



University of the
West of England

MODULAR PROGRAMME

COURSEWORK ASSESSMENT SPECIFICATION

Module Details

Module Code UFCFDS-15-1	Run 22/23 CW	Module Title COMPUTER SYSTEMS ARCHITECTURE
Module Leader Martin Serpell	Module Coordinator	Module Tutors Martin Serpell, Djamel Djenouri, Desmond Case, Paul Jackson
Component and Element Number A Test 1		Weighting: (% of the Module's assessment) 60%
Element Description		Total Assignment time 24 hours

Dates

Date Issued to Students 30/01/2023	Date to be Returned to Students 18/5/2023
Submission Place Blackboard	Submission Date 02/05/2023
	Submission Time 14:00hrs (GMT)

Deliverables

As listed on the Assignment specification sheet

Module Leader Signature

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UFCFDS-15-1 CSA: Course Work Specification, CW 2022-23

There are two parts to this assignment

- 1) a written report
- 2) a programming task

Deliverables

There are two deliverables: a report on sustainability written in MS Word or PDF and a C program. Both are to be placed in a directory, zipped and uploaded to Blackboard. The compression algorithm must produce a .zip formatted file.

The Assignment

1. Report

This report should detail a sustainability issue related to the IT industry. It can be how IT can be used in other industries to improve sustainability. It can follow on from work done during the induction week at UWE. Correct research and citations are to be used. Marks will be given for the student demonstrating an understanding of the subject and using correct citation and referencing.

Marks will be given for:

- Understanding the subject - 6
- References (must be peer reviewed journals) (UWE Harvard format) - 8
- Citations (UWE Harvard format) - 8
- Grammar and spelling - 3
- Structure (sensible headings and sub-headings) - 4
- Correct terminology - 4
- 3rd Person - 3
- Flows nicely - 4

Allocation of marks: **0 to 40 marks**

2. Programming Task

You will need to demonstrate communications working between two Arduino computer systems.

Demonstrate the button on the first Arduino turning the buzzer on and off on the second Arduino (and vice versa).	5 marks
Demonstrate the tilt-switch on the first Arduino turning an LED on and off on the second Arduino (and vice versa).	5 marks
Demonstrate the potentiometer on the first Arduino changing the value displayed on the 1-digit 7-segment display on the second Arduino (and vice versa).	10 marks
Demonstrate the Temperature and humidity sensors on the first Arduino changing the value displayed on the 4-digit 7-segment display (first two digits temperature and second two digits percentage humidity) on the second Arduino (and vice versa).	25 marks

Demonstrate the joystick on the first Arduino changing the speed of the fan motor on the second Arduino (and vice versa).	25 marks
Demonstrate the ultrasound sensor on the first Arduino changing the LCD display on the second Arduino (and vice versa).	25 marks

If you get any of these working, then your communications must be working and so you get an extra 15 marks.

The communications message (9 bytes long) will look like this...

Start Byte 0x70	Button On/off (1/0)	Tilt Switch (1/0)	Potentiometer 0..7	A 0..99	B 0..99	C 0..99	D 0..99	Stop Byte 0x71
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A, B, C and D are values from the input devices (some have two values) of the projects worth 25 marks. You choose what goes where. If another Arduino can read them in and act upon them, you get the marks.

You may have noticed that you can get more than 60 marks on this part of the assignment. However, doing more than one 25-mark project may be impossible because of the number of inputs and outputs available. But give it a try. You can use the extra marks to offset any lose of marks on your report.

Also, on the 25-mark projects I don't mind if you mix up the inputs and outputs, e.g., the ultrasound sensor driving the fan motor.

All projects must be wired into the board and working at the same time in the lab when this is marked (no re-wiring).

Allocation of marks: **0 to 60 marks**