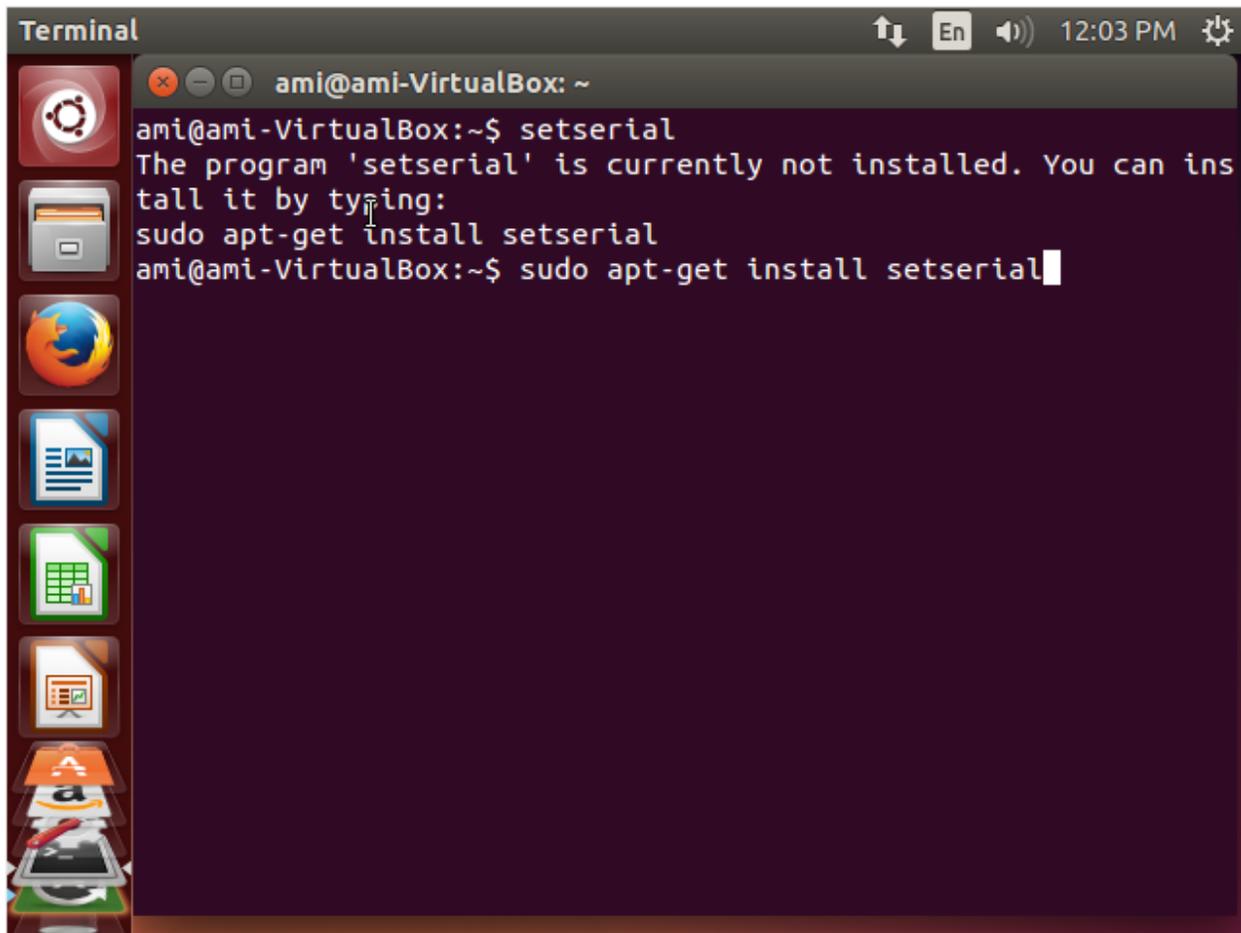


In order to add the ISA serial ports manually in Linux, please follow the below steps

**Note:** These steps are followed in Ubuntu-12.04 and it will be mostly same in other Linux flavors except installing the required tool

**Prerequisites:**

- “setserial” tool is used for adding the serial ports manually
- Check whether the tool is available or not by typing the command in terminal as follows

A terminal window titled "Terminal" with a dark background. The window shows the user "ami" at the prompt "ami@ami-VirtualBox: ~". The user enters the command "setserial", and the terminal displays the message: "The program 'setserial' is currently not installed. You can install it by typing: sudo apt-get install setserial". The user then enters the command "sudo apt-get install setserial" and the terminal shows a cursor at the end of the command. The terminal window has a sidebar on the left with various application icons and a top bar with system icons and the time "12:03 PM".

```
ami@ami-VirtualBox:~$ setserial
The program 'setserial' is currently not installed. You can install it by typing:
sudo apt-get install setserial
ami@ami-VirtualBox:~$ sudo apt-get install setserial
```

