Alan Bernal

Pseudocode:

Output the name and data of the assignment.

Extract value from the .obj file

Process the values into dataArray, vsum the values, find the max and min.

Used the bubble sort algorithm to organize dataArray in order.

Use the array values to find the median according to the length of the array.

Output the values with the fprint function.

Code:

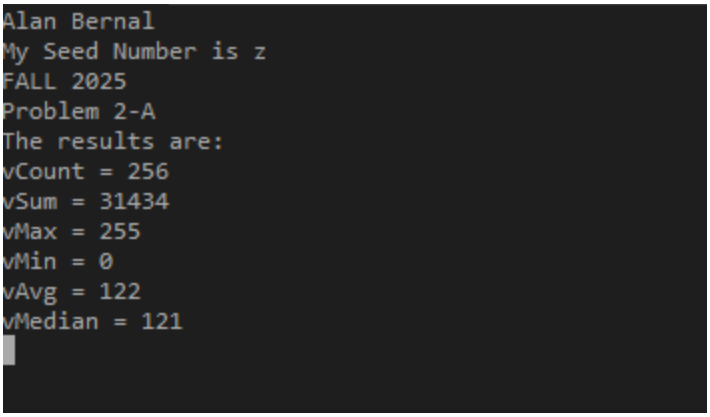
```
/*
 *  HW Assignment: CPGM0
 *  EEL-4746 Fall 2025
 *  Alan Bernal
 *  Date: 10/8/2025
 *  This is my first EEL-4746 C Program (fixed version)
 */

// Standard Includes

#include "driverlib.h"
#include <stdint.h>
#include <stdio.h>

//Include file for BCUART function
#include "HAL_UART_4746.h"


// Function Prototypes
void GPIO_init();

//Function object file
extern uint8_t myData(uint8_t cmd, uint8_t *dataValue);
```

```
//  Main Function
void main(void){

   //Define Local Variable
   char buffer[100];
   uint8_t dataValue;
   uint16_t i, j;
   uint16_t vCount = 0;
   uint32_t vSum = 0;
   uint8_t vMax = 0;
   uint8_t vAvg = 0;
   uint8_t vMedian = 0;
   uint8_t vMin = 255;
   uint8_t dataArray[256];


   //WDT
   WDT_A_hold(WDT_A_BASE);

   //Initialize LED0 and set it low
   GPIO_setAsOutputPin(GPIO_PORT_P1, GPIO_PIN0);
   GPIO_setOutputLowOnPin(GPIO_PORT_P1, GPIO_PIN0);

   //Initialize and Configure UART
   UART_initGPIO();
   UART_init();

   //Activate New Port Configurations
   PMM_unlockLPM5();

   sprintf(buffer, "Alan Bernal \r\n");
   UART_transmitString(buffer);

   sprintf(buffer, "My Seed Number is z\r\n");
   UART_transmitString(buffer);

   sprintf(buffer, "FALL 2025 \r\n");
   UART_transmitString(buffer);

   sprintf(buffer, "Problem 2-A \r\n");
   UART_transmitString(buffer);

   sprintf(buffer, "The results are: \r\n");
   UART_transmitString(buffer);
```

```
//--------------CODE------------------//


//Get Data from file.
while (1)
{

  if (vCount < 256)
  {
    dataArray[vCount] = myData(vCount, &dataValue);
    vSum += dataArray[vCount];

    if (dataArray[vCount] > vMax) vMax = dataArray[vCount];
    if (dataArray[vCount] < vMin) vMin = dataArray[vCount];


    vCount++;
  }
  else
  {
    // array full
    break;
  }
}


// Compute average only if we read at least one value
if (vCount > 0) {
  vAvg = (uint8_t)(vSum / vCount);
} else {
  vAvg = 0;
}

//Sort Values

if (vCount > 0) {
  // Sort dataArray (use 16-bit indices to avoid overflow when vCount==256)
  for(i = 0; i < (uint16_t)(vCount - 1); i++){
    for(j = i + 1; j < vCount; j++){
      if (dataArray[i] > dataArray[j]) {
        uint8_t temp = dataArray[i];
        dataArray[i] = dataArray[j];
        dataArray[j] = temp;
      }
```

```
        }
      }
    }

    if (vCount > 0) {
      if (vCount % 2 == 0) {
        vMedian = (dataArray[vCount/2 - 1] + dataArray[vCount/2]) / 2;
      } else {
        vMedian = dataArray[vCount/2];
      }
    } else {
      vMedian = 0;
    }

    //-----------Writing UART------------------//

    sprintf(buffer, "vCount = %d \r\n", vCount);
    UART_transmitString(buffer);

    sprintf(buffer, "vSum = %d \r\n",  vSum);
    UART_transmitString(buffer);

    sprintf(buffer, "vMax = %d \r\n",  vMax);
    UART_transmitString(buffer);

    sprintf(buffer, "vMin = %d \r\n", vMin);
    UART_transmitString(buffer);

    sprintf(buffer, "vAvg = %d \r\n",  vAvg);
    UART_transmitString(buffer);

    sprintf(buffer, "vMedian = %d \r\n",  vMedian);
    UART_transmitString(buffer);

    //Turn LED ON.. done
    GPIO_setOutputHighOnPin(GPIO_PORT_P1, GPIO_PIN0);

    //Spin Loop
    while(1){
      // Nothing here.
    }


}
```

Terminal:


Alan Bernal
My Seed Number is z
FALL 2025
Problem 2-A
The results are:
vCount = 256
vSum = 31434
vMax = 255
vMin = 0
vAvg = 122
vMedian = 121