30th Day

Object Assignment //copies the address

```
class msd;
  int data;
endclass


module tb;
  msd m1,m2;
  initial
    begin
      m1=new();
      m1.data=10;
      m2=new();
      m2.data=20;
      m2=m1;
      m1.data=30;
      m2.data=40;
      $display("m1 data=%0d and m2 data=%0d",m1.data,m2.data);
    end
endmodule
```

Simulation

```
Contains Synopsys proprietary information.
Compiler version U-2023.03-SP2_Full64; Runtime version U-2023.03-SP2_Full64;  Apr 18 12:25 2025
m1 data=40 and m2 data=40
                V C S   S i m u l a t i o n   R e p o r t
Time: 0 ns
CPU Time:      0.380 seconds;       Data structure size:   0.0Mb
Fri Apr 18 12:25:05 2025
```

Shallow Copy

//shallow copy- same address for subclass objects different address for data

```
class msd;
  int obj;
endclass

class manoj;
  int data;
  msd m=new();
endclass

module tb;
  manoj m1, m2;
  initial begin
    m1 = new();
    m1.data = 13;
    m1.m.obj = 6;
    m2 = new m1; // shallow copy

    $display("Before change:");
    $display("m1 data=%0d m2 data=%0d", m1.data, m2.data);
    $display("m1 obj=%0d m2 obj=%0d", m1.m.obj, m2.m.obj);

    // Change m2.m.obj and m2.data

   m2.data=7;
```

```
  m2.m.obj=2;


   $display("After change:");
   $display("m1 data=%0d m2 data=%0d", m1.data, m2.data);
   $display("m1 obj=%0d m2 obj=%0d", m1.m.obj, m2.m.obj);
 end
endmodule
```

Simulation

```
Compiler version U-2023.03-SP2_Full64; Runtime version U-2023.03-SP2_Full64;  Apr 18 12:18 2025
Before change:
m1 data=13 m2 data=13
m1 obj=6 m2 obj=6
After change:
m1 data=13 m2 data=7
m1 obj=2 m2 obj=2
          V C S   S i m u l a t i o n   R e p o r t
Time: 0 ns
CPU Time:      0.420 seconds;       Data structure size:   0.0Mb
```

Deep Copy

//different address for both sub class objects and data

```
class msd;
  int obj;

  function msd copy();
    copy=new();
    copy.obj=this.obj;
  endfunction

endclass

class manoj;
  int data;
  msd m=new();

  function manoj copy();
    copy=new();
    copy.data=this.data;
    copy.m=this.m.copy;
  endfunction

endclass

module tb;
  manoj m1,m2;
  initial
    begin
```

```
    m1=new();
    m1.data=13;
    m1.m.obj=6;

    m2=m1.copy(); //deep copy

  $display("Before change:");
  $display("m1 data=%0d m2 data=%0d", m1.data, m2.data);
  $display("m1 obj=%0d m2 obj=%0d", m1.m.obj, m2.m.obj);

    m2.data=7;
    m2.m.obj=2;

  $display("After change:");
  $display("m1 data=%0d m2 data=%0d", m1.data, m2.data);
  $display("m1 obj=%0d m2 obj=%0d", m1.m.obj, m2.m.obj);

  end
endmodule
```

Simulation

```
Compiler version U-2023.03-SP2_Full64; Runtime version U-2023.03-SP2_Full64;  Apr 18 12:46 2025
Before change:
m1 data=13 m2 data=13
m1 obj=6 m2 obj=6
After change:
m1 data=13 m2 data=7
m1 obj=6 m2 obj=2
          V C S   S i m u l a t i o n   R e p o r t
Time: 0 ns
```