- If the tool is not available , then install it by using following command

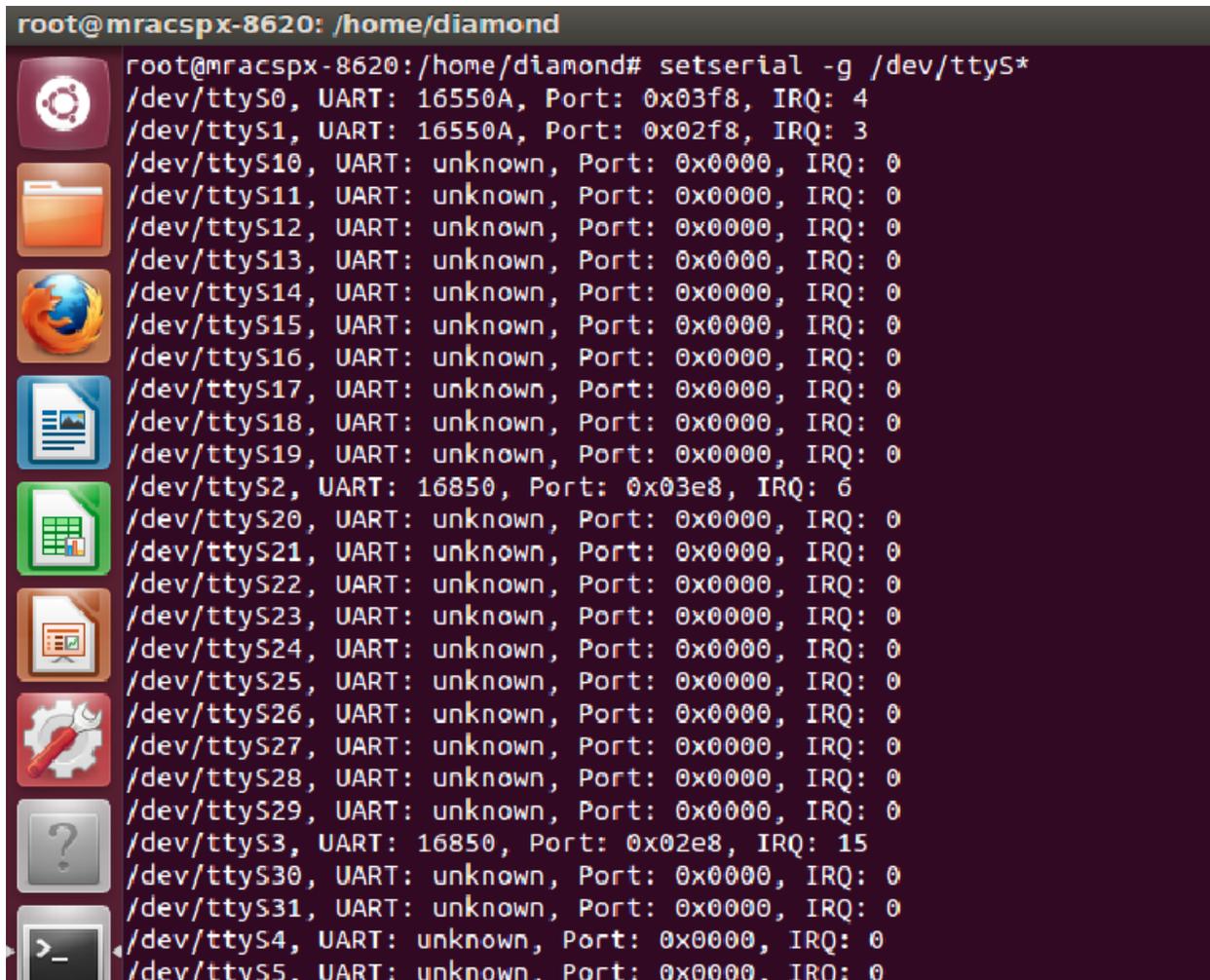
\$sudo apt-get install setserial

## Dummy serial device:

First we need to find out dummy serial devices which are available in Linux OS under /dev directory and the same dummy device we can use it for our ISA serial ports. To find out the dummy serial devices, please follow the below steps

