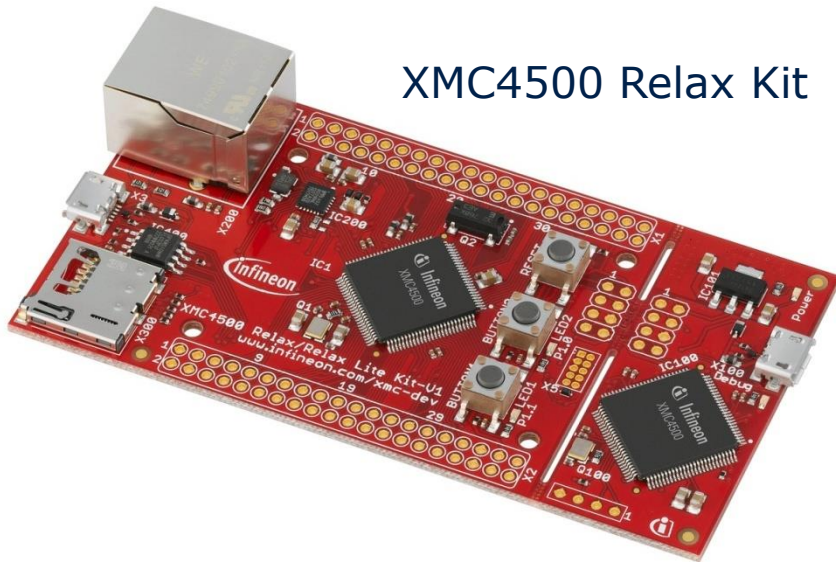
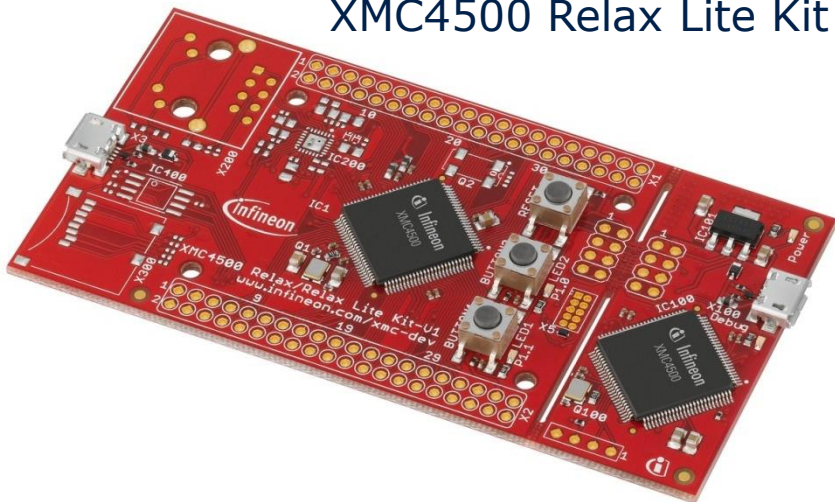




