

# System Verilog

## Direct Programming Interface

## System Verilog DPI Example

String passing example

1) For illustration strings are used;

But strings can't be used in module ports;

2) Use SystemVerilog "program" instead of "module" for testbenches.

```
// File name: dpi_top.v
// Author: A.G.Raja
// Website: agraja.wordpress.com
// License: GPL

module top ();
import "DPI-C" context v2c_c=
task v2c_sv(input string a);
import "DPI-C" context c2v_c=
function string c2v_sv();
export "DPI-C" print_string_c =
function print_string_sv;
string v2c_string,c2v_string;
function void
print_string_sv(input string aaa);
$display("Exporting VerilogFunction:%s", aaa);
endfunction
initial
begin
v2c_string = "A v2c_string";
v2c_sv(v2c_string);
c2v_string = c2v_sv();
$display("c2v_string: %s n",
c2v_string);
$finish;
end
endmodule

// EOF dpi_top.v
```

```
// File name: dpi.h
// Author: A.G.Raja
// Website: agraja.wordpress.com
// License: GPL

#include "svdpi.h"

#ifdef __cplusplus
extern "C" {
#endif

extern void print_string_c (const char *_a1);

#ifdef __cplusplus
}
#endif

// EOF dpi.h
```

```
// File name: dpi_main.c
// Author: A.G.Raja
// Website: agraja.wordpress.com
// License: GPL

#include <stdio.h>
#include "svdpi.h"
#include "dpi.h"
#include "veriusers.h"
void v2c_c(char* v2c_string)
{
io_printf("v2c_string: %s\n",v2c_string);
print_string_c("string passed from C");
}
char* c2v_c(void)
{
char* c2v_string;
c2v_string="This is c2v_string";
//io_printf("c2v_string: %sn",
//c2v_string);
return c2v_string;
}

// EOF dpi_main.c
```

```
##### shell script to run simulation
# File name: run
# Author: A.G.Raja
# Website: agraja.wordpress.com
# License: GPL
nverilog +sv dpi_top.v +elaborate +ncelabargs+-messages
gcc -fPIC -shared -o dpi_main.so dpi_main.c -
I/$CDS_INST_DIR/tools.lnx86/inca/include
nverilog +sv dpi_top.v +sv_lib=dpi_main.so
# EOF run
```

### **Running the simulation:**

- 1) Create the files as given above
- 2) Type at terminal: `chmod +x run`
- 3) Type at terminal: `./run`

### **Result:**

```
v2c_string: A v2c_string
Exporting VerilogFunction:string passed from C
c2v_string: This is c2v_string n
```