchid specifically. The trees need to be watered twice a day to ensure their growth. This project has a sensor to detect soil moisture before watering the plant. Soil moisture detector is needed because the Durian tree is very sensitive to water. In this irrigation system, Arduino Uno be a microcontroller to control the water pump, humidity sensor and relay. The sensor will check the soil moisture before allowing water pump to watering the tree. All of this component get the power supply from solar panel.	Practice-oriented	Title and project synopsis are acceptable
TS. ELIYANA BINTI RUSLAN	ZUL' AZIQ ADIEMI BIN PUTRA	DEVELOPMENT OF FACE MASK DETECTOR WITH TEMPERATURE SCANNER USING ARDUINO	Wearing a face mask is the primary preventive measure implemented by the government and the World Health Organization (WHO). Therefore, these face mask scanners need to be placed at the main entrance for monitoring purposes. For example, when customers want to enter the mall, they need to scan the temperature and face mask before being allowed to enter. The face mask scanner using ESP32-CAM Face Recognition will scan the human face and open the bar/gate to allow the customer to enter if all instructions are followed. According to the policy, customers who do not wear face masks will not be permitted to enter, and the bar/gate will remain closed until they do so. This scanner also reminds the customer wears the mask on the LCD screen.	Practice-oriented	Title and project synopsis are acceptable
DR. NOR AZLAN BIN MOHD ARIS	MOHAMAD ALIF RIFDI BIN MOHD ROFI	Development of Rainfall Monitoring System Using Acoustic Sensor and Arduino	To measure rainfall intensities, three main options are available: rain gauges, radars, and satellite data. With radar and satellite data the rainfall over a large area can be determined. However, as the grid size of these methods are from hundreds of meters up to several kilometers the results of these measurements are in many cases not accurate enough. For a more accurate analysis these results should be validated with ground measurements collected by rain gauges. This study is about the design, development, and field testing of acoustic sensors for rain measurements. An Android based acoustic sensor is to be designed and tested. The system can upload data files to a web server, and can trigger an SMS alarm when rainfall data exceeds safety thresholds. This is an alternative, and low-cost system for rainfall measurement. Rainfall data from the sensors are graphed, analysed, and compared vis-à-vis to data from tipping bucket rain gauges. Objective 1)To develop an acoustic-based rain gauge system using acoustic sensor for rain intensity measurement. 2)To display the rain intensity profile on the phone app from the sensor output. 3)To notify the user through SMS about the severity of the rain. Methodology a.Hardware -Arduino mega board -Solar power supply -Tin housing - Acoustic sensor b.Software -Arduino -Blink apps -C# Expected result A rain gauge system that can measure the intensity of the rain using acoustic sensor and notify the user about the severity of the rain is expected to be developed.	Practice-oriented	Title and project synopsis are acceptable
DR. NOR AZLAN BIN MOHD ARIS	AFIQ BIN SHAHRULNIZAM	Development of Weather Information System using NOAA Satellite Data Retriever system with RTL-SDR	National Oceanic and Atmospheric Administration (NOAA) satellites are satellites with LEO (Low Earth Orbit) orbits which are remote sensing satellites that are used for monitoring and research for ocean and weather conditions. NOAA satellite information is sent to earth stations with direct readout service that consisting of images from satellite sensor capture. In general, to receive weather satellite data, users must have complete device facilities such as those in the Pustekdata LAPAN. Alternatively, it can be received in a simpler infrastructure using one of the NOAA satellite services on APT services. Weather data in the form of images can be retrieved with low operational costs. In order to receive NOAA APT satellite data, the reception subsystem is needed in the form of an antenna that matches the working frequency of the VHF band at a frequency of 137 Mhz. Objective: To develop an acquisition system of NOAA satellite data using RTL-SDR. To process the satellite raw data into weather image data. To display the weather image data on computer. Method: The development of this acquisition system require a few components such as L or V antenna, RTL-SDR, and coaxial cable, to name a few. Expected Result: A system that can directly retrieve and display the data from the NOAA satellite is expected to be developed, where the data can be recorded and kept for further analysis.	Practice-oriented	Title and project synopsis are acceptable
DR. NOR AZLAN BIN MOHD ARIS	NIK ADLI BIN NIK A'SRY	DEVELOPMENT OF HOME APPLIANCES CONTROL SYSTEM USING ARDUINO FOR SMART HOME	Synopsis Today, the increase in demand of service over the internet necessitated the data collection and exchange in efficient manner. In this sense internet of things (IOT) has promised the ability to provide the efficient appliances automation by connecting the physical devices via electronic sensor and internet. The IOT has created the revolution all over the world and fascinatingly it has become integral part of life. Hence, this paper utilizes Arduino fundamentals and some sensor to ease the way we control our homes appliances. The main aim of this project is to develop a system that can control home appliances using microcontroller. This system allows user to control light and fan through website/phone app. The light and fan can be turned On/Off, whereby the fan speed can be controlled. The electricity consumption(Watt) of the fans and lights will be stated in the website and continue to inform the payment to be made from time to time Objective 1)To develop a system that can control home appliances using microcontroller. 2)To display the status of the home appliances on website. 3)To alert the user of the system about electricity consumption information (watts) and current payments. Methodology The hardware components that will be used in this project include Arduino Uno, DC motor, and LED, to name a few. Arduino, PHP myAdmin, Visual Studio Code, and C# will be used as for software development. Expected result Smart home automation is expected to control the power of fan and lamp. It can also calculate and display the electricity usage through website.	Practice-oriented	Title and project synopsis are acceptable
TS. ELIYANA BINTI RUSLAN	NURUL NAZIRA BINTI SENIK	Development of Smart Energy Meter Monitoring System using Arduino.	Smart Energy Meter Monitoring System using Arduino specifically designed for home or office, especially for other state besides Melaka n Klang Valley. So far, TNB smart meter only installed in Melaka n Klang Valley. Other state will be installed phase by phase. Therefore, this project will be apply to premises that used old meter and they able to manage their electricity usage. The main purpose of this project is to monitor the energy meter reading and manage the use of electricity. This system uses energy meter with Arduino as microcontroller system to monitor energy usage using a meter. Simple web application named IoT Gecko shows the Live Output of these reading over the internet.	Practice-oriented	Title and project synopsis are acceptable
TS. DR. IDA SYAFIZA BINTI MD ISA	AINNA KALSOM BINTI SULAIMAN	Development of IoT-based power outage monitoring system with renewable energy integration using Arduino for smart agriculture	A power failure can cost a lot of damage to the production. Furthermore, unexpected power outages can also cost a thousands of dollars in lost revenue. As reported by the Information Technology Intelligence Consulting Research, a single hour of downtime will cost over $100,000 for 98% of businesses. In the meantime, for agriculture system, a loss in electricity can be a huge issue. This is because most of the current agriculture system are using automatic watering system. Therefore, unexpected power outage can give impact on the growth of the crops. In this work, an IoT-based power outage device will be developed to monitor the early detection of the power outages. When the system detects an outage, it will send an alert to the person-in-charge via text or personal call. In the meantime, the monitoring system will be integrated with the renewable energy source as a backup power to the system while action is being taken by the PIC. Also, the status of the power will be updated in the cloud for monitoring purposes. The performance of the system will be evaluated in terms of its reliability.	Practice-oriented	Title and project synopsis are acceptable