- Execute following command in terminal

```
$setserial -g /dev/ttys*
```

A terminal window screenshot showing the command 'setserial -g /dev/ttys\*' and its output. The output lists various serial devices with their UART type, port address, and IRQ number. The devices are listed from /dev/ttyS0 to /dev/ttyS31. Most devices have a UART type of 16550A or 16850, and a port address of 0x0000 or 0x03f8. The IRQ number is 4 for /dev/ttyS0 and /dev/ttyS31, and 3 for /dev/ttyS1. Most other devices have an IRQ of 0. The terminal window has a dark background and a sidebar with icons for various applications like a terminal, file manager, and web browser.

```
root@mracspix-8620: /home/diamond
root@mracspix-8620:/home/diamond# setserial -g /dev/ttys*
/dev/ttyS0, UART: 16550A, Port: 0x03f8, IRQ: 4
/dev/ttyS1, UART: 16550A, Port: 0x02f8, IRQ: 3
/dev/ttyS10, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS11, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS12, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS13, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS14, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS15, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS16, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS17, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS18, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS19, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS2, UART: 16850, Port: 0x03e8, IRQ: 6
/dev/ttyS20, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS21, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS22, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS23, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS24, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS25, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS26, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS27, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS28, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS29, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS3, UART: 16850, Port: 0x02e8, IRQ: 15
/dev/ttyS30, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS31, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS4, UART: unknown, Port: 0x0000, IRQ: 0
/dev/ttyS5, UART: unknown, Port: 0x0000, IRQ: 0
```

- The above command lists configuration of all serial port devices available in the mother board which includes dummy as well as proper serial port devices.
- Let us consider the serial port device /dev/ttyS0 and its configuration as follows

UART type = 16550A

Port base address = 0x3F8

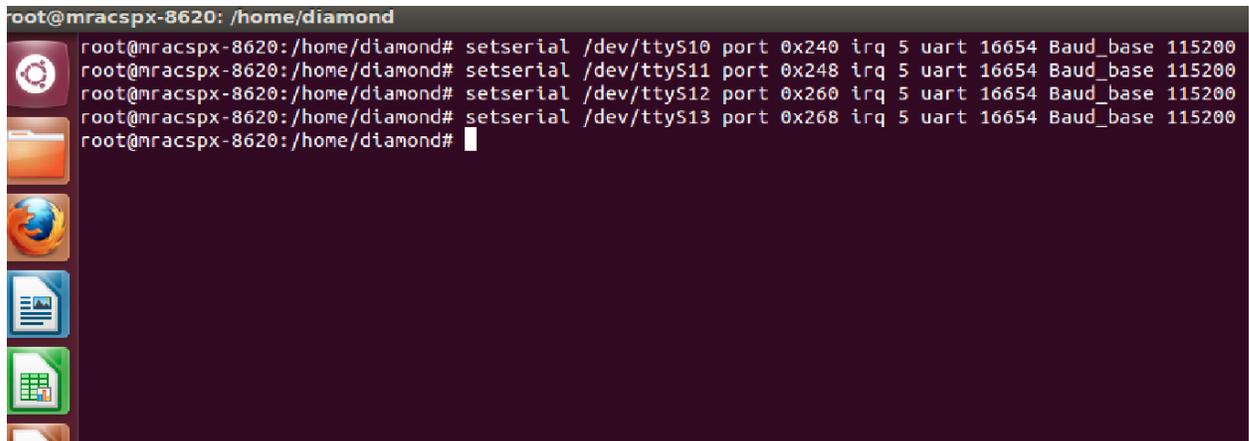
IRQ number = 4

- The other devices except ttyS1, ttyS2 and ttyS3 are called as dummy device since it is not assigned with any configuration. So we can select any of those dummy devices and configure it for our serial ports

### Configure serial ports:

We have to provide proper base address and IRQ number in “setserial” command to configure it. The base address and IRQ values to configure ISA serial ports are known, i.e. these values are static values which can be found from Jumper configuration of the board.

- Let us choose the devices ttyS10 ,ttyS11,ttyS12,ttyS13 for our four serial ports (e.g. EMM-DIO4M-XT board )
- To configure the ISA serial ports , please follows the steps as shown in the picture



```
root@mracspcx-8620: /home/diamond
root@mracspcx-8620:/home/diamond# setserial /dev/ttyS10 port 0x240 irq 5 uart 16654 Baud_base 115200
root@mracspcx-8620:/home/diamond# setserial /dev/ttyS11 port 0x248 irq 5 uart 16654 Baud_base 115200
root@mracspcx-8620:/home/diamond# setserial /dev/ttyS12 port 0x260 irq 5 uart 16654 Baud_base 115200
root@mracspcx-8620:/home/diamond# setserial /dev/ttyS13 port 0x268 irq 5 uart 16654 Baud_base 115200
root@mracspcx-8620:/home/diamond#
```

**Note :** Mandatorily Provide Baud\_base value as 115200 or 9600 .If the Baud\_base argument is skipped, it will throw an error “Cannot set serial info : invalid argument”