SV Assignemet-3

1. Write a class with name “student”. Declare 10 “student” handles. Initialize the properties(student_name, roll_no, marks, course_name, Pass_Fail) with different values (except the course_name).
b. Write one function and one task to do the manipulations on properties.

2. For above code declare 1000 student handles.

3. Write a class and initialize the class properties at constructor itself.

4. Write a class. Declare two handles. Initialize different values to the properites, while constructing the object itself.

5. Write a program to count how many objects got created for a particular class.

6.
```
class variable_decl;

 static byte var_sta;
 int var_int;

endclass
```

a. Declare a handle for variable_decl and initialize the properties with some values without constructing the object for the declared handle.
b. Display the content of the variables.

7.
```
class variable_decl;

 static byte var_sta;
 int var_int;

function void display();
  $display(var_sta, vara_int);
endfunction

static function void print();
  $display(var_sta, vara_int);
endfunction

static function void disp_var_sta();
  $display(var_sta);
endfunction

endclass
```

a. Declare a handle for the above class. Without constructing object for the handle call the 3 methods mentioned above.
b. Declare a handle for the aobe class. Create object for that handle. Call the 3 methods(display,print,disp_var_sta).

8. Return the class handle from the function
Note: Take an handle as an input to the function, then modify the values of class properties and then return it.

9.
a. Write a class with name “class1” containing 10 properties and mention a display method(function) which displays all the properties.
b.Write another class with name “class2” which should have above 10 properties and extra 2 other properties.
c. Create an object for above class “class2” and print the content.

11. For the above program,
   a. In “class1” use constructor to initialize the values to the properties.
   b. In “class2” use constructor to initialize the values to the properties.

12. For the above program,

a.In “class2” define a method name “modify”. This “modify” method modifies all the properties with some decremented values.

b. Display the content of the properties. (Reuse the content to reduce the effort of repeated work.)

13.

Write a function code to complete the below program.

```
Class packet;
 bit write;
 bit[2:0] address;
 int w_data;
 int r_data;

 function new(.....)
 .
 .
 .
 .
 endfunction
endclass

initial
 begin

  pakcet p1;
  p1=new(1’b1, 3’b000, ‘d100, ‘d100);
  //display the properties values also
 end
```

a. The function(new) arguments should have different names with respect to the property names.

b. The function(new) arguments should have same names as the property names.

14.

Write a program containing base and derived classes and then mask the base class methods and only have the visibility of child methods only.

15.

a. Write a class with 10 properties.
b. Take two handles pkt1 and pkt2.
c. Create the object for pkt1.
d. Initialize the values to pkt1 properties.
e.Copy the content of pkt1 to pkt2
f. Change the pkt1 properties values and display pkt1, pkt2 content.

16. Write a class with name “packet” contaning 10 properties. Write another class with name “small_packet” containing 5 properties.
While writing the “packet” class, declare a handle for the “small_packet” class(Eg. sp).
Declare two handles for “packet” class (Eg.pkt1,pkt2). Create object for the handle pkt1.
Now copy the content of pkt1 to pkt2. (Check whether the pkt1 object’s small packet handle(sp) properties are copied to pkt2 object’s small packet handle(sp) or not).

17.For the above code,
a. Modify the data of pkt1 and the sp(small packet handle). Display the contents of pkt1 and pkt2.
b. Modify the data of pkt2 and the sp(small packet handle). Display the contents of pkt1 and pkt2.

18.

Write a class with name “packet” contaning 10 properties. Write another class with name “small_packet” containing 5 properties.
While writing the “packet” class, declare a handle for the “small_packet” class(Eg. sp).
Declare two handles for “packet” class (Eg.pkt1,pkt2). Create object for the handle pkt1.
Now copy the content of pkt1 to pkt2(without using shallow/deep copy concepts).

19. Write a base class with 4 properties and also have a derived class. In the base class,
a. restrict one property to access only inside that class.
b. other property to acess inside base and derived classes
c. other property should be accessible inside base classs, derived class and initial block.
d. Display the content of class.

20. Write a class. Inside that declare a variable as a bit[max_width-1:0]var1; Declare max_width as parameter and load some value.
Take two handles for the class as pkt1,pkt2.
Change the pkt1's "max_width" to 16 and pkt2's "max_width" to 60.
Display the content of pkt1 and pkt2. (use %b as format specifier)
Check the bitwidth of the var1.(Make sure pkt1's width is 16 and pkt'2 width is 60)

21. Write a class, having two properties of any data_type. Take two handles.(Ex. pkt1, pkt2)
Change pkt1 properites data_type with respect to pkt2 properties data_type.(pkt1,pkt2 properties should have different data_types)
Note:override the datatype from handle declaration.