TS. DR. IDA SYAFIZA BINTI MD ISA	SITI NADIAH BINTI HAMZAH	Development of IoT-based Real-time Asset Tracking System using Raspberry Pi	Every business has valuable assets. Therefore, protecting the safety and the availability of those assets are crucial to business's success. Internet of Things (IoT)-enabled asset tracking is one the method of tracking valuable property by leveraging IoT technology that uses GPS or Bluetooth or RFID to pinpoint the asset's location. Through sensors and connected devices, IoT asset tracking enables an automated, remotely controlled and connected means for monitoring and managing geo-position and movement aspects of an asset security. In this work, a GPS will be used to track the location of the assets. However, this only apply when the assets are located outside the building. Therefore, by taking the consideration that the location of the asset is in a building and are not allowed to be taken outside from the organization (i.e. the workplace), a Bluetooth technology will be installed on the assets. With the combination of the GPS and Bluetooth system, the assets can be located both indoor and outdoor. Also, the location of the assets will be updated periodically in the cloud server for monitoring purposes. The performance of the system will be evaluated in terms of its reliability through several considered scenarios.	Practice-oriented	Title and project synopsis are acceptable

SURAYA BINTI ZAINUDDIN	MUHAMMAD NORAMINSHAH BIN ABU BAKAR	DEVELOPMENT OF INTERACTIVE APPLICATION FOR STEM EDUCATION USING AUGMENTED REALITY	Student motivation can be a huge problem for even the best of teachers, moreover when it involves engineering subjects. Augmented reality (AR) is an enhanced version of the real physical world through digital visual elements, sound, or other sensory stimuli delivered via technology. AR makes learning more engaging and fun. It can be used across all levels of schooling, from pre-school education up to college or even at work. Thus, in this study, AR application will be realized to model electronic component elements, focusing on components in power supply to emulate the electrical and electronic engineering learning process. This project includes the design of AR and identifying the functionality of electronic components for the AR application. The expected outcome is to have an AR application that contributes to developing educational material, which increases students' motivation.	Practice-oriented	Title and project synopsis are acceptable
SURAYA BINTI ZAINUDDIN	MOHAMAD AL IKRAM BIN ALHAM	DEVELOPMENT OF SOLAR-POWERED SYSTEM FOR HYDROPONIC PLANTING USING A MICROCONTROLLER	Recently, due to covid-19 and uncertain climate change, the shortage of food has become the top topic to be discussed. Nevertheless, there are many ways to avoid it from happening. Many techniques are available for planting and gardening, including the Nutrient Film Techniques (NFT), which is a hydroponic method that grows the plant using a nutrient solution. The system required a pump to circulate the solution. Typically, the system is powered by electricity from a socket outlet located far and may contain electrical consumption. This system can cause safety issues such as the cable being exposed to water and animals, also the tripping issue. Thus, this project aims to develop a solar-powered hydroponic system from solar photovoltaic (PV) technology. The solar PV system will be designed for the homeowner to perform a modern technology and techniques called NFT. The solar system will generate power from sun irradiation then will charge the solar charger controller and battery to supply to the water pump.	Practice-oriented	Title and project synopsis are acceptable
TS. DR. IDA SYAFIZA BINTI MD ISA	SITI HAJAR BINTI ARBAAIN	Low-latency fog-based network architecture design and analysis for smart city	Fog computing (FC) has been introduced to overcome the latency issues arise with cloud computing. This is because, the fog is located near to the users, hence reduced the delay in processing the traffic from the users. In this work, fog computing is used to reduce the latency for the heterogeneous communication approaches in the smart cities' applications of the Internet of Things (IoT). This is done by optimizing the number and location of the fog servers in the network so that the latency can be reduced. 12 locations of the famous tourist hotspot in Melaka will be chosen as the candidate location to place the fog servers. A mixed integer linear programming model (MILP) will be developed using AMPL software with CPLEX solver to optimize the number and location of the fog servers to serve the users so that the latency is reduced.	Practice-oriented	Title and project synopsis are acceptable
SURAYA BINTI ZAINUDDIN	MUHAMMAD FARRIEZ ESKANDAR BIN AB AZIZ	DEVELOPMENT OF VEHICLE MANAGEMENT SYSTEM FOR PARTS MONITORING BASED ON IOT TECHNOLOGY	It is a common issue for a vehicle's owner to keep track of the status of the part, such as the battery, engine oil and tyre change or overdue. Thus, a vehicles management system is crucial to ensure drivers are alert with their vehicles part status. Due to the issue, this project aims to develop a digital platform based on IoT to monitor, diagnose, and manage automobiles. This system will help drivers be alert about their vehicle's parts. It will notify the vehicle owner through an application about the vehicle problem or provide a reminder. Furthermore, it also assists in managing driver's expenses for vehicle services and helping to secure driver's safety and health by avoiding any breakdown.	Practice-oriented	Title and project synopsis are acceptable
SURAYA BINTI ZAINUDDIN	MUHAMMAD HAFIZUDDIN BIN ROHAIZI	DEVELOPMENT OF GROUND TARGET DETECTION SOFTWARE SYSTEM FOR AREA MONITORING USING AN FMCW RADAR	An area monitoring or surveillance system is crucial to ensure the area's privacy is not intruded. Various methods can be explored for monitoring, including the utilisation of radar. Radar is favoured due to its robustness against the weather. Thus, this project aims to design and develop a detection system to detect a ground target and its distance from the monitoring system by utilising a frequency modulated continuous waveform (FMCW). It will also analyse the developed system in terms of its functionality. The expected outcome is that the system can locate the target and its range from the observing point.	Practice-oriented	Title and project synopsis are acceptable
TS. ABDUL HALIM BIN DAHALAN	VISNUR A/L RADHAKRISHNAN	DEVELOPMENT OF SMART HOME COOKING GAS SAFETY SYSTEM AND COMBUSTION TEMPERATURE USING ARDUINO	This project is entitled "Design Smart Home Cooking Gas Safety System and Combustion Temperature". The project is used to inform consumers about cooking gas emissions or fires in homes in the absence of people. The project also has the feature to monitor their home wherever they are using the android app. It aims to reduce the risk of a more severe fire if a fire occurs and minimize it. With this system, it can help users in various aspects, especially notifying users by making calls and sending messages to users. In this case the user can take initial steps to deal with a rapidly spreading fire or extensive gas leakage. Reform is done by doing research on problems or deficiencies in any part of the system that is done. Problems and weaknesses are studied in detail to be used as a source in order to obtain the desired product quality. The hardware implementation in this project is "ESP8266 Wifi Module", "Gsm Sim900A", smoke and temperature sensor and also "Arduino Uno". The results of this project are very useful to be implemented in homes and industries to assist in the risk of death and injury, as well as to avoid losses that have to be borne by the victims. Finally, this system can also be improved by using smoke sensors, light sensors, IR sensors to make it more efficient.	Practice-oriented	Title and project synopsis are acceptable
