Module B.6 – Level 2 Answers

1. Done
2. The different program commands and statements in the blink program are void, setup(), pinMode(), LED\_BUILTIN, OUTPUT, loop(), HIGH, LOW, digitalWrite() and delay().
3. void

* Used only in function declarations
* Indicates function is expected to return no information to the function from which it was called

setup()

* Used when a sketch starts
* Used to initialize variables, pin modes, start using libraries, etc.
* Will only run once, after each reset of the Arduino board

pinMode

* Configures the specified pin to behave either as an input or an output

LED\_BUILTIN

* The number of the pin to which the on-board LED is connected
* Most boards have this LED connected to digital pin 13

OUTPUT

* Pins configured as OUTPUT with pinMode() are said to be in a low-impedance state
* Can provide a substantial amount of current to other circuits
* Can be damaged or destroyed if connected to either the ground or positive power rails.

loop()

* Loops code consecutively
* Allows your program to change and respond

HIGH

* meaning of HIGH is different depending on whether a pin is set to an INPUT or OUTPUT
* When a pin is configured as an INPUT with pinMode(), and read with digitalRead(), the Arduino (ATmega) will report HIGH if:
  + a voltage greater than 3.0V is present at the pin (5V boards)
  + a voltage greater than 2.0V volts is present at the pin (3.3V boards)
* When a pin is configured to OUTPUT with pinMode(), and set to HIGH with digitalWrite(), the pin is at:
  + 5 volts (5V boards)
  + 3.3 volts (3.3V boards)

LOW

* meaning of LOW also has a different meaning depending on whether a pin is set to INPUT or OUTPUT
* When a pin is configured as an INPUT with pinMode(), and read with digitalRead(), the Arduino (ATmega) will report LOW if:
  + a voltage less than 1.5V is present at the pin (5V boards)
  + a voltage less than 1.0V (Approx) is present at the pin (3.3V boards)
* When a pin is configured to OUTPUT with pinMode(), and set to LOW with digitalWrite(), the pin is at 0 volts (for both 5V and 3.3V boards)

digitalWrite()

* Write a HIGH or a LOW value to a digital pin

delay()

* Pauses the program for the amount of time (in milliseconds) specified as parameter. (1000 milliseconds = 1 second.)

1. A constant is a predefined expression in the language of Arduino. Different constants are used to make the programs easier to read. A variable is a place to store a piece of data. Variables have a name, value, and type. The difference between the two is that a constant is a value that CANNOT be changed during normal execution whereas a variable’s value CAN be changed during normal execution.
2. - Syntax Error: a character or string incorrectly placed in an instruction or command that causes a failure in the execution of the program.

* Logic Error: a bug in a program that causes it to operate incorrectly, but not to crash.
* Run-Time Error: a program error which occurs while the program is running.