This code provides important .examples of string (char array[]) manipulation crucial to your success in the upcomng RPNCalcualtor Project.

Create an Arduino project called **stringExercises** and replace the default code with the sketch below.

// PROJECT  :stringExercises

// PURPOSE#1:Introduction of (Arduino) C string data type as array of char

// PURPOSE#2:Preparation for RPNCalculator Project

// COURSE   :ICS3U-E

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// DATE     :2025 04 14

// MCU      :\*

// STATUS   :Working

// REFERENCE:https://docs.arduino.cc/language-reference/en/variables/data-types/string/

//          :http://darcy.rsgc.on.ca/ACES/TEI3M/Tasks.html#RPN

//          :AVR-Libc:https://www.nongnu.org/avr-libc/user-manual/string\_8h.html

//          :CPlusPlus: https://cplusplus.com/reference/cstring/

// NOTE     :No Third-Party Libraries

#define NULL '\0'  //good idea to name Control Characters

#define TAB '\t'

//Various char array declaration from Reference #1 above

char str1[15];

char str2[8] = { 'a', 'r', 'd', 'u', 'i', 'n', 'o' };

char str3[8] = { 'a', 'r', 'd', 'u', 'i', 'n', 'o', NULL };

char str4[] = "arduino";

char str5[8] = "Arduino";

char str6[15] = "arduino";

char \*p;  // pointer to a character

char newChar[2];

void setup() {

  Serial.begin(9600, SERIAL\_8N1);  //2nd parameter is optional

  show(str1, sizeof(str1));  //confirm

  show(str2, sizeof(str2));  //

  show(str3, sizeof(str3));  //

  show(str4, sizeof(str4));  //

  show(str5, sizeof(str5));  //

  show(str6, sizeof(str6));  //

  // demonstrate similarity between char array[] and a 'pointer to a char'

  p = &str4[0];

  show(p, sizeof(str4));  //confirm

  show(p, sizeof(p));     //confirm

  Serial.println();

strcpy(str5, "2");         //modify contents of a char array

  show(str5, sizeof(str5));  //confirm

  float operand = atof(str5);   //convert string to a float

  Serial.println(operand + 1);  //confirm

  strcat(str5, ".14159");       //join (concatenate) two strings

  operand = atof(str5);         //convert a char array of digits to a float

  Serial.println(operand + 1,5);//confirm

  char str7[8] = "17";       //demonstration of string modification

  show(str7, sizeof(str7));  //confirm

  str7[0] = '2';

  show(str7, sizeof(str7));  //confirm

  Serial.println(str7);      //confirm

  newChar[0] = '6';          //replace a character at a specific position

  strcat(str7, newChar);     //append char array to end of dest array

  show(str7, sizeof(str7));  //confirm

  Serial.println(str7);      //confirm

}

// Utility function to display the contents of a character array

void show(char a[], uint8\_t length) {

  Serial.print(length);

  Serial.print(TAB);

  for (uint8\_t i = 0; i < length; i++)

    Serial.print(a[i] == NULL ? '!' : a[i]);

  Serial.println();

}

void loop() {}

## **Serial Monitor Output:**

15 !!!!!!!!!!!!!!!

8 arduino!

8 arduino!

8 arduino!

8 Arduino!

15 arduino!!!!!!!!

8 arduino!

2 ar

8 2!duino!

3.00

3.14159

8 17!!!!!!

8 27!!!!!!

27

8 276!!!!!

276