FAUZI BIN HJ ABDUL WAHAB	MUHAMMAD AFWAN BIN MUHAMAD ZAMRI	DEVELOPMENT OF SMART WATER QUALITY & FLOOD MONITORING SYSTEM USING ARDUINO AND CLOUD SERVER	Malaysia is a tropical country with an almost unlimited supply of freshwater. The water flows in the rivers from rain and is stored at the dam. A good ecosystem requires water to be of good quality, which is sometimes disregarded by all. Water, one of the essential natural resources, can be easily polluted and, at the same time, can be a significant threat to humankind. When it rains heavily, a flood may hit the surrounding areas of dam or river. Many properties will be destroyed, or people's lives may be threatened. This project will focus on developing a water quality monitoring system in the dam or river, with the ability to monitor the water level. With the convenience of IoT Technology, an intelligent system can deliver valuable warning alerting information for both quality and flood hazards to respective personnel or the public.	Practice-oriented	Title and project synopsis are acceptable
FAUZI BIN HJ ABDUL WAHAB	HARITH HAKIMI BIN HARRY	Development Data Transmission System using Visible Light Communication (VLC) System (LI-FI)	VLC or LIFI stands for Visible Light Communication. VLC, also known as LIFI, is a data communication technology that employs a visible light source as a signal transmitter, air as a transmission medium, and a signal receiving device. The transmitters are commonly Light Emitting Diodes (LEDs), while the receiver's main element is a photodetector, which is usually a photodiode. We can complement radio waves with VLC or LIFI to achieve higher data rates and a broader bandwidth in short-range applications. Radio waves can support only limited bandwidth because of restricted spectrum availability and interference. Radio spectrum is full to bursting, and it isn't easy to find radio capacity to support media applications. It is making a system that can transmit the message from transmitter to receiver using (LI-FI) concept. Arduino uses the keypad to write the text before sending the message and make the receiver receive the message from the transmitter and display the message on LCD. The result of this project is when the transmitter sends a message text, and the receiver can read the message from the transmitter without data loss. Also, the receiver can LCD the message received from the transmitter.	Practice-oriented	Title and project synopsis are acceptable
FAUZI BIN HJ ABDUL WAHAB	WAN MUHAMMAD SHAHRIL BIN WAN MOHD FADZLI	DEVELOPMENT SMART STREET LIGHTING SYSTEM USING ZIGBEE AND ARDUINO	This project is to reduce power consumption by glowing the street light only when needed and controlling the intensity of the light based on surrounding conditions. The prototype will use an IR sensor, LDR sensors, LED's and Arduino as the microcontroller, and ZigBee as a wireless communication device. LDR sensor is used to detect the light intensity surrounding it, and if the light is below a certain level, the light will be dimmed. IR sensors are used to detect object movement and the microcontroller will compute the speed and send the signal to ZigBee to wirelessly alert other LEDs. Light intensity is also based on the speed of the object. The system will be constructed and tested for performance analysis.	Practice-oriented	Title and project synopsis are acceptable

TS. FAKHRULLAH BIN IDRIS	MUHAMAD ZULFAQAR BIN YA'AKUP	Development of IoT Based Wudhu Water Management System using Raspberry Pi for Green Mosque.	Mosque have very high clean prosessed drinking water consumptions due to Muslims needs ablutions. Usually they will use ten to twelve litres of water five times daily during ablution. Wudhu Water Management System would reduce water consumption during ablution process by reusing post ablution water in ablution tub after finish the ablution process. This system will control the flow and the volume of water during the ablution process. The objective of this project is to design and develop a prototype system in ablution system and to design a system that can reduce water consumption during ablution process by reusing post ablution water after finish the ablution process. Raspberry Pi will be used as controller to control the water flow. The water pump will control the flow of the water at ablution tub and sensors will check the water volume in storage and ablution tub to ensure enough water for ablution process. All data is shared to cloud for monitoring purposes. The system should only operate at certain preconfigured time according to prayer time and when users detected only. The result and analysis of data about volume and flowrate of water during ablution process will be presented in GUI	Practice-oriented	Title and project synopsis are acceptable
TS. FAKHRULLAH BIN IDRIS	NADHIRAH BINTI MAZALAN	Development of IoT Based Rainwater Harvesting System using Raspberry Pi for Melaka Green Homes	In the past decade, Melaka facing several cases of drought and forced to rations clean water to its populations as its dams running out of water. One of the possible solutions is to installs Rainwater Harvesting System in every houses it the state. If implemented, the number of vector diseases may increase. IoT Based Rain Water Harvesting will helps to hold rainwater catchment, records the usage and remove vector from the stored water. Raspberry Pi will control the sensors and motor. Sensor will detect the amount of rainwater stored, motor can be used to remove vector and pump can be used to pump water for consumption. All data captured will be shared to cloud for the PBT monitoring with potential to expend beyond one house only.	Practice-oriented	Title and project synopsis are acceptable
IR. DR. MOHD MUZAFAR BIN ISMAIL	MUHAMMAD AZIM BIN RAZALI	Development of Intelligent Home Automation System using Arduino and Bluetooth technology	The main goal of this project is to create a home automation system that can be managed remotely by any Android OS smartphone utilising an Arduino board and Bluetooth. Houses are becoming smarter as technology progresses. Modern homes are gradually moving away from traditional switches and toward a centralised control system with remote switches. Currently, traditional wall switches are dispersed throughout the house, making it difficult for the user to get close enough to activate them. It becomes even more difficult for the elderly or physically challenged to do so. Remote controlled home automation system provides a most modern solution with smart phones. In order to achieve this, a Bluetooth module is interfaced to the Arduino board at the receiver end.	Practice-oriented	Title and project synopsis are acceptable
IR. DR. MOHD MUZAFAR BIN ISMAIL	NASHRAN HAKIMI BIN ZAHILAL	Develpment of smart solar tracking system using Arduino	As we know, the sun often changes position. Typically, the existing solar panel is static, it cannot produce energy more efficiently because of the changing sun's timing position. Therefore, the use of automatic solar tracker is ideal for maximizing power generation. The term "automated system" refers to a system that necessary to provide a steady output capable of rotating the solar panels on a regular basis panel. To overcome the challenge, a prototype of a sun tracking system was created. It is going to be automatically maintains the panel towards the sun until it is visible. This project will generate a solar tracking system using Arduino. It will maximise the production of electricity from sunlight compared to static solar panels.	Practice-oriented	Title and project synopsis are acceptable
IR. DR. MOHD MUZAFAR BIN ISMAIL	EZZAT MUHAMMAD SYAHMY BIN ASRI	Development of smart Early Home Flood Prevention System using Arduino	This system is used to prevent or reduce the damage to inside the homes. System that uses features multiple stages of flood prevention ranging from monitoring overflowing water with IOT and water gate system for residential houses. The system sequence is monitoring the water around the house using sensor, when the water reach danger level, a multiple water gate will be initiate around the house for handling the increasing overflow of water.	Practice-oriented	Title and project synopsis are acceptable
