Ontwerp (E) - Design (E) - 314

Started on	Monday, 29 March 2021, 12:00
State	Finished
Completed on	Monday, 29 March 2021, 12:16
Time taken	15 mins 57 secs
Marks	7.80/15.00
Grade	**5.20** out of 10.00 (**52**%)

Question **1**

Incorrect

Mark 0.00 out of 2.00

You just arrived at the testing station for Demo 1. You have uploaded your working C-code to your Nucleo board, and plugged it into the test station. During the demo, the power indicator LED on your baseboard switches on but the test station did not receive any of your UART data. From the listed actions, choose the order of the four most appropriate actions which you will do to debug the problem:

U het pas by die toetsstasie aangekom vir Demo 1. U het u werkende C-kode op u Nucleo-bord gelaai en in die toetsstasie ingeprop. Tydens die demo gaan die aanwyser-LED op u basisbord aan, maar die UART-data het die toetsstasie nie ontvang nie. Kies uit die gelyste aksies die volgorde van die vier geskikste aksies wat u sal doen om die probleem op te spoor:

1)
Check that F1 has been bridged / Kyk of F1 oorbrug is
✖

2)
Check that the Nucleo is plugged in correctly / Kyk of die Nucleo korrek ingeprop is
✖

3)
Check that the Nucleo board J5 is set to E5V setting / Kyk of die Nucleo-bord J5 op E5V ingestel is
✖

4)
Check that CN3 RX pin is connected to the TIC / Kyk of CN3 RX-pen aan die TIC gekoppel is
✖

Check that the DC power socket is plugged in / Kyk of die GS kragsok ingeprop is

Check that J30 and J31 has jumpers ON / Kyk of J30 en J31 kortsluitings AAN het

Measure with the Multimeter if you have 5V supply / Meet met die Multimeter of jy 5V toevoer het

Check that the voltage and current setting on the bench power supply is correct / Kyk of die spanning en stroominstelling op die bank se k

Check that the Nucleo board J5 is set to E5V setting / Kyk of die Nucleo-bord J5 op E5V ingestel is

Measure with the oscilloscope whether the 5V supply is correct / Meet met die ossilloskoop of die 5V toevoer korrek is

Check that your working UART-TX code for Demo 1 is uploaded to the Nucleo / Kyk of u werkende UART-TX-kode vir Demo 1 op die Nu

Check that the USB A-B cable is plugged into the baseboard / Kyk of die USB A-B-kabel in die basisbord geprop is

Check that the Nucleo is plugged in correctly / Kyk of die Nucleo korrek ingeprop is

Check that CN3 RX pin is connected to the TIC / Kyk of CN3 RX-pen aan die TIC gekoppel is

Check that the USB A-miniB cable is plugged into the Nucleo board / Kyk of die USB A-miniB-kabel in die Nucleo-bord gepro

Check that CN3 TX pin is connected to the TIC / Kyk of CN3 TX-pen aan die TIC gekoppel is

Check that F1 has been bridged / Kyk of F1 oorbrug is

Your answer is incorrect.

The correct answer is:
You just arrived at the testing station for Demo 1. You have uploaded your working C-code to your Nucleo board, and plugged it into the test station. During the demo, the power indicator LED on your baseboard switches on but the test station did not receive any of your UART data. From the listed actions, choose the order of the four most appropriate actions which you will do to debug the problem:

U het pas by die toetsstasie aangekom vir Demo 1. U het u werkende C-kode op u Nucleo-bord gelaai en in die toetsstasie ingeprop. Tydens die demo gaan die aanwyser-LED op u basisbord aan, maar die UART-data het die toetsstasie nie ontvang nie. Kies uit die gelyste aksies die volgorde van die vier geskikste aksies wat u sal doen om die probleem op te spoor:

1) [Check that CN3 RX pin is connected to the TIC / Kyk of CN3 RX-pen aan die TIC gekoppel is]

2) [Check that the Nucleo board J5 is set to E5V setting / Kyk of die Nucleo-bord J5 op E5V ingestel is]

3) [Check that F1 has been bridged / Kyk of F1 oorbrug is]

4) [Check that the Nucleo is plugged in correctly / Kyk of die Nucleo korrek ingeprop is]

Question **2**

Partially correct

Mark 1.00 out of 3.00

Given the datasheet of the MCP1700 regulator (as found on the SunLearn EDesign page), an input voltage range of 5 to 9V, and a load resistance of 25 ohm, what is the minimum and maximum power that is dissipated by the device?

Gegee die datavel van die MCP1700 reguleerder (soos gevind op die SunLearn Ontwerp webblad), 'n intree spanningsbereik van 5 tot 9V, en 'n lasweerstand van 25 ohm, wat is die minimum en maksimum krag wat deur die reguleerder verkwis word?

Minimum 1 ✖ W

Maximum 3.24 ✖ W

According to the datasheet of the MCP1700, what is the maximum supply voltage you can connect to it?

Volgens die datablad van die MCP1700, wat is die maksimum toevoerspanning wat jy daaraan kan koppel?

