Quick Start Guide to Building with iso7816_plain.asm
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Set up directories

1. Create a directory where you will extract `iso7816_plain.zip`. The directory `C:\Projects\Atmel` will be used in this example.
2. Unzip `iso7816_plain.zip` into `C:\Projects\Atmel`. This will create the directory `C:\Projects\Atmel\iso7816_plain` and extract the following files into the latter directory: `EULA.txt`, `iso7816_plain.asm`, and `make_xpatmel_files.bat`.
3. If you will be using XPAtmel to program your development terminal, create a directory named XpAtmel in the Atmel directory (i.e., in `C:\Projects\Atmel\XpAtmel`). Copy `XpAtmel.exe` and `atmeldrv.sys` (provided with the SmartCache installation) to the `C:\Projects\Atmel\XpAtmel` directory.
4. At this point, your directory structure should look like this:
```
Projects
    Atmel
        iso7816_plain
        XpAtmel
```

Install AVR Studio

1. If you do not already have Atmel AVR Studio installed, download it from Atmel and install it (AVR Studio is provided free of charge). The current URL for AVR Studio is:
   http://www.atmel.com/dyn/products/tools_card.asp?tool_id=2725
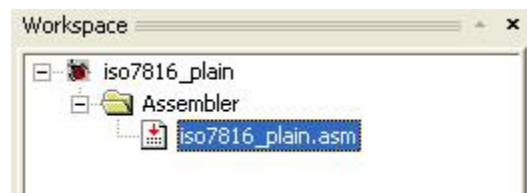
Create the AVR Studio Project for iso7816_plain

1. Open AVR Studio.
2. Select **New Project** from the **Project** Menu.
3. In the dialog that opens, set the **Location** field to `C:\Projects\Atmel\iso7816_plain` and enter `iso7816_plain` for the **Project Name**. Uncheck the **Create initial File** and **Create Folder** checkboxes. Following is a screenshot of this dialog. Press the **Next** button.

4. In the **Select debug platform and device** dialog, select "AVR Simulator" for the **Debug Platform** and select AT90S2313 for the **Device**. Following is a screenshot of this dialog. Press the **Finish** button.
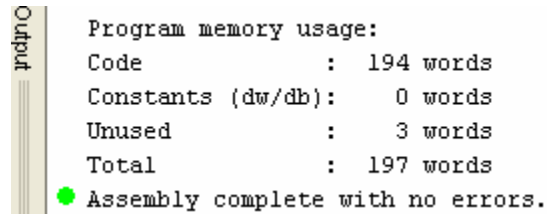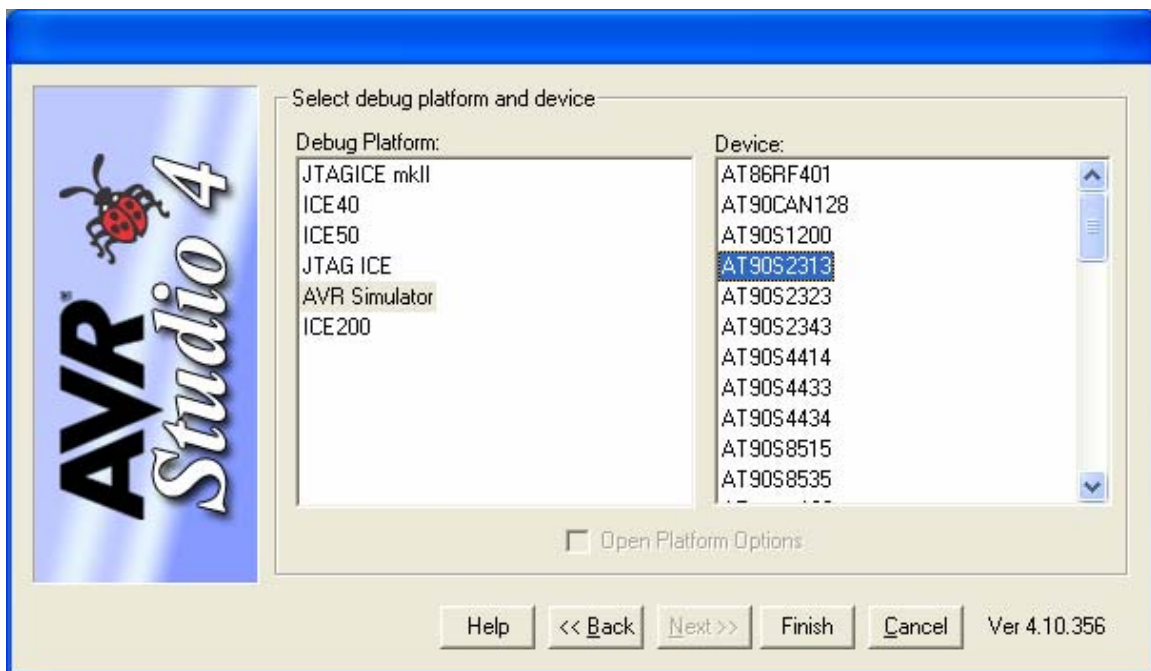