IR. DR. MOHD MUZAFAR BIN ISMAIL	NOR AZALIE BIN JONE	Development of alternative payment tools using RFID sensor	Almost all petrol pumps in existing systems contain a controlling device that performs activities such as managing the electrical pump, driving the display, measuring the flow, and turning off the electrical pump accordingly. However, a person must still collect the funds, and there is a risk of many human blunders. We are employing RFID cards to access petrol at different petrol stations owned by different petrol firms around the country in this planned petrol pump automation system. We simply insert the RFID card near the RFID reader whenever we wish to fill the tank from the fuel dispenser. The microcontroller then examines the data from the RFID reader and takes the appropriate action based on the customer's needs. This computerised petrol pump system also provides customers with security when filling up at gas stations by avoiding the participation of humans, hence reducing the risk of carrying cash at all times.	Practice-oriented	Title and project synopsis are acceptable
TS. DR. ADAM WONG YOON KHANG	CLARICE MARIA LEE	IMPLEMENTING ESP-MESH NETWORK FOR SMART HYDROPHONIC MONITORING SYSTEM USING ESP32 AND ESP8266 MICROCONTROLLER	Fertigation system is a method that uses fertilizer and the irrigation water through the drip system. Farmers face difficulties in ensuring their crops are properly fertilized according to its needs to grow into healthier plants. For that, implementing esp-mesh network for smart fertigation system monitoring using esp32 and esp8266 microcontroller is proposed. The objective is to better monitor the crop field in real-time manner based on mesh network connectioon by controlling the environmental factors to grow healthy crops. Through the methods used, the proposed system here would be able to be monitored more efficiently and closely where the crops would be receiving a sufficient amount of water and fertilizer.	Practice-oriented	Title and project synopsis are acceptable
TS. DR. ADAM WONG YOON KHANG	HASVIN RAJ A/L MEGANATHAN	DEVELOPMENT OF AUTOMATED HYDROPHONIC MONITORING SYSTEM BASED ON IOT MESH NETWORK USING ESP8266 MICROCONTROLLER AND RASPBERRY PI	Hydroponics is a type of modern agriculture to produce healthy plants and vegetables. The plants require a lot of water, and the weather can be unpredictable. To address these issues, we must build automated hydrophonics system based on IoT mesh network.using esp8266 microcontroller and raspberry pi. Information are collected by sensors to enable automation and analysis. The objective is to delivers the hydroponics grower complete wireless control of the grow room atmospheric conditions, with user inputted sensor thresholds that if exceeded, alert or take action as required. Through the methods used, the integrated farming with IoT mesh network will be efficient for the automated Hydroponic system.	Practice-oriented	Title and project synopsis are acceptable
TS. DR. ADAM WONG YOON KHANG	MUHAMMAD SHAMIL BIN MOHD NAZIR	DEVELOPMENT OF TRAIN TRACK MONITORING SYSTEM USING RASPBERRY PI	Train is one of the most important transportations in this world. It can be use as cargo train, and it is also can be use as public transportation. The train track or railway should always be in a good condition so that we can avoid the accidents. For that, development of train track monitoring system using raspberry pi is proposed. The IR sensor will transmit and receive the signal and from that signal, it will be sent to Raspberry Pi and will alert the main station about the condition of the track.The objective is to design a system that can monitor the train track using Raspberry Pi. . Through the methods used, this project will provides an alternative solution which the system can be easily detect the exact location or area of the track that might be in a bad condition.	Practice-oriented	Title and project synopsis are acceptable
TS. DR. ADAM WONG YOON KHANG	ABDUL RAUF BIN YA'AKUB	Development of Energy Efficient Algorithm for Automated Hydroponic System using Solar energy and Nodemcu	Hydroponic system can be defined as a form of soil-less farm. But it can be high in energy consumption when referring to pump operation that need to operate in the always on condition in Hydroponic system. . For that, development of energy efficient automated hydroponic system based on solar energy and nodemcu is proposed. The objective is to design an energy efficient hydroponic system in an automated way. . Through the methods used, this project will provides an alternative solution to reduce the energy consumption in the traditional hydroponic system.	Practice-oriented	Title and project synopsis are acceptable
NORLEZAH BINTI HASHIM	KEVIN LOWELL BIN LIAN	Development of face recognition door lock system using Raspberry Pi for Home Security	The most important feature of any home security system is to detect people entering or leaving the house. Instead of tracking it by password or PIN, we can use unique faces as they are our own biometric trait. These are innate and cannot be easily changed or stolen. The level of security can be increased by using face detection. The proposed facial recognition door lock security system has been developed to prevent theft in highly secure areas such as home environment with low power consumption and more reliable self-contained security device for detecting intrusion and door security.	Practice-oriented	Title and project synopsis are acceptable

NORLEZAH BINTI HASHIM	MOHAMMAD ASYRAF BIN ZULKARNAIN	Development of Automated Recycle Bin Compressor using Arduino for Smart city	Compressed Recycle Bin is designed to automatically compress when the wastes inside the bin reached a specific level and before the wastes are collected. This bin is suitable to be placed in crowded area to ensure the objectives were achieved. Normally, the wastes will be collected without any compression and that will be a waste of space. The bin is equipped with an IR sensor to detect the level of wastes in the bin to make the DC motor to start working and compresses the wastes. When the led light emits and it reflect to the infrared receiver, the sensor starts to detect wastes. By doing this, it can reduce the problem of excessive wastes and overflowing bin that are not managed well. A high torque and low rpm DC motor is used to make sure the wastes are compressed perfectly. The bin is equipped 3 Watt of solar panel to recharge the battery using a solar charger circuit to avoid the charging is interrupt. For example, when the battery is full, the circuit will cut off the charging process. The switch off button is located behind the bin and can be turn off manually if anything happens.	Practice-oriented	Title and project synopsis are acceptable
NURULHALIM BIN HASSIM	MOHAMAD ASYRAF BIN MOHAMAD RAFIE	Development of RFID based Smart home security system using Arduino	RFID is now a common place devide used in the home and on the toll-highway. Home security is an area that can be further improved with the introduction of an RFID card to help monitor and control the movements of the inhabitants of a home. Various security clearence levels can be assigned to different members of a household. Different zones can be specified to ensure only certain individuals are allowed acces to certain rooms. Current systems available in the market are very costly. Therefore this project will try to develop a low cost system using arduino as the microcontroller while achieving the facilities stated above.	Practice-oriented	Title and project synopsis are acceptable
NURULHALIM BIN HASSIM	MOHAMAD NAZHIM BIN MOHAMAD ALI	Development of Vivaldi Antenna for Energy Harvesting.	Vivaldi Antenna is one category off requency independent antennas that were used in many applications. Its Ultra Wideband capability is suitable for energy harvesting of a wide range of frequencies. However in most research only single, double or triple frequency antennas were used for energy harvesting. This work proposes a detailed investigation of the design, simulation, fabrication and validation of this Vivaldi Antenna to be used for Ultra Wide Band RF Energy Harvesting.	Practice-oriented	Title and project synopsis are acceptable
NURULHALIM BIN HASSIM	EDWIN MARK JOSEPH	Development of Balun and Rectifier for wideband RF energy harvesting system	A Balun is is an electrical device that allows balanced and unbalanced lines to be interfaced without disturbing the impedance arrangement of either line. A balun can take many forms and may include devices that also transform impedances. A matching network that transform impedences between an antenna and a rectifier ensures the maximum transfer of energy in an RF energy harvesting system. However, in most rectenna designs a very frequency specific matching nework is used between the antenna and the rectifier. Therefore, this work proposes the use of a balun as an Ultra Wide band matching network between a frequency independent antenna and the rectifier for RF Energy harvesting. This work proposes a detailed investigation of the design, simulation, fabrication and validation of a Balun and a rectifier for Wideband RF energy harvesting.	Practice-oriented	Title and project synopsis are acceptable