XMC4500 Relax Kit



XMC4500 Relax Lite Kit



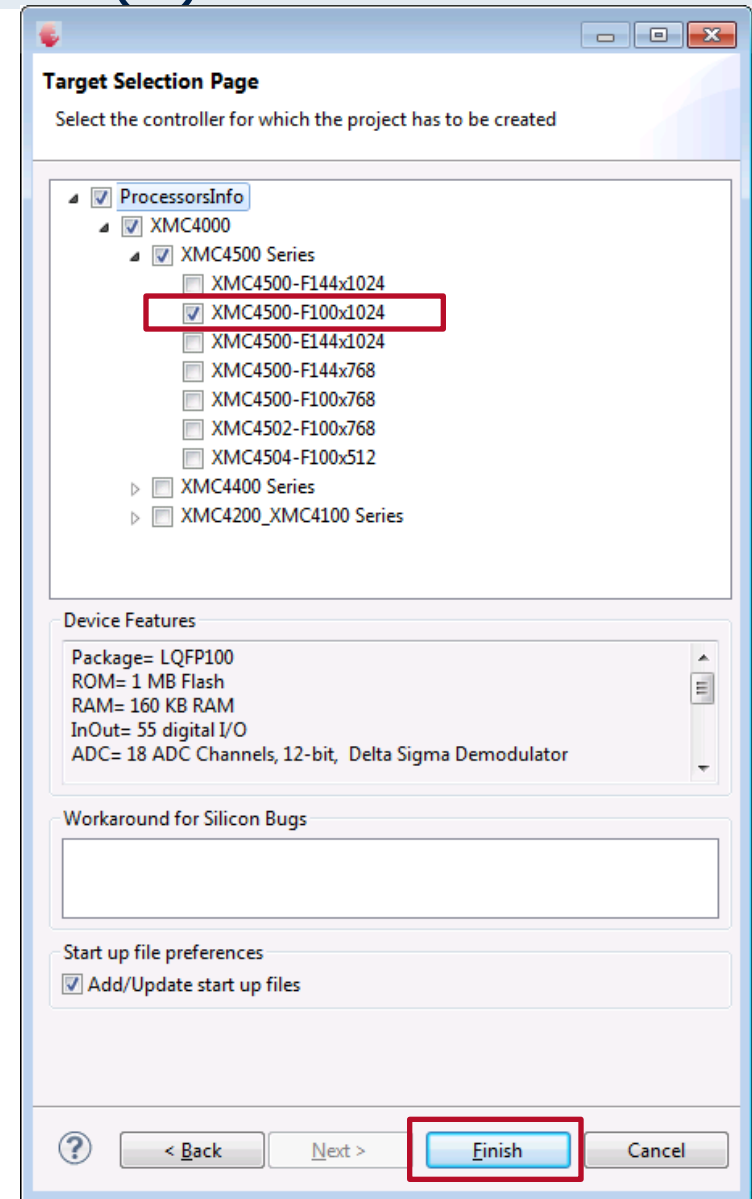
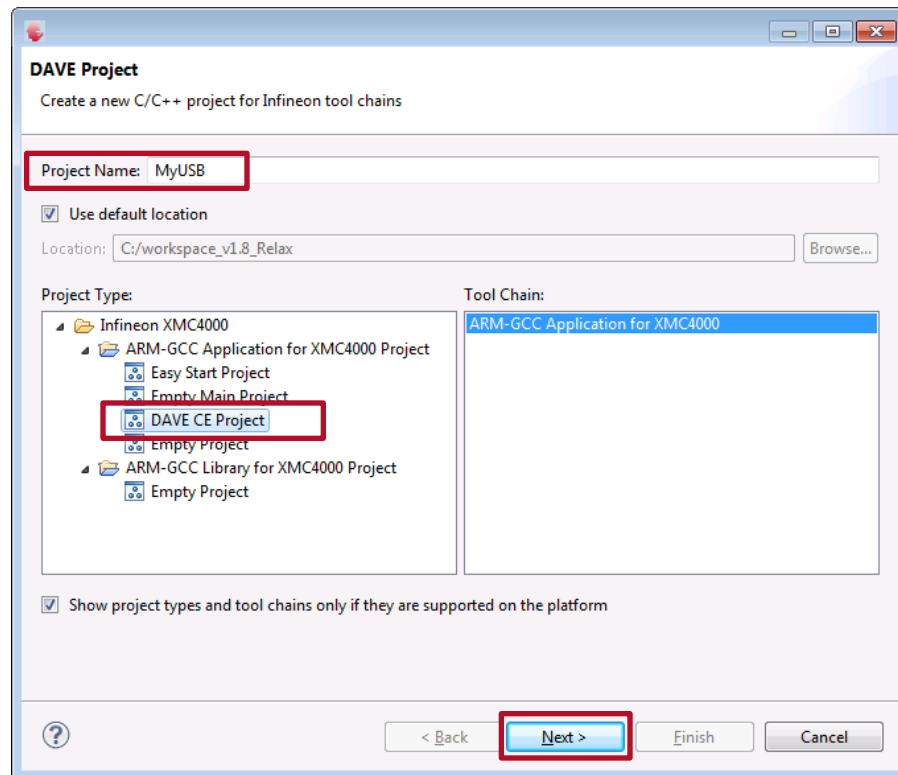
- The XMC4500 Relax Kit and the XMC4500 Relax Lite Kit are new budget-priced evaluation boards equipped with:
  - ARM® Cortex™-M4F CPU running on 120MHz
  - 1MB Flash
  - 160KB RAM
- The Relax Lite Kit offers a complete set of on-board devices and plugs to run USB-based applications and to develop human machine interfaces with buttons and LEDs
- The Relax Kit extends the feature set with an Ethernet-enabled communication option. It also allows developers to explore mass storage and file systems using a microSD card. In addition, it comes with serial flash memory

