ELECTRONIC PROJECTS

The following projects are just some ideas that can be used. These can be modified or altered to suit a particular application for yourself.

1. *The Manager of a garden centre is trying to cut down on the labour costs involved in the business. Possible areas to be looked at are temperature control, humidity control and plant watering. Identify an area which could benefit from this type of control and produce a device to provide a solution.*

2. *A photographer wants to take pictures of a badger feeding at night. Not wanting to disturb the animal it is important to take the picture automatically. Design a device that will operate a camera when the animal enters a given area.*

3. *Hard of hearing competitors at swimming galas have difficulty in hearing the starter. Produce a device that will indicate to the competitor the first command "take your marks" and then indicate the starting signal.*

4. *Musicians use a metronome to help them get the timing of music correct. A small ensemble requires a portable, adjustable beat metronome to use at performances.*

5. *Caravan theft is on the increase. The most vulnerable time is when the caravan is parked whilst en route or left on a site during daytime. Consider this problem and design a device to alert/deter the possible theft.*

6. *A car driver finds it particularly difficult to park the car in the garage close to the end wall without touching it. Design a device that would aid the driver in this manoeuvre.*

7. *An increasing number of people are concerned that they are at risk of being attacked or robbed whilst walking alone and would welcome a device that would attract attention and/or frighten away an assailant. It would be important for the device to be easily and comfortably carried, but for it to be simple and quick to operate.*

8. *When cooking various items of food, it is important that they are cooked for the correct time. Devise a device that can measure cooking time, is very simple to use and can be adjusted for various durations.*

9. *The scoreboards traditionally used for some sports such as snooker or darts have a number of disadvantages. An electronic scoreboard with a large display could be easier to use and more importantly be more clearly visible to a larger audience.*

10. *There are occasions when you will want to know how many people have entered a premises, purely out of interest or for security. Devise a device that will detect people entering a room and count the number of times it occurs.*

11. *Employees in a shop often have to walk into a storeroom behind the shop with messages. Some kind of two-way voice communications system (intercom) between the two rooms would be very useful.*

12. *A small musical group requires a portable instrument tuner. This should be able to produce a range of sounds for tuning various instruments. There might even be a facility for comparing the note on an instrument with that on the tuner. A display could indicate if the two are the same, or whether a tuning adjustment is required.*

13. *Someone with an interest in electronics often acquire a collection of spare components. Capacitors come in many types, shapes and sizes, and it is sometimes difficult to read their values, especially if they are old and the markings have become rubbed off. Devise a piece of test gear to measure the value of a capacitor and see if it was working correctly.*

14. *A keen gardener with a small greenhouse wants to go away on a two weeks holiday and needs to install some form of automatic watering system to prevent the plants form dying. Design a system to accomplish this.*

15. *When camping at festivals and other crowded sites, theft from tents is easy . Design a device that will detect any intrusion and alert/deter the possible theft.*

16. *Personal stereos are very popular and are ideally suited for individual listening. Sometimes however it is useful to amplify the sound and play this through some small loudspeakers so that a small group of people can listen together to some music. A Walkman booster would have to be small, lightweight and portable, with a low current consumption for reasonable battery life.*

17. A small business requires only a small number of employees to have access to a certain room. Instead of fitting a lock to the door and issuing keys to those who need them, it is decided to design and make a combination door lock. One feature of the lock is that the combination can be changed at a future date if desired (for example if an employee leaves or no longer requires access to the area).

18. Design a random number generator for a mini-lottery/bingo stall which is held to raise funds for a local charity.

19. Heat, light and wind-speed sensors can be connected to a home computer to record changes in temperature, sunlight and air-speed for a small weather station. Design an interface to enable the sensors to be connected to one of the computer ports.

20. A person with a medical condition has to take some medicine several times a day. It is important to take the correct number of doses, but not to exceed this number. It is difficult to keep count of the doses. Design a simple to operate counter that will increase a displayed number by one each time a button is pressed. The device needs to draw very low current to prolong the battery life and monitor when the battery is getting low.

21. An enthusiast in radio-controlled racing cars uses Ni-cad batteries for their models. these batteries must be discharged properly before being recharged. Devise and construct a devise to discharge batteries to a required minimum and give an indication when this is done.

22. At Christmas time it is customary to put up decorations and a Christmas tree to celebrate the festive season. Some form of electronic decoration with randomly moving lights is required to hang up or place on top of the tree. Design and make a decoration that could fulfil this requirement.

23. A model railway enthusiast has an extensive layout of a model railway with many suburban features. To make it more realistic, they want to add sound effects to the layout. These can be triggered manually or by particular events (such as train crossings). Devise a system that will produce sound effects for various events and can be triggered manually or through various sensors placed around the model layout.

24. Racing Scalextric cars can be exciting and lap counters can keep record of the competitors progress through the race. Sometimes it would be useful to be able to time a lap and compete for the quickest lap time. Devise a device that could display the time it took to do a lap and was triggered by the car passing a start/finish point on the track.

25. Fishing can be a very relaxing sport and it is easy to dose off. This has been the cause of many a lost catch. Devise a device that will give a warning to the angler when a bite has been taken.

26. Long journeys can be very boring for young children. Devise a simple electronic game or toy that is portable and simple to use and could keep one or more children amused while travelling on long journeys.

27. When training at fitness clubs or playing sports at school, clothes and equipment are often left unattended in changing rooms or out of sight. This lends opportunity to theft and is usually very costly. Devise a device that could be placed with the bag to alert the owner of theft or tampering.

28. Riding a bicycle can be a good way to help keep fit and at times some fairly high speeds can be achieved. It would be useful to know how fast you were travelling maybe to help with a keep fit program, or even just for the fun of it.

29. Hi-Fi amplifiers are common place in the home and some enthusiasts demand very high standards of sound. Various equipment can be used to measure and monitor the sound quality produced. A useful piece would be some form of indication of sound level. Devise some form of sound meter to give an indication of the volume being produced by a system.

30. Many devices around the home use batteries. When almost run down, they can cause malfunction, and batteries found around the home only have a limited shelf life. Even when measured with a multimeter, a flat battery can give a fair reading but be unable to deliver any power. Devise a battery meter that is quick and simple to use and will measure the battery under a modest load.

31. Most teenagers value their privacy and don't like people sneaking into their room or catching them by surprise. Some sort of automatic announcement when someone enters their room would be useful to alert them of someone entering and even deter others. Devise a device that will detect a person entering a room and play a novelty tune or sound effect when they do.