DR. A K M ZAKIR HOSSAIN	MOHAMAD TAUFIQ BIN MOHAMAD ALIAS	Development of Gas Leakage Detector with SMS Alert system Using GSM Module and Arduino	Gas leakage detector are very useful in detecting the any kind of flammable gas such as buthane ,methane and others in buildings. The objective of this project is to detect the presence of LPG leakage as a part of a safety system. Next, to alert the authorized person about the incident through SMS for them to take safety precautions in handling the situation. This is because, the usage of the LPG (Liquefied Petroleum Gas) gas is widely use in Malaysia and if any incident happen might caused a lot of harms and able to cause death. So, gas leakage detector with SMS alert is of the important parameters in order to prevent the disaster because the circuit trigger the alarm system if the leakage of the gases is detected by using the MQ135 Gas sensor and Arduino because the sensor has excellent sensitivity in detecting the presence of LPG gases and automatically will inform the owner by sending the warning message to the mobile number written in the code sent by the GSM module. The GSM module is automatically functioning because of the signal sent by the microcontroller where the microcontroller monitored the output from the MQ135 gas sensor. If the output of MQ135 is low, the microcontroller will send the signal to the GSM module.	Practice-oriented	Title and project synopsis are acceptable
DR. A K M ZAKIR HOSSAIN	MUHAMMAD ZAIM BIN ZULKAPLI	Development of IoT-based Smart Key Finder using Arduino	Many times, we misplace our keys and search the entire home for them, only to discover them after a long search, much to our dismay. The simple solution is to put your keys back where they belong.We'll make a basic IoT-based Smart Key Chain with just an ESP8266-01, a buzzer, and a battery. Now, if you can't locate your keys and remember that you have an IoT keychain linked to them, you pull out your phone, open Chrome, and go to your Keychain Webpage. Then you press the toggle button, and within seconds, a beep sound emanates from your keychain, allowing you to easily locate your keys.	Practice-oriented	Title and project synopsis are acceptable
DR. A K M ZAKIR HOSSAIN	SHARVIN RAJ A/L RAJA LINGAM	Development of IoT based Real-Time Energy Monitoring System using Arduino	The rapid growth of residential homes and factories around the world has significantly contributed to higher demand for energy supplies. The energy consumed by appliances and machines contributes to cost, availability, and performance. Thus, real-time energy monitoring would help the owner, operation team and the management better understands the energy needs and other related parameters that can help them optimize energy usage. Connecting sensors that collect and send real-time information to a monitoring IoT dashboard has gained popularity in recent years. This project proposes to build an IoT system that links the embedded sensors that monitor energy use and other associated factors that can be analyzed and control the functionality of an electric appliance even if there is no person to supervise the system. The energy utilization parameters specifically support the management to determine the overall consumption and control the functionality of an entire home or facility and ways to optimize the overall efficiency for better cost savings.	Practice-oriented	Title and project synopsis are acceptable
DR. A K M ZAKIR HOSSAIN	MUHAMMAD ELWAN BIN MOHD ROSLAN	DEVELOPMENT OF DRONE DETECTION SYSTEM USING ARDUINO FOR ENHANCE PRIVACY PURPOSE	The application of pesticides and fertilizer sin agricultural areas is of prime importance for crop yields. The use of aircrafts is becoming increasingly common in carrying out this task mainly because of its speed and effectiveness in the spraying operation. However, some factors may reduce the yield, or even cause damage (e.g. crop areas not covered in the spraying process, overlapping spraying of crop areas, applying pesticides on the outer edge of the crop). Climatic condition, such as the intensity and direction of the wind while spraying add further complexity to the control problem. In this paper, we describe an architecture based on unmanned aerial vehicles (UAVs) which can be employed to implement a control loop for agricultural applications where UAVs are responsible for spraying chemicals on crops. The process of applying the chemicals is controlled by means of the feedback obtained from the wireless sensor network (WSN) deployed on the crop field. The aim of this solution is to support short delays in the control loop so that the spraying UAV can process the information from the sensors. We evaluate an algorithm to adjust the UAV route under changes in wind intensity and direction. Moreover, we evaluate the impact of the number of communication messages between the UAV and minimize the waste of pesticides.	Practice-oriented	Title and project synopsis are acceptable
NAJMIAH RADIAH BINTI MOHAMAD	MUHAMMAD AKMAL BIN ABD WAHID	Development of Highly Selective and Sensitive Carbon based Biosensor for Urea Detection.	Faster advancement of biosensor technologies for point-of-care applications requires the development of a nanoelectronic device that is sensitive, portable, reliable and most importantly sufficiently selective to work directly in complex media. The electrodeposition of pyrrole/MWCNT on carbon electrode will be observed using a potentiostat to analyze the relationship between voltage, current and thickness. Urease/urea will be dropped on it with certain molarity to get the targeted redox and sensorgrams results.	Practice-oriented	Title and project synopsis are acceptable
NAJMIAH RADIAH BINTI MOHAMAD	WAN ZARIFF ZIKRI BIN WAN MARZUKI	Development of Highly Selective and Sensitive Carbon based Biosensor for Glucose Detection	Faster advancement of biosensor technologies for point-of-care applications requires the development of a nanoelectronic device that is sensitive, portable, reliable and most importantly sufficiently selective to work directly in complex media. The electrodeposition of pyrrole/MWCNT on carbon electrode will be observed using a potentiostat to analyze the relationship between voltage, current and thickness. Glucose oxidase/glucose will be dropped on it with certain molarity to get the targeted redox and sensorgrams results.	Practice-oriented	Title and project synopsis are acceptable

NAJMIAH RADIAH BINTI MOHAMAD	NUR IZZATI NADIAH BINTI MUHAMMAD NADZIN	Development of Low-Cost Handmade Potentiostat using Raspberry Pi for Monitoring Aqueous Solution	This study developed a new design of a low-cost potentiostat circuit device. This device is an alternative electrochemical instrument applied for monitoring aqueous solutions using mobile phone. It was developed to alleviate the cost burden of equipment procurement and due to the requirement for in-situ application since the existing commercialize devices are bulky and expensive. The main component of the device consists of electronics configuration of operational amplifier and Raspberry Pi.	Practice-oriented	Title and project synopsis are acceptable
NAJMIAH RADIAH BINTI MOHAMAD	NURFARAHIN BINTI A GANI	Optimization of K-SPR Biosensor based on MWCNT using Taguchi Method	According to the statistics, the number of persons diagnosed with diabetes and kidney failure seems to be increasing. High blood glucose, urea and creatinine levels can result in heart attacks and strokes, all of which can lead to mortality. In this work, Kretschmann-based surface plasmon resonance (K-SPR) sensor utilizing Cr/Au/MWCNT nanofilms will be develop for label-free biomedical sensing using photonic technology. Taguchi's L9 Orthogonal Array (OA) method will be used to optimize the effects of four control factors and noise factor which are the incident optical wavelength, chromium (Cr) and Au layer thicknesses, MWCNT layer thicknesses, and their root-mean-square (RMS) surface roughness on the performance of the K-SPR sensor. The control factors were varied for four levels of a novel multi-response SPR sensor which are the minimum reflectivity (Rmin), the full-width-at-half-maximum (FWHM) and the sensitivity of glucose/urea/creatinine detection using simulation.	Practice-oriented	Title and project synopsis are acceptable
