23rd Day

SV Tasks and Functions

Code1

```
module task_function_sv;

  typedef struct {
  int square;
  int cube;
  } result;

function result msd(input int num);
  result res;
  res.square = num * num;
  res.cube   = num * num * num;
  return res;
endfunction


  // Task
  task automatic twice(input int num);
    #2;
    $display("Twice of %0d = %0d", num, 2*num);
  endtask

  initial
```

```
  begin

  result val = msd(5);
  $display("Square = %0d, Cube = %0d", val.square, val.cube);

   twice(6);
end

endmodule
```

SIMULATION

```
Contains Synopsys proprietary information.
Compiler version U-2023.03-SP2_Full64; Runtime version U-2023.03-SP2_Full64;  Apr 10 08:00 2025
Square = 25, Cube = 125
Twice of 6 = 12
          V C S   S i m u l a t i o n   R e p o r t
Time: 2 ns
CPU Time:      0.490 seconds;       Data structure size:   0.0Mb
Thu Apr 10 08:00:32 2025
```

Code2

```
module task_function_sv;

 task calc_square_cube(input int num, output int square,cube,twice);

  square=num * num;
  cube=num * num * num;
  twice=2*num;

 endtask

 initial

  begin

   int sq, cb,twice;

   calc_square_cube(5, sq, cb,twice);

   $display("Square = %0d, Cube = %0d, twice=%0d", sq, cb,twice);

  end

endmodule
```

Result

```
Chronologic VCS simulator copyright 1991-2023
Contains Synopsys proprietary information.
Compiler version U-2023.03-SP2_Full64; Runtime version U-2023.03-SP2_Full64;  Apr 10 08:11 2025
Square = 25, Cube = 125, twice=10
          V C S   S i m u l a t i o n   R e p o r t
Time: 0 ns
CPU Time:      0.370 seconds;       Data structure size:   0.0Mb
Thu Apr 10 08:11:50 2025
```

Code3

```
module task_function_sv;

 int a=10;

 function void pass_by_value(int a);

  a=a*6;

  $display("\ninside pass by value a=%0d\n",a);

 endfunction


 function void pass_by_ref(ref int a);

  a=a*6;
```

```
    $display("inside pass by reference a=%0d\n",a);

  endfunction


  initial

    begin

      pass_by_value(a);

      $display("after calling pass by value a=%0d\n",a);

      pass_by_ref(a);

      $display("after calling pass by reference a=%0d\n",a);

    end
endmodule
```

Result

```
Compiler version U-2023.03-SP2_Full64; Runtime version U-2023.03-SP2_Full64;  Apr 10 08:45 2025

inside pass by value a=60

after calling pass by value a=10

inside pass by reference a=60

after calling pass by reference a=60

          V C S   S i m u l a t i o n   R e p o r t
Time: 0 ns
```