6 ✔ V

Question **3**

Partially correct

Mark 3.00 out of 5.00

Match the following terminal output (a) to (e) to the code segments

Kies die toepaslike kode segmente wat by elke terminaal afvoer (a) tot (e) pas

(a)

```
1234
```

(b)

```
4Vx
```

(c)

```
12345678123456781234567812345678123456781234567812345678...
```

(d)

```
12345678
```

(e)

```
char mymsg[] = "12345678";
uint8_t* myptr = mymsg;
HAL_UART_Transmit(&huart2, myptr, sizeof(myptr), 1000);
while (1)
{
}
```

(d) ✖

```
char mymsg[] = "12345678";
while (1)
{
   HAL_UART_Transmit(&huart2, mymsg, sizeof(mymsg), 1000);
}
```

(c) ✔

```
uint32_t studentnum = 12345678;
char mystr[10] = sprintf("%d", studentnum);
HAL_UART_Transmit(&huart2, mystr, 8, 1000);
while (1)
{
}
```

(a) ✖

```
uint32_t studentnum = 0x12345678;
HAL_UART_Transmit(&huart2, &studentnum, 4, 1000);
while (1)
{
}
```

(b) ✔

```
char mymsg[] = "12345678";
while (1)
{
   HAL_UART_Transmit(&huart2, mymsg, 0, 8);
}
```

(e) ✔

Your answer is partially correct.

You have correctly selected 3.

The correct answer is:

```
char mymsg[] = "12345678";
uint8_t* myptr = mymsg;
HAL_UART_Transmit(&huart2, myptr, sizeof(myptr), 1000);
while (1)
{
}
```

→ (a),

```
char mymsg[] = "12345678";
while (1)
{
   HAL_UART_Transmit(&huart2, mymsg, sizeof(mymsg), 1000);
}
```

→ (c),

```
uint32_t studentnum = 12345678;
char mystr[10] = sprintf("%d", studentnum);
HAL_UART_Transmit(&huart2, mystr, 8, 1000);
while (1)
{
}
```

→ (d),

```
uint32_t studentnum = 0x12345678;
HAL_UART_Transmit(&huart2, &studentnum, 4, 1000);
while (1)
{
}
```

→ (b),

```
char mymsg[] = "12345678";
while (1)
{
   HAL_UART_Transmit(&huart2, mymsg, 0, 8);
}
```

→ (e)

Question **4**

Correct

Mark 1.00 out of 1.00

Why would the test station not receive your UART message if you forget to switch the power jumper on your Nucleo module to E5V (external power)?

Waarom sal die toetsstasie nie jou UART boodskap ontvang as jy vergeet om die kortsluiting skakel (jumper) op E5V (eksterne krag) te sit nie?

Select one:

- a. The UART connection has to be made to the TX pin instead / Die UART verbinding moet eerder na die TX lyn gemaak word
- b. The debug cable is not present / Die ontfoutingskabel is nie ingeprop nie
- c. The 7805 regulator is not powered by the test station / Die 7805 reguleerder word nie van krag voorsien deur die toetsstasie nie
- d. The 5 external interrupts is not enabled / Die 5 eksterne onderbrekings is nie aangeskakel nie
- e. The baudrate will be incorrect / Die bistempo sal verkeerd wees
- f. The STM32 microcontroller will not get power / Die STM32 verwerker sal nie krag kry nie ✔

Your answer is correct.

The correct answer is: The STM32 microcontroller will not get power / Die STM32 verwerker sal nie krag kry nie

Question **5**

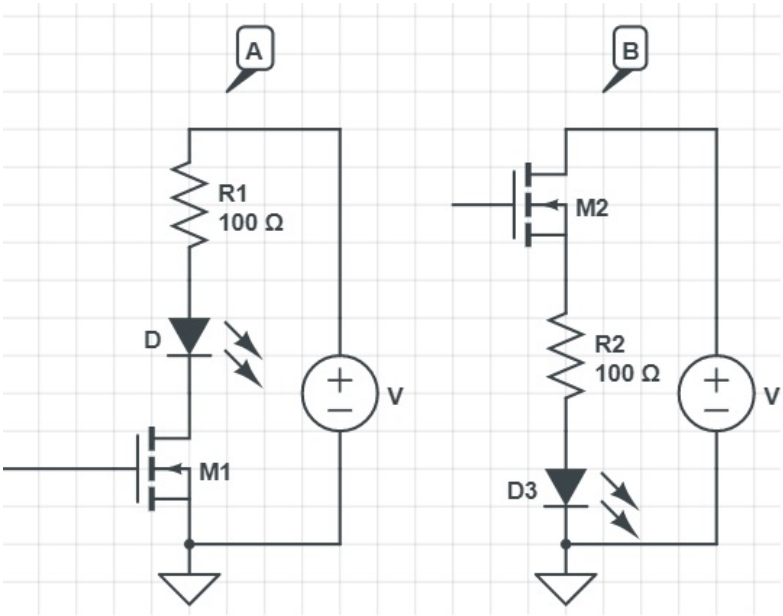
Correct

Mark 2.00 out of 2.00

Which is the correct method to connect the MOSFETs you received:

Wat is die korrekte metode om die MOSFET's wat u ontvang het, te koppel:

A ✔



For the dot matrix display, why do we need to use MOSFETs?