# Exercise 1: USB Virtual Serial Port

- Implement a USB CDC Class (USBVC001) acting as virtual serial port:
  - Send "Hello Word" to the terminal program via USB on reception of any character/string.

# Exercise 1: USB Virtual Serial Port (1)

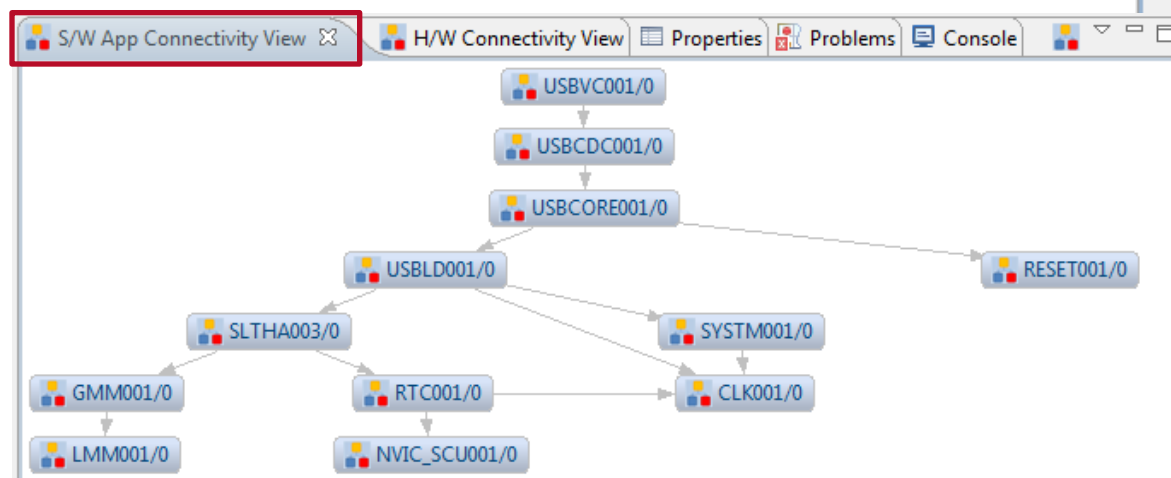
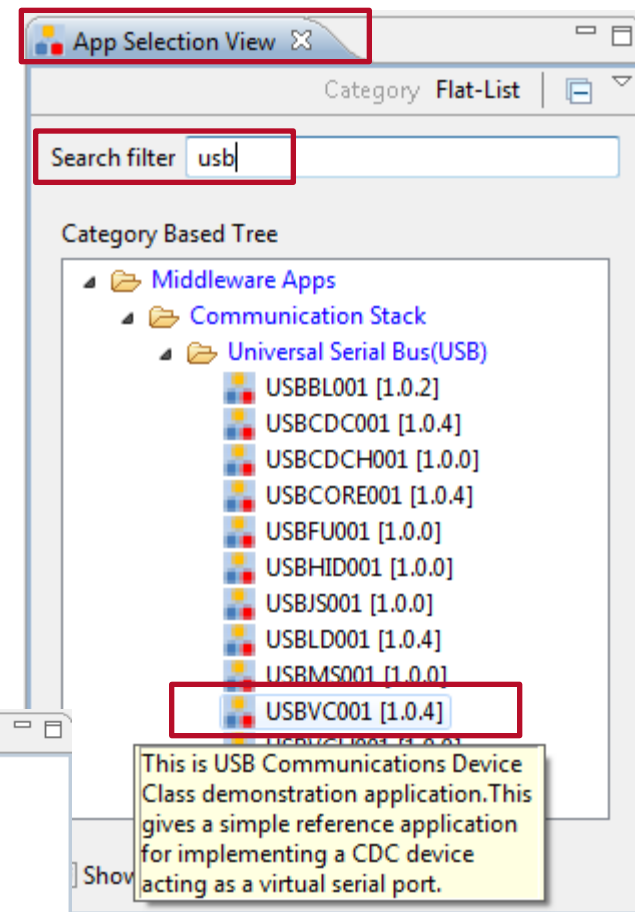
- Start a New Project
  - File > New > DAVE Project
- Project Name: **MyUSB**
- Project Type: **DAVE CE Project**
- Target Device: **XMC4500-F100x1024**



