How to assign a decimal value to a std_logic_vector

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Many times we have wanted to assign a decimal value to a *std_logic_vector* and we have not been able to do it directly and we have had to declare a *constant* with a fixed value and then assign the value of that constant to the signal we want.

Well, there is a way to do that assignment without having to go through a constant.

The normal assignment method is:

```
library ieee;
use ieee.std_logic_1164.all;
use ieee.numeric_std.all;

entity borrar is
    port(
       a : in std_logic;
       b : out std_logic_vector(9 downto 0)
    );
end entity;

architecture arch_borrar of borrar is
-- the classic way to define a constant is to define all
-- the fields:
-- constant twelve : unsigned(9 downto 0) := to_unsigned(12,
-- 10);
-- but it can also be done in a summarized way:

constant twelve : unsigned(b'range) := to_unsigned(12, b'length);

begin
    process(a)
    begin
    if a = '1' then
        b <= std_logic_vector(twelve);

     elsif a = '0' then

          b <= (others=>'0');
     end if;
      end process;

end architecture;
```


Well, the other way we avoid having to declare a constant is to use '<signal> <= std_logic_vector(to_unsigned(<value>, <signal>'length));'

This example illustrates its use:

```
library ieee;
use ieee.std_logic_1164.all;
use ieee.numeric_std.all;

entity borrar is
    port(
        a : in std_logic;
        b : out std_logic_vector(9 downto 0)
```

```
    );
end entity;

architecture arch_borrar of borrar is

begin
    process(a)
    begin
        if a = '1' then
            b <= std_logic_vector(to_unsigned(12, b'length));
        elsif a = '0' then
            b <= (others=>'0');
        end if;
    end process;

end architecture;
```

And with this we avoid having to declare a constant for the assignment of a decimal value.

Also, comparisons can be made with this format, for example:

```
library ieee;
use ieee.std_logic_1164.all;
use ieee.numeric_std.all;

entity borrar is
    port(
        a : in std_logic_vector(9 downto 0);
        b : out std_logic
    );
end entity;

architecture arch_borrar of borrar is

begin
    process(a)
    begin
        if a = std_logic_vector(to_unsigned(12, b'length))then
            b <= '1';
        else
            b <= '0';
        end if;
    end process;

end architecture;
```


Note

You should always use the '*numeric_std*' library