To answer the following questions, go to the Arduino C/C++ tutorial on the following link: <https://startingelectronics.org/software/arduino/learn-to-program-course/introduction/>

**Part 9**

**Note: if you’re having errors with your light turning on/staying on, try copying and pasting this instead:**

char rx\_byte;

void setup() {

 Serial.begin(9600);

 pinMode(13, OUTPUT); // LED on pin 13 of UNO

}

void loop() {

 delay(50);

 if (Serial.available()) { // is a character available?

 rx\_byte = Serial.read();

 if (rx\_byte == 'a') {

 digitalWrite(13, HIGH);

 }

 }

}

1. What would happen with your blinking LED code if you connected the LED to pin 12 instead of 13? How could you modify the code so that pin 12 would work with the LED?

Click or tap here to enter text.

1. How could you modify the code so that multiple LEDs attached to multiple pins could light up?

Click or tap here to enter text.

1. Show me your blinking LED(s). **Check off #2.**

**Part 10**

1. What is the advantage of if…else statements over just if statements?

Click or tap here to enter text.

1. Some of you may notice that the code in the lesson doesn’t work quite as you’d expect it to. After working through the part 10 lesson, copy and paste the following code exactly as is into IDE.

void setup() {

 Serial.begin(9600);

 pinMode(13, OUTPUT); // LED on pin 13 of UNO

}

void loop() {

 char rx\_byte;

 Serial.available();

 rx\_byte = Serial.read();

 if (rx\_byte > 96) { // is a character available?

 if (rx\_byte == 'a') {

 // switch the LED on if the character 'a' is received

 digitalWrite(13, HIGH);

 }

 else {

 // switch the LED off if any character except 'a' is received

 digitalWrite(13, LOW);

 }

 }

What do you notice different between the code in the lesson and the code here?

Click or tap here to enter text.

1. What do you think the significance of the line reading “rx\_byte > 96” is? What about the number 96? (hint: think back to ASCII values)

Click or tap here to enter text.

1. What does it mean to have nested loops or nested if statements? Why do you think this might be relevant?

Click or tap here to enter text.

**Part 11**

**If your LED is not turning on/staying on with the provided code in the tutorial, copy/paste the following code instead:**

void setup() {

 Serial.begin(9600);

 pinMode(13, OUTPUT); // LED on pin 13 of UNO

}

char rx\_test = 0;

char rx\_byte = 0;

void loop() {

 rx\_test = Serial.read();

 if (rx\_test > 65) { // is a character available?

 rx\_byte = rx\_test;

 }

 if (rx\_byte == 'a') {

 digitalWrite(13, HIGH);

 delay(500);

 digitalWrite(13, LOW);

 delay(500);

 }

 else if (rx\_byte == 'b') {

 digitalWrite(13, HIGH);

 delay(200);

 digitalWrite(13, LOW);

 delay(200);

 }

}

1. In the following code, what would you expect the final value of the variable “n” to be?



Click or tap here to enter text.

1. Adjust the code so that at least 5 different keyboard commands perform different functions. Show me when you are finished. **CHECK OFF #3**

**Part 12**

1. Fill in the following table with what each logical operator means in C/C++.

|  |  |
| --- | --- |
| **Logical Operator** | **Meaning** |
| == | Click or tap here to enter text. |
| < | Click or tap here to enter text. |
| > | Click or tap here to enter text. |
| <= | Click or tap here to enter text. |
| >= | Click or tap here to enter text. |
| && | Click or tap here to enter text. |
| || | Click or tap here to enter text. |
| != | Click or tap here to enter text. |

1. In C, what is the difference between “a=12” and “a==12”? (assuming “a” is a variable of class int)

Click or tap here to enter text.

1. Adjust your code from the previous lesson –lesson 11— to be using at least three different logical operators. Insert a screenshot (or multiple screenshots) of your code.





**Part 15 – NOTE: WE ARE SKIPPING PARTS 13 and 14**

1. Up to this point, all of our code sketches have only used two default functions, the setup function and the loop function. However, it is possible to create your very own function! What is the point of creating a new function and when is it advantageous to create a new function versus just using the default functions?

Click or tap here to enter text.