DeviceTree vtechstudy : Lesson_1

This first coding example is intended to introduce the tools and build environment, etc.

At top-level of code tree pulled from github you find these folders:

- **dts/** : sample-machine.[dts|dtb]
- ***oss-dtc/*** : header and library files from linux installation of upstream dtc project
- ***src/*** : collection of example source code, each sub-folder, e.g. ***lesson_1/*** has a **Makefile**

Study ***oss-dtc/libfdt/libfdt.h***, this defines the upstream FdtLib API and includes the possible error codes. The quizzes and coding examples assume you have a basic knowledge of the API as well as DeviceTree concepts in general.

Build lesson_1 and run with this command-line: **./lesson_1 -f sample-machine.dtb**

You should see output like this:

> ./lesson_1 running...
>
> [main] read dtb_blob[sample-machine.dtb]..size[1508]
>
> prop[0:compatible]..format[b]..data[acme,coyotes-revenge]
>
> prop[1:#address-cells]..format[w]..data[1]
>
> prop[2:#size-cells]..format[w]..data[1]
>
> example() returned [FDT_ERR_QC_NOERROR]...

You can experiment running this example, e.g. **./lesson_1 –help** to see the different command-line arguments that are available.

Now build example_1a and run it, using same .dtb file, e.g. **./lesson_1a -f sample-machine.dtb**

You should see a very slight difference in the output. Consider what might be causing this change in output or really, what might have introduced an error in the parsing of data in the .dtb file?

Q.1) A one-line change is required in lesson_1a.c to correct the parsing and output. In your answer, provide: line-number, <corrected code>

Using QDTE

Start QDTE and open sample-machine.dtb under lesson_1/ folder.

Q.2) In the root node there is a fourth property, please identify this property by name, leaving off the leading forward-slash.

Q.3) What does the value in this property represent, this is a standard property (single word answer)?

Q.4) Modify lesson_1a.c to read this fourth root property and display its value, similar to the first three properties. Cut/paste the additional line of output here:

Q.5) A DTSpec-compliant boot program shall supply #address-cells and #size-cells on all nodes that

A) have a reg property

B) have child nodes

C) have a phandle property

D) is a child of a bus controller node

Q.6) Reference dtc-help.txt in dt-vtechstudy git repo you cloned and try to construct a command-line for dtc that will generate a dts file from sample-machine.dtb. Note: Generated file-name should be sample-machine.dts. The required parameters should be in same order as listed in dtc-help.txt.

Q.7) Assuming you can generate this new .dts file, can you explain the difference on line 7? Compare generated .dts with original source for sample-machine.dtb, found in dts/ folder.