# Exercise 1: USB Virtual Serial Port (2)


## ■ Add an App to your project:

- The “Search Filter” in the “App Selection View” helps you to find Apps
- Double Click on the **USBVC001** App to insert the App into your project
- In the “S/W App Connectivity View” window all requires “Sub”-Apps will appear



- Use the mouseover function to get more details about the Apps

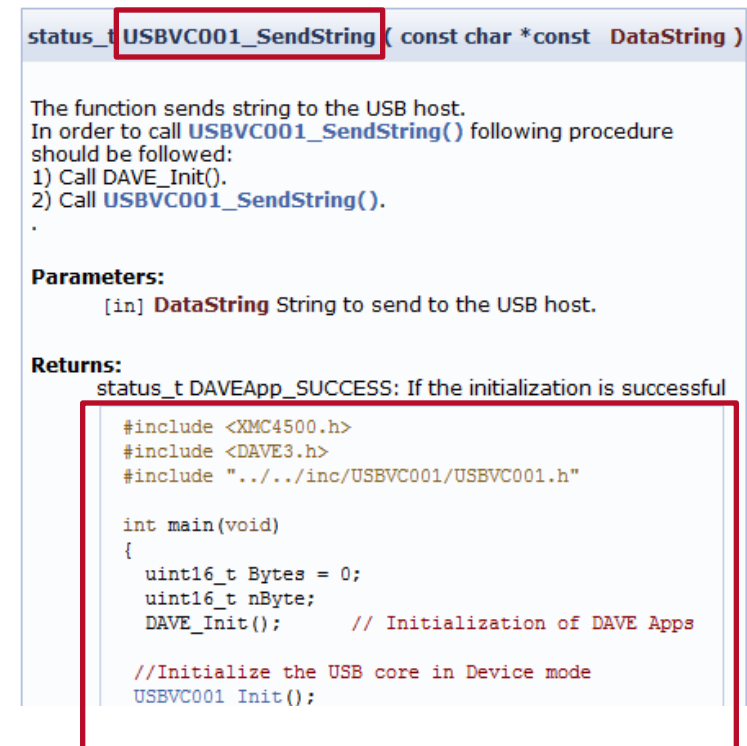
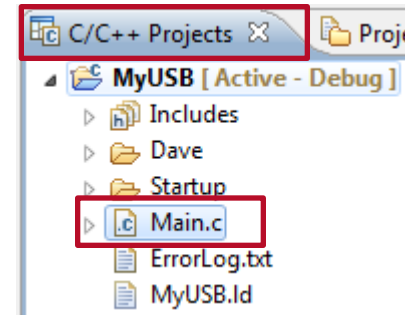
# Exercise 1: USB Virtual Serial Port (3)