Waarom moet ons MOSFET's gebruik vir die puntmatriksvertoning?

- The GPIO's are setup as outputs and not inputs / *Die GPIO's is ingestel as uittrees en nie intrees nie*
- To obtain the required current gain / Om die nodige stroomaanwins te verkry
- The GPIO pins cannot sink the required current / *Die GPIO-penne kan nie die benodigde stroom sink nie* ✔
- The GPIO pins cannot source the required current / *Die GPIO-penne kan nie die benodigde stroom verskaf nie*
- To adjust the output voltage level for the LED / Om die uittreespanning aan te pas vir die LED

Mark 1.00 out of 1.00

The correct answer is: The GPIO pins cannot sink the required current / *Die GPIO-penne kan nie die benodigde stroom sink nie*

Question **6**

Partially correct

Mark 0.80 out of 2.00

It is 21:59, you are in the EE Lab, together with 20 other E-Design students, working on your project. Your demonstration slot is 10:00 tomorrow morning, and you have other classes from 11:00. In the last two hours you have made several changes to your code trying to get your LEDs working correctly, with no success. With your project's current state, you should get 50%-60% for the demonstration. You have some choices to make at this point in time. Base your actions on your experience of "what should be done", and not "what I have done" with regards to good project management, design approaces and engineering ethics. Select ALL the applicable actions from the options in the list below. (Bad choices will add negative marks to a minimum of 0)

Dit is 21:59, jy is in die EE Lab, saam met 20 ander E-Ontwerp studente, besig om aan jou projek te werk. Jou demonstrasie gleuf is 10:00 more oggend, en jy het ander klasse vanaf 11:00. In die laaste twee ure het jy vele veranderinge aan jou kode gemaak om jou LED om te werk, sonder sukses. Met jou projek se huidige status, behoort jy 50%-60% te kry vir die demonstrasie. Jy het 'n paar keuses om te maak by hierdie punt in tyd. Baseer jou aksies op jou ervaring van "wat behoort gedoen te word", en nie "wat ek gedoen het" nie met betrekking tot goeie projek bestuur, ontwerp benadering en ingenieurs etiek. Selekteer AL die toepaslike aksies in die lys hieronder. (Slegte keuses sal negatiewe punte byvoeg tot 'n minimum van 0)

Select one or more:

- [x] Go over to a friend/collegue and ask him/her for advice on fixing your problem. / *Gaan oor na 'n vriend/kollega en vra hom/haar vir advies om jou probleem op te los.* ✔
- [ ] Continue working on the problem alone, even if it takes till 07:00. / *Werk alleen voort aan die probleem, selfs al vat dit tot 07:00.*
- [ ] Throw your hands in the air and yell: "I give up!" / *Gooi jou hande in die lug en skree: "Ek gee op!"*
- [x] Check that you are working with the correct source and binary files. / *Kyk dat jy met die regte bronkode en binêre lêers werk.* ✔
- [ ] Stand up and go get a coffee/tea/energy drink. / *Staan op en gaan kry 'n koffie/tee/energie drankie.*
- [ ] Get a copy of some working code and change the ID number to match your student number. / *Kry 'n kopie van werkende kode en verander die ID nommer om jou studente nommer te pas.*
- [ ] De-solder the LEDs so long and wait till 08:00 to get replacements from the lecturer. / *Soldeer die LEDs solank los en wag tot 08:00 om 'n vervanging van die dosent te verkry.*
- [ ] Bribe a close friend to write/fix your code for you. / *Koop 'n goeie vriend om om jou kode vir jou te skryf/reg te maak.*
- [ ] Read the datasheet/class notes/manuals again. / *Lees die datavel/klasnotas/handleiding weer.*
- [ ] Decide to start reading "The Silmarillion" by J.R.R. Tolkien. / *Besluit om "The Silmarillion" deur J.R.R. Tolkien te begin lees.*
- [ ] Before doing anything else, go home and replace the flip-flops you are wearing with closed shoes. / *Voor jy enigiets anders doen, gaan huis toe en vervang die plakkies wat jy dra met toe skoene.*
- [ ] Fall asleep on your workbench. / *Raak aan die slaap op jou werksbank.*

Your answer is partially correct.

You have correctly selected 2.
The correct answers are: Stand up and go get a coffee/tea/energy drink. / *Staan op en gaan kry 'n koffie/tee/energie drankie.*, Go over to a friend/collegue and ask him/her for advice on fixing your problem. / *Gaan oor na 'n vriend/kollega en vra hom/haar vir advies om jou probleem op te los.*, Read the datasheet/class notes/manuals again. / *Lees die datavel/klasnotas/handleiding weer.*, Check that you are working with the correct source and binary files. / *Kyk dat jy met die regte bronkode en binêre lêers werk.*, Before doing anything else, go home and replace the flip-flops you are wearing with closed shoes. / *Voor jy enigiets anders doen, gaan huis toe en vervang die plakkies wat jy dra met toe skoene.*

◄ Callen Fisher - Meetings

Jump to...

Practical session choice - select before 2...