

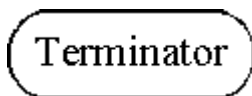


## PBasic Programming

PBasic is a simple language to learn especially if you are already familiar with other types of languages or flow-charting. In this introductory exercise you will learn the use of flowcharts. We use flowcharts to help our minds figure out what techniques and approaches to utilize in order to solve programming problems.

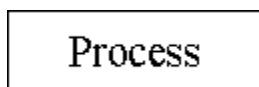
### Flowcharts

While there are numerous symbols used by professional programmers we will concentrate on the 6 most often used.



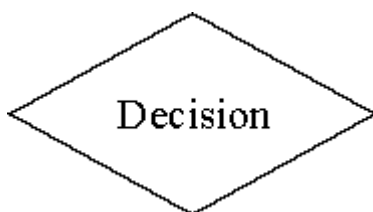
*Figure 1*

The Terminator block, see figure 1, is used to indicate the Start or End of a program.



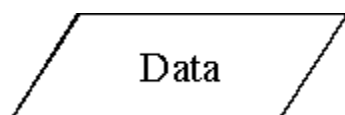
*Figure 2*

Figure 2 represents a Process that occurs. This might be turning a motor or lamp on, getting the value of a variable, or setting input or output pins.



*Figure 3*

The Decision block is used to branch the program after comparing variables or checking the position of switches.



*Figure 4*

Figure 4 is a Data block. Data blocks are used to assign variables and allow us to set parameters.



Figure 5

The display block is used when you want a value to appear on your screen.



Figure 6

The Delay block is used to indicate that the program is to pause for a length of time before moving on.

## Exercises

1. Create a flow chart for placing toothpaste on a toothbrush and then brushing your teeth for 45 seconds.
2. Create a flowchart for creating a peanut butter and jelly sandwich.
3. Create a flowchart for helping a three-year-old child put on their jacket.

## PBasic

PBasic is one of the Basic language groups. It is designed to be a simple way for us to program. A certain group of commands is permanently loaded into the microcontroller. When you enter your program, the microcontroller uses the basic commands to translate them into a form it can use by accessing the permanently stored commands.

PBasic can be said to have only a few groups of commands. These are briefly described here.

### Digital In/Out

These commands control the input and output pins digitally

### Branching

These commands control the flow of the programs

### Looping

This group controls the repetition of events

### Numerics

These commands control math functions

### Analog I/O

These commands allow for analog input and output to the pins

### Sound

These control the ability to generate tones

### Time

Controls the flow of the program

Power

Commands that control the power consumption

Display

Commands that provide feedback to the user

For more information watch the [PowerPoint on PBasic Commands](#).

Then run through the exercises that follow.