- Look up in the Apps documentation:
  - Press F1 or click Help > Dynamic Help
  - Then click on the App 
  - In **Help** window click on "More Info"
  - Click "**API Documentation**"





# Exercise 1: USB Virtual Serial Port (4)

- Use the example code from the documentation in your project:
  - In the **C/C++ Projects** window double click on **Main.c**
  - Delete the code in Main.c window.
  - In Help: Copy the complete **code example** of the function „**USBVC001\_SendString**“
  - In Main.c: Paste the code example



# Exercise 1: USB Virtual Serial Port (5)

- Click  to generate the code
  - Code needs to be generated only if
    - new Apps have been added to the project or
    - Apps settings have been changed
- Build the project: 
- Exercises:
  - Study the code in main. What needs to be changed in the code, if "Hello World" should be send on reception of a byte only? Modify the code.
  - Where can you find the compiler messages und what error does the compiler report? Correct the code!



# Exercise 1: USB Virtual Serial Port (6)

## ■ Exercises Solution:

- What needs to be changed in the code, if "Hello World" should be send only on reception of a byte?

Move the function "USBVC001\_SendString" into the if-condition:

```
if (Bytes != 0)
{
    .....
    USBVC001_SendString((const char *)"Hello World");
}
```

- Where can you find the compiler messages and what error does the compiler report?

"Console" shows compiler messages.

Add code for TxBuffer declaration:

```
int main(void)
{
    int8_t TxBuffer[100];
    uint16_t Bytes = 0;
    uint16_t nByte;
```

## ■ Build the project again.

# Exercise 1: USB Virtual Serial Port (7)

■ Connect Relax Kit via USB cable to X100

■ Setup a Debug Session

□ Click the "bug" button



□ Double Click on "TASKING C/C++ Debug"

□ Click the "Debug" button

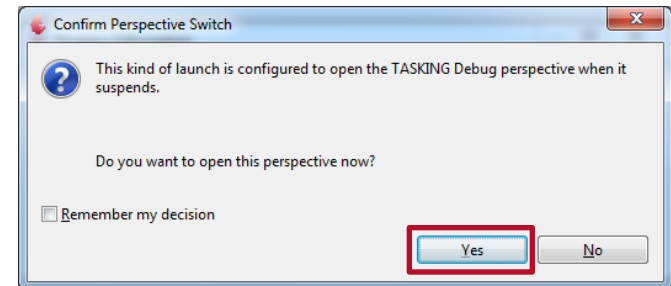
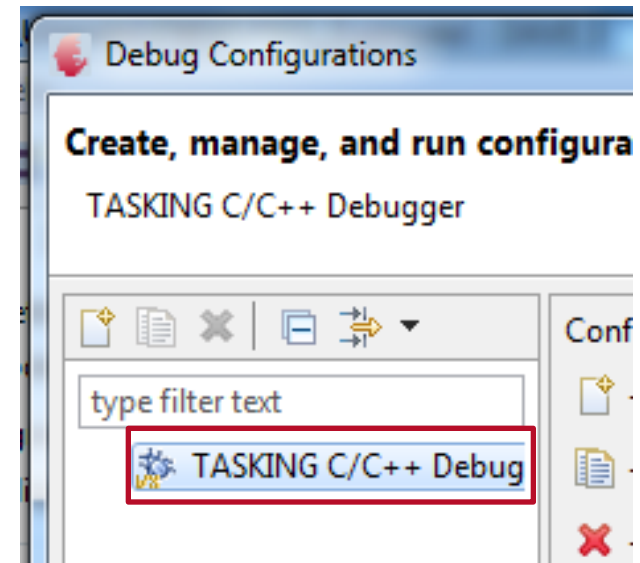