TS. ABDUL HALIM BIN DAHALAN	MUHAMMAD FARHAN BIN PRAYITNO	DEVELOPMENT OF SMART HYDROPONIC SYSTEM USING ARDUINO	Since soil in many parts of the world lacks sufficient nutrients for plant growth, hydroponics is a plant cultivation method without usage of soil. Plants are typically dissolved in water rather than having their nutrients taken from the soil, and their roots are suspended, flooded, or handled poorly with nutrients. Depending on the type of hydroponic device used, there might be a solution so that the ingredients will reach the plant. It is essential for growth. a)Lacks enough nutrients in soil for plan growth b)Farmers have less time for doing and keeping maintenance of hydroponic plants c)Traditional farming faced manual ploughing, weeding, pest and climate The major objective of this project is to offer the objectives of this project based on the above-mentioned problem statement: a)To develop the hydroponics automatic control system using microcontroller b)To design and construct a hydroponic system for IoT monitoring of various factors such as water pH, water level, temperature, and humidity. c)To develop the automatic hydroponic using real timing control.	Practice-oriented	Title and project synopsis are acceptable
TS. ABDUL HALIM BIN DAHALAN	MUHAMMAD FAIZ ZULKARNAIN BIN MOHD RUCHAINI	DEVELOPMENT OF SMART BUS MONITORING SYSTEM USING ARDUINO	INTRODUCTION Bus tracking is an application that tracks a bus and gathers the distance to each station along its route. Tracking System involves the installation of an electronic device in a bus, with an installed Android App on any SMART phone to enable the Administrator or User to track the bus location. Global Positioning System (GPS) bus tracker system is an android smartphone application to help people to track the current bus location in real-time. The system also will always display the actual distance from the initial location to the desired destination. The processes involved in the GPS bus tracker system searched for the bus current location. This project uses an agile approach to complete all the tasks as proceeds to each iteration. people are able to know the movement of the bus as they started using this system and they can prevent from wasting their time waiting for the bus without knowing whether really bus present in time. OBJECTIVE •To design bus tracking and notification system using IoT integrated with the server. •To develop a smartphone application to check the destination of the tracked bus.	Practice-oriented	Title and project synopsis are acceptable
TS. ZAHARIAH BINTI MANAP	MUHAMMAD ZAHIR BIN SAIMON	Development of IoT-based Remote Fuel Level Monitoring System using Arduino	This project aims to develop an IoT fuel level monitoring system which can log fuel level in a tank located in remote area. We specifically refer to the problem experienced by Telekom Malaysia (TM) technicians during their duty in fuel level monitoring at TM's base stations located in remote area, mostly at hill tops. Manual monitoring technique is not efficient in terms of time consumption and accuracy. Therefore, in this project, we will propose an IoT application (apps) that remotely monitors the current level of fuel and consumption overtime. The fuel level monitoring system consists of a sensor circuit, wireless communication module and user apps. The developed system is expected to promote efficient fuel monitoring method for the technicians.	Industry-based	Title and project synopsis are acceptable
TS. ZAHARIAH BINTI MANAP	MUHAMAD AKMAL BIN RAZALI	Development of WiFi-based indoor localization utilizing machine learning technique	Position estimation using global positioning systems (GPS) is not reliable in indoor environment due to weak signal penetration and the complex nature of indoor setting which causes severe signal attenuation. This project will explore the potential of utilising available wireless signal in indoor environment which is WiFi. We will implement fingerprinting technique to predict the position of mobile devices in a confined indoor space. The methodology involves two stages which are training stage and testing stage. In training stage, sufficient number of data will be measured in a study area. The data will be the received signal strength (RSS) measured by a mobile phone at predetermined reference points (RPs). The measured data will be trained using machine learning technique in Matlab platform to produce an indoor localization prediction model. In the testing stage, the produced model will be used to predict the location of mobile devices based on instantaneous measured RSS. This project is expected to compare the accuracy produced by several machine learning techniques, and identify the best prediction model to be used in WiFi-based indoor localization.	Practice-oriented	Title and project synopsis are acceptable
TS. ZAHARIAH BINTI MANAP	MUHAMMAD FARIS BIN MD NAZARI	Development of Vehicle Number Plate Recognition using machine learning technique	Automatic number-plate recognition (ANPR) is a system that captures vehicle number plate and recognizes the characters. The systems are widely used traffic management, parking management, parking fee collection, vehicle localization, security monitoring, and crime prevention. One of the challenging issues in ANPR is the accuracy of detecting the number plate for moving vehicles. This project aims to develop an ANPR to automatically recognizes a moving vehicle's number plate. A camera will be used to capture the characters on number plates and will be saved as pictures. Machine learning technique will be implemented to train the characters and perform the character matching process. The system is expected to recognize number plate of moving vehicle with high accuracy.	Practice-oriented	Title and project synopsis are acceptable
TS. FAKHRULLAH BIN IDRIS	MUHAMMAD HARITH BIN ZULKARNAIN	Development of IoT Based Ocean Current Level and Red Tide Monitoring System using Raspberry Pi for Big Data Application	Two phenomenons occur in Malaysia Ocean water are tidal level and red Tide. Both affecting live hood of fisherman nationwide. The proposed system would map, monitor and share the data to enable big data application. The system will be install in every boat and records data everytime the boat leave the port. And save data when it return to port. Raspberry Pi will be used as controller to capture photographic evident of the sea water as the boat travel and gyroscope will record the tidal changes & waves patterns. Information could be used for further image processing and data correlations. Small scale experiments should results in the system indicates if there are possible Red Tide phenomenon detected and the level of tide if it reaches certain dangerous level.	Practice-oriented	Title and project synopsis are acceptable
ZULKIFLI BIN SHARIFF	DEVENDRAN A/L GUNALAN	DEVELOPMENT OF SMART SAFETY HELMET MONITORING SYSTEM FOR SITE WORKER IN CONSTRUCTION INDUSTRY USING ARDUINO-BASED.	SUPERVISORS WILL HAVE A DIFFICULT TIME KEEPING TRACK OF THE EMPLOYEES SINCE THEY ARE DISTRIBUTED OVER THE SITE CONSTRUCTION AREA. ADDITIONALLY, THEY WILL BE UNABLE TO DETERMINE WHETHER LABORERS WERE WEARING SAFETY HELMETS OR NOT. THE SMART-HELMET IN THE SENSE OF EMBEDDED SEVERAL SENSORS TO ALERT WORKER WHEN (1) EXCEED THE NOISE LEVEL LIMIT ACCORDING TO COMPLIANCE [NOISE SENSOR, VIBRATOR, BUZZER]; (2) FALL DETECTION TO LOCATE REAL TIME INJURED WORKER [SHOCK SENSOR]; AND (3) WORKER BODY TEMPERATURE [TEMPERATURE SENSOR] WILL BE DESIGNED AND DEVELOPED TO HELP SUPERVISORS IN MONITORING AND ANALYSING THE SITE CONSTRUCTION.	Industry-based	Title and project synopsis are acceptable
ZULKIFLI BIN SHARIFF	FAHMI BIN SAADON	DEVELOPMENT OF INTERACTIVE CONTROL SYSTEM FOR LIFTING CRANES BY USING ARDUINO-BASED.	Interactive control system for mobile lifting devices, particularly for lifting devices. An innovative processing scheme, using several functional modules, for the interactive control system has been presented, covering also the use of anti-patterns of normalized commands and standardized strategies, and analysis of crane stability. The invented system solves the problem of effectively controlling lifting devices during tasks requiring increased efficiency, safety, speed and precision.	Industry-based	Title and project synopsis are acceptable

