

## Barrel\_Shift.vhd

---

```
-----
-- Author: Roger Grayson
-- Date: Feb, 2003
-- Purpose: the Kung Fu master of VHDL
-- barrel shift adders
-----

library IEEE;
library STD;
use IEEE.STD_LOGIC_1164.all;
use IEEE.STD_LOGIC_signed.conv_integer;
use IEEE.STD_LOGIC_arith.all;

entity barrel_shift is
    port(
        Din: in std_logic_vector(31 downto 0);
        LR: in std_logic;
        ShAmt: in std_logic_vector(4 downto 0);
        Dout: out std_logic_vector(31 downto 0));
end barrel_shift;

architecture behavior of barrel_shift is
begin
    process(Din, ShAmt, LR)
        variable shft : integer;
        variable temp : std_logic_vector(5 downto 0);
    begin
        temp := '0' & ShAmt;
        shft := conv_integer(temp);
        case (LR) is
            when '1' => Dout <= Din(shft-1 downto 0) & Din(31 downto shft);
            when '0' => Dout <= Din(31-shft downto 0) & Din(31 downto 31-shft+1);
            when others => Dout <= (others=>'0');
        end case;
    end process;
end behavior;
```