□ Click "Yes" in the "Confirm Perspective Switch" dialog

□ Run the program with the "Resume" button



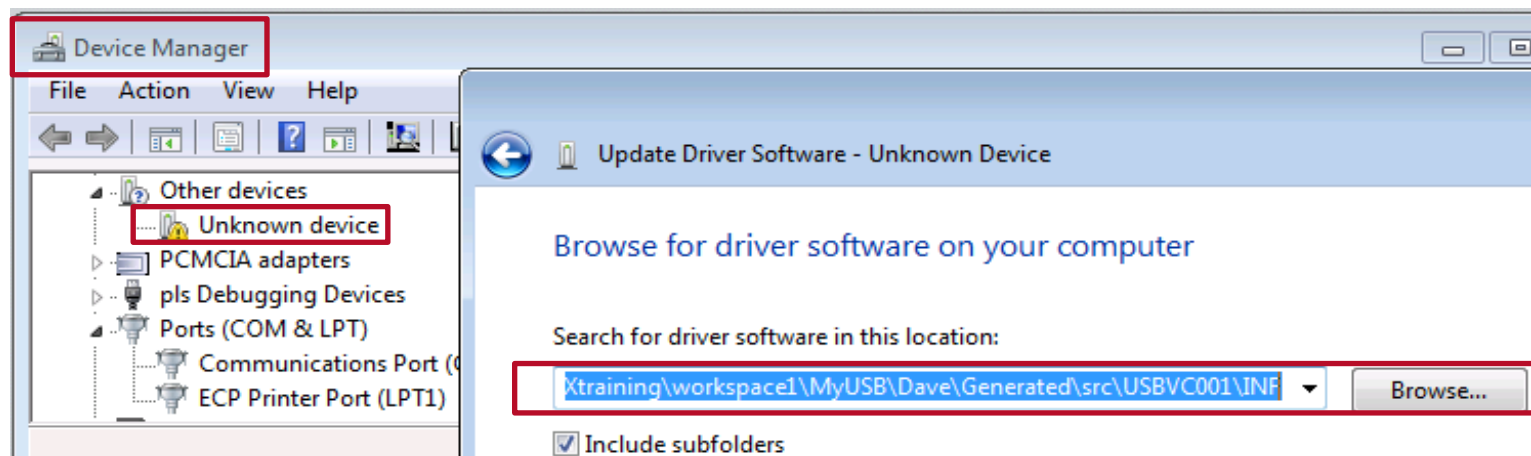
■ Note: The next time you want to launch the debugger, just click on the "bug" button