NORLEZAH BINTI HASHIM	IDZHAM RIZAL BIN JAMSARI	Development of Water Quality Monitoring System Using Arduino for Smart City	Water contamination is one of the most serious environmental concerns we face, as water covers more than 70% of the Earth's surface. The quality of water in streams, lakes, and rivers is determined by the sources that supply it. When fertilizer, animal and human waste, plastics, and harmful industrial chemicals reach these sources, water pollution occurs. It has a negative influence on public health, fishing, tourism, and the environment, which costs the economy money. It is hard for the water supply company to pin point the contamination source and this caused a serious water service disruption. So, it is important to know where is the pollution location occur. So, with this system, it makes it easy to find the source of pollution. Sensor that are required for this project is, temperature sensor, Ph sensor, Turbidity sensor and TDS sensor.	Practice-oriented	Title and project synopsis are acceptable
AZIEAN BINTI MOHD AZIZE	MUHD ALIFF NAJMI BIN AFIFFUDIN	Development of Remote sensing system in land observation and sustainability and of Putra Jaya using Erdas and ArcGIS	Remote sensing is the art or science of obtaining information about an object, an area or a phenomenon, through analyzing of data collected by a given device or sensor that has no direct physical contact with the object, area or phenomena being investigated. Geographic Information System (GIS) is a computer system build to capture, store, manipulate, analyze, manage and display all kinds of spatial or geographical data. GIS application are tools that allow end users to perform spatial query, analysis, edit spatial data and create hard copy maps. The project is purposed for the development of the images of remote sensing to remotely monitor and study the area under interest. Images of remote sensing are obtained and followed by the mapping process by using the mapping tools, ERDAS Imagine and ArcGIS software. A few images of latest and past 15 to 20 years of the research areas are taken and preprocessed. Comparison of the images after processing of will help in analysing the study area.	Industry-based	Title and project synopsis are acceptable
AZIEAN BINTI MOHD AZIZE	MOHAMAD QHAIRUL FITRI BIN HISHAM	Development of IoT Home Automated System using Arduino	Smart home automation allows us to tap into high-tech functionality and luxury that wasn't possible in the past. As technology development continues to expand, so will the possibilities for consumer home automation to make life easier and more enjoyable. This project aims to develop apps for voice recognition home automation with application of IoT using Arduino over a network of home appliances. The application is designed to run on android device providing features like, switch mode control, voice command control and a provision to view the status of the devices on the application itself.	Practice-oriented	Title and project synopsis are acceptable
AZIEAN BINTI MOHD AZIZE	AHMAD MUSTAPHA BIN MUHAMAD	Development of Remote sensing system in observation and sustainability of agricultural in Malaysia using Erdas and ArcGIS	Remote sensing is the art or science of obtaining information about an object, an area or a phenomenon, through analyzing of data collected by a given device or sensor that has no direct physical contact with the object, area or phenomena being investigated. Geographic Information System (GIS) is a computer system build to capture, store, manipulate, analyze, manage and display all kinds of spatial or geographical data. GIS application are tools that allow end users to perform spatial query, analysis, edit spatial data and create hard copy maps. The project is purposed for the development of the images of remote sensing to remotely monitor and study the area under interest. Images of remote sensing are obtained and followed by the mapping process by using the mapping tools, ERDAS Imagine and ArcGIS software. A few images of latest and past 15 to 20 years of the research areas are taken and preprocessed. Comparison of the images after processing of will help in analysing the study area.	Practice-oriented	Title and project synopsis are acceptable
MOHD FAIZAL BIN ZULKIFLI	AMIRUL HAKIM BIN BADARUDIN	Development of App-enabled medicine dispenser using Raspberry Pi for health care application	With the recent pandemic situation many have fallen ill, a lot of patients are facing health issues severely and they need to have a device that help them to remind them to take their medicine in timely manner. An App-enables medicine dispenser will be designed and developed to cater the need. The app will be created using MIT-App Inventor to set and control the motors that will release all the medicines according to correct time. The medicine dispenser should be able to house a few types of medicines. Raspberry pi will be used to connect the machine dispenser to the app. The app will help to track the time and the machine will dispense the correct medicine according to correct time to take it.	Practice-oriented	Title and project synopsis are acceptable
MOHD FAIZAL BIN ZULKIFLI	DINENDRAN A/L NADARAJAN	Development of IoT based electricity energy meter using ESP32 for Smart Home application	Nowadays, there are many people are required to stay home due to in-need of quarantine situation thus stay at home situation is pretty much the new norm. Hence, electricity bill is on the spike due to this situation. In order, to help people better in managing their electricity usage, a device is needed to help them monitor their daily consumption. The objective is to study and to design a device that help user to monitor electricity of the electric equipment that is to be observed by user and the consumption can be observed via an app. An ESP32 will be used receive electricity usage from a sensor and then pass the data to electricity energy meter that is displayed on app that has been developed using MIT App Inventor. User can monitor their electricity consumption of the electric equipment and can help to educate the user to always switch off the equipment after usage. With this system, user can estimate the monthly electricity bill.	Practice-oriented	Title and project synopsis are acceptable
MOHD FAIZAL BIN ZULKIFLI	SITI NUR LYANA KARMILA BINTI NOR AZMI	Development of IoT based flood monitoring system using ESP32 and Node-Red for preventive of natural disaster	With global warming problem is on the rise, flood can happen instantaneously for many parts of the world. A device is needed to help monitor the water level whenever heavy raining and help to alert the resident in case of the water level reached at certain level. The objective of to study and to design a system that can help track water level during raining season then automatically send a notification to the resident. An ESP32 will be used to detect water level through an outdoor ultrasonic sensor. The water level is continuously track and the data will be displayed through an app. An alert will be triggered when the water level has reached at a certain level. With this warning, the resident is expected to at least have some time to save important thing and themselves.	Practice-oriented	Title and project synopsis are acceptable
ZULKIFLI BIN SHARIFF	MENAHA A/P SELVAMONI	DEVELOPMENT OF COVID PATIENT SELF QUARANTINE HEALTH MONITORING SYSTEM USING ARDUINO-BASED.	DURING THE PANDEMIC COVID19, WE HAVE ESTABLISHED SPECIFIC COVID19 QUARANTINE CENTERS TO TREAT COVID PATIENTS. DUE TO COVID IS EXTREMELY CONTAGIOUS, IT IS CRITICAL TO ISOLATE COVID PATIENTS, BUT DOCTORS MUST ALSO CHECK THEIR HEALTH. WITH THE GROWING NUMBER OF INSTANCES, IT'S GETTING INCREASINGLY DIFFICULT TO MONITOR THE HEALTH STATUS OF SO MANY ISOLATED INDIVIDUALS. TO ADDRESS THIS ISSUE, A REMOTE IOT-BASED HEALTH MONITORING SYSTEM THAT ENABLES REMOTE MONITORING OF MANY COVID PATIENTS VIA IOT WILL BE DESIGNED AND DEVELOPED. THE SYSTEM CONTAIN OF SEVERAL SENSORS SUCH AS TEMPERATURE SENSOR, HEART RATE SENSOR, BLOOD OXYGEN SATURATION LEVEL, AND A BLOOD PRESSURE SENSOR.	Industry-based	Title and project synopsis are acceptable