5. In the Workspace pane, right-click on the **Assembler** folder and select "Add existing file" in the popup menu. Select the file `iso7816_plain.asm` in the **Open** dialog. The workspace pane should look like this:

Build iso7816_plain

1. With the `iso7816_plain` project open in AVR Studio, select **Build** from the **Project** Menu. This will create the files `iso7816_plain.hex` and `iso7816_plain.eep` in the `iso7816_plain` project directory. The output pane should like this:

```
Output    Program memory usage:
          Code              :  194 words
          Constants (dw/db):    0 words
          Unused            :    3 words
          Total             :  197 words
        ● Assembly complete with no errors.
```

Program with XPAtmel

1. If you will be using XPAtmel to program your development terminal, run the batch file `make_xpatmel_files.bat`, located in the `iso7816_plain` project directory. This will copy the files `iso7816_plain.hex` and `iso7816_plain.eep` to the `XpAtmel` directory and rename them using XPAtmel's naming convention. (Any time you make changes to `iso7816_plain.asm` and rebuild, you must run the batch file `make_xpatmel_files.bat`.)
2. Open `XpAtmel.exe` in the `C:\Projects\Atmel\XpAtmel` directory. In XPAtmel, select `iso7816_plain` in the list and select the COM port that your development terminal is connected to. Press the **Program** button. Exit XPAtmel.
3. Cycle power on your development terminal.
4. Now your development terminal is programmed to work with SmartCache or SmartCard.

Program with STK500

1. If you will be using the Atmel STK500 board to program the Atmel microcontroller in your development terminal, perform the following steps.
2. Remove power to the development terminal.
3. Remove the Atmel microcontroller from the development terminal.
4. Place the Atmel microcontroller in the 20-pin red DIP socket on the STK500.
5. Open Atmel's AVR Studio and open the STK500 programming dialog.
6. When you open this dialog, AVR Studio will attempt to detect the STK500. If detection is successful, move to the next step. Otherwise, close the dialog, check serial port and power connections to the STK500, and try again.
7. Select AT90S2313 in the Device combo box.
8. Check the checkbox labeled **Erase Device Before Programming**.
9. In the Flash group box, select `iso7816_plain.hex`, located in the `iso7816_plain` project directory.
10. In the Flash group box, press the **Program** button and wait for programming to complete.
11. Uncheck the checkbox labeled **Erase Device Before Programming**.
12. In the EEPROM group box, select `iso7816_plain.eep`, located in the `iso7816_plain` project directory.
13. In the EEPROM group box, press the **Program** button and wait for programming to complete.
14. Remove the Atmel microcontroller from the STK500 and put it in the development terminal. **All pins must be seated.**
15. Apply power to the development terminal.

16. Now your development terminal is programmed to work with SmartCache or SmartCard.

Notes
1. In AVR Studio, select **AVR Tools User Guide** from the Help menu to display help that includes a description of AVR Assembler instructions.
2. I suggest downloading the AT90S2313 datasheet from Atmel, especially if you are a programmer.
3. Comments, suggestions and bug reports are always welcome.