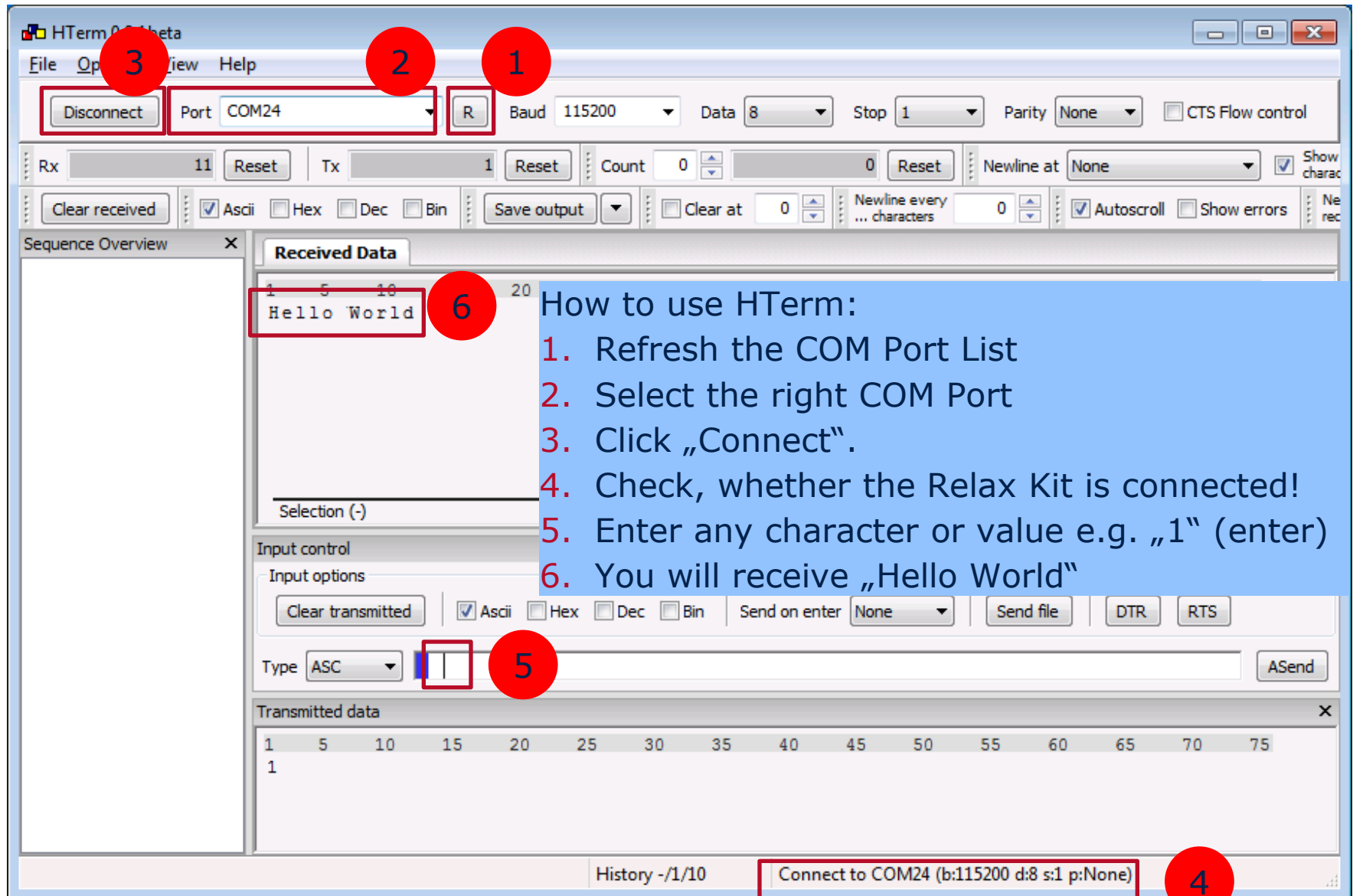
# Exercise 1: USB Virtual Serial Port (8)

## ■ Installation of USB Driver on the PC:

- ❑ Connect USB port (X3) of the Relax Kit to your PC
- ❑ Open Windows **Device Manager** from the control panel
- ❑ Select the "**Unknown device**" with the driver error indication
- ❑ Choose the option in the properties window to update the driver
- ❑ Use the manual driver location option and point it:  
**C:\YOUR\_workspace\MyUSB\Dave\Generated\src\USBVC001\INF**



# Exercise 1: USB Virtual Serial Port (9)



The screenshot shows the HTerm software interface. Red circles with numbers 1 through 6 highlight specific actions: 1. Clicking the 'R' (Refresh) button next to the Port dropdown. 2. Selecting 'COM24' from the Port dropdown menu. 3. Clicking the 'Disconnect' button. 4. Checking the status of the Relax Kit connection. 5. Entering a character '1' in the input field. 6. Receiving the text 'Hello World' in the Received Data window.

**How to use HTerm:**

1. Refresh the COM Port List
2. Select the right COM Port
3. Click „Connect“.
4. Check, whether the Relax Kit is connected!
5. Enter any character or value e.g. „1“ (enter)
6. You will receive „Hello World“

Additional interface details: The 'Received Data' window shows 'Hello World' at line 1. The 'Transmitted data' window shows '1' at line 1. The status bar at the bottom indicates 'History -1/10' and 'Connect to COM24 (b:115200 d:8 s:1 p:None)'.



# ENERGY EFFICIENCY MOBILITY SECURITY

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