TS. EFFENDY ONN BIN SIAM	LOSHENE PRIYA RAJ A/P JUDE AMAL RAJ	DEVELOPMENT OF AN AUTOMATED RAILWAY GATE SYSTEM WITH WIRELESS NOTIFICATION FOR OBSTACLES DETECTION USING Arduino Uno	The railway system is the most commonly used transportation mode. More safety features should be added into the system to ensure less operation failures to happen in future. Railroad related accidents are more dangerous than other transportation accidents in terms of severity and death rate. In this project, IR sensors play the main role as the detection of incoming train in several places. Six IR sensors were used in terms to detect the incoming train. Those sensors are placed in various places where IR sensor 1 gives signal to change the level crossing signal and IR 2 gives the signal to close the gate in the level crossing. In addition, IR sensor 3 and 4 were placed at the level crossing to ensure obstacles to be detected and the gate opens when there are obstacles with a message through GSM modular to the train master telling the train to be stopped. This procedure also follows with an emergency alarm buzzing while the message is being sent. Furthermore, there is two other sensors which is IR sensor 5 and IR sensor 6 which acts to close the gate back if there is no obstacles detected and the signal at the level crossing changes when the trains passes IR sensor 6. The overall system works is dual direction because in certain countries railway industries are still using single tracks to for trains to move. This project ensures that the system works even when the train approaches in either direction	Practice-oriented	Title and project synopsis are acceptable

TS. EFFENDY ONN BIN SIAM	KAUSHALYA NAIR A/P PERABAGARAN	DEVELOPMENT OF WIND GENERATOR AND MONITORING SYSTEM USING Arduino Uno	The most significant difficulties in generating electrical energy using fossil-fuel resources are their high cost and scarcity. Thus, renewable energy, which is achieved using natural resources, is one of the most imperative aspects for solving the energy crisis. Solar, wind, geothermal and tidal energy are examples of sustainable and renewable energy resources as they are unlikely to deplete. Presently, wind energy is the most developed of these renewable technologies due to the vast number of wind turbines used across the world as well as the many projects currently being planned. Producing electrical energy in a very efficient way is the main purpose of this project. In this project, I added some sensors in a wind generator that the sensor is measuring the climate condition of wind turbine temperature sensor, vibration sensor, and IR sensor. If anyone is abnormal means the alert message will be sent to an authorized person of the wind turbine. For this project, I used Arduino Uno which collects the sensor value form wind turbine.	Practice-oriented	Title and project synopsis are acceptable
TS. EFFENDY ONN BIN SIAM	NAREENDRA AMERDHASHAN A/L KRISHNAN	DEVELOPMENT OF AN ANTI-SLEEP DETECTION AND ALARM SYSTEM USING HEARTBEAT SENSOR	Feeling sleepy while driving could cause hazardous traffic accident. However, when driving alone on highway or driving over a long period of time, drivers are inclined to feel bored and sleepy, or even fall asleep. Nowadays most of the products of driver anti-sleep detection sold in the market are simply earphone making intermittent noises, which is quite annoying and inefficient. As such, there is a high demand for cheap and efficient driver sleep detection. Therefore, we came up with an idea and successfully developed a sleepy detection and alarming system, which could effectively meet this demand. Sensor, Sen-11574 plays the main role as the detection of sleepiness. The heartbeat sensor is based on the principle of photoplethysmography. It measures the change in volume of blood through any organ of the body which causes a change in the light intensity through that organ (avascular region). In the case of applications where the heart pulse rate is to be monitored, the timing of the pulses is more important. When the driver in sleepy condition, the heartbeat sensor will be become low. It will make the buzzer to make a loud sound which will be in our circuit. We also will include a system in our handphone to make sure the driver to get know about their heartbeat rate and make them to realize the value of heartbeat.	Practice-oriented	Title and project synopsis are acceptable
DR. MOHD SA'ARI BIN MOHAMAD ISA	EU JING LING	Development of Home Appliances Control System Based on Smartphone Using Arduino.	Without operation, sometime might face difficulties on operation and monitoring. Hence, home appliances control system is to control home appliances with a smartphone using Arduino. Users can control the home appliances using web browser in their smartphone whenever and wherever they are, provided that their smartphone is connected to the internet. This home appliances control system is to provide convenience to daily activities of users and to improve the quality of life.	Practice-oriented	Title and project synopsis are acceptable
DR. MOHD SA'ARI BIN MOHAMAD ISA	MUHAMMAD AIMAN BIN MOKHTAR	Development of IoT Gas Leakage Detection and Alertness System using Arduino	Without proper monitoring and control, the smoke detector system can cause some difficulties and dengerous to the user and ever the orhanisation. Therefore, a system that can detect smoke or gas leakage (flammable gases : propane, alcohol, LPG etc). This system can alert user through smartphones by Blynk application. It has GSM module, LED interface, buzzer and LCD display. In scenario of gas leakage, LED will glows and buzzer is on, notification will be sent to user smartphone for alert. While all the parameters are displayed on LCD Component used are Arduino Uno and gas sensor (MQ-2). Application used are Arduino IDE and Blynk Application (for smartphone)	Practice-oriented	Title and project synopsis are acceptable
DR. MOHD SA'ARI BIN MOHAMAD ISA	SHARVIN RAJ A/L RAJA LINGAM	Develop the Smart Dustbin with IoT Notifications forSmart City Using Arduino	As the population grows, so does the amount of rubbish in urban areas. Normally, dustbins are opened by placing the foot against the lever and then dumping the rubbish. A person must also keep track of when it is full to empty it and prevent it from overflowing. Furthermore, in this pandemic period, many people will hold and open the lid off the public trash bin if there were no foot levers. It can increase the spread of Covid19 disease among the public. The dustbin is also an easy spot where viruses can easily spread through the public when touched So, I going to propose a project which is named "Smart Dustbin with IoT Notifications in Smart City". The purpose of this project is to avoid Covid19 from spreading (Contactless). Furthermore, it also helps avoid garbage overflow and the use of a foot lever. Normally, the foot lever of the dustbin will be broken easily if many people use it.	Practice-oriented	Title and project synopsis are acceptable
DR. MOHD SA'ARI BIN MOHAMAD ISA	MANGALESHWARAAN A/L ARUNASALAM	DEVELOP THE IOT BASE PORTABLE APRS DIGIPEATER MONITORING SYSTEM USING ARDUINO	APRS is amateur radio based system for real time digital communications throughout stations such as airports , docks, military and many more. Simply , APRS is an advanced of radar with higher precision and frequencies. 144.00 MHz is universal frequency that used for APRS. Apart from locating , APRS has much functions such as weather tracking, humidity and temperature tracking, satellite connectivity , moving object tracer and etcIOS has been already digitalized APRS usage - Maps is the only app that can be installed in IOS products such as Iphone and Ipads. The precision of the current application is better than waze and google maps. This is because Maps of an Iphone always connected or communicated nearby digipeater stations while Google Maps was updating by manually where HAM radio users or Geologist will travel through van or car by detecting all new routes and places. This fact can be proof as only Google Maps and waze will always need to be update in Play Store. -Creating an APRS monitoring system that can works with all devices especially in ANDROID is one of my idea. High cost and heavy usage of equipment. - Digipeaters are getting updated as many compact electronics updating. Still not many succeed in inventing a fully compact digipeater which is 100% portable. Because some use TNC modem , Sound modem , RTL-SDR for increasing frequency band and etc while some digipeaters build in a fixed place near repeater stations so that the cost can be reduced - Fabricate a portable digipeater and also low cost by using latest electronics such as Rasperry.Pi or even Arduino components	Practice-oriented	Title and project synopsis are acceptable