Assignment-4

1. Write a class with 4 variables:
int var1;
bit[4:0]var2;
bit[4:0]var3;
reg[6:0]var4;
Generate 20 random values for above variables.
a. for var1 – get any random values for 20 times.
b. for var2,var3,var4 – get all different values(i.e., var2!=var3!=var4)

2. Write a class with above 4 properties:
a. for var1 – random values should be picked from 100 to 200
b. for var2 – random values should be 100 or 50 or 200 or 250 or 300
c. for var3 – random values should be 30 or 40 or 300 or between 10 to 20;
d. for var4 – random values should be 60 or 70 or between 10 to 20(10:20) or between 30 to 60.

3. Write a program to get the random values for variable “data”:
“data” can have these values:10,30,50,100.
“data” can have any values >=50.
“data” can have any values <100.
Write the constraints for the all the above conditions. Randomize for 10 times. Check the output.

4. Write a class with 2 properties var1, var2;
var1 values should be {2, 4, 10, 12}. When you randomize var1, the output value 12 should come more times when compared to 4.
var2 values should be 2 to 30 or 50 to 80. When you randomize var2, the output values 50 to 80 should come more number of times when compared to 2 to 30 values.

5. Write a class with 3 properties:
int waddr;
int wdata;
int rdata;
When randomized, these three values should not be same.(waddr!=wdata!=rdata).

6.Write a program without fixed arrays.
a. Array1 elements should be 10 or between 30 to 40.
b. Array2, Sum of all elements should be <80.
c. Array3, should have only 10 elements and the sum of those 10 elements should be >100.
d. Array4, can have any values but the Array3 and Array4 size should be same.
e. Array5, can have any values but the n.o of elements of Array5 should be equal to n.o of elements in Array1 or Array4.

7. Write a class with 4 variables.
a. var1 can have any values, but when var2 value is 20 then var1 value should be between 0 to 10.
b. var2 can have values{20,40,10}
c. var3 can have values{90,500}
d. var4 – when var3 is 90, then var4 should be 90 otherwise var4 should be between 10 to 50.

8. Write a class with two variables var1, var2.
var1 can have values in between 0 to 2000. var2 can have values in between 10000 to 2000.
Randomize 20 times.

a. For 10 times, when var1<1000 then var2 should be between 5000 to 10000.
b. For next 10 times, var1 should be 2000 and var2 should be 10000.

9. Write a class with 10 properties,
a. Display the contents
b. Randomize the values. You should get some defined random values.
c. After 10 time units, randomize with condition var1,var2, var3, var4, var5 should be between 10 to 20. var6, var7, var8, var9, var10 should be between 100 to 90.

10. Write a program with two variables var1, var2.
At runtime for 2 times restrict var1 to get 1 to 100 and var2 to get 30 to 400.
Next 2 time, get any random values without the mentioned conditions.
For next 2 times, get previous values (no randomization should happen).

11.
Declare a class with name “Flat” with one property var_h and one class handle “kitchen”. “kitchen” class has two properties var_k1, var_k2. Declare var_h and var_k1 as random variables.
a. Randomzie 2 times with some conditions to properties.
b. Randomzie without any conditions. Check the output.

12.
class base;
rand int addr;
constraint cst1(.....)
endclass
Write a constriant to addr with some conditions.
Class derived extends base;
constraint cst1(.....)
endclass
a. Write a constraint in derived class with the same name used in base class. Declare handles for base and derived classes. Create object for derived class handle. Randomize the derived class object and check the output.
b. Assign base class handle to derived class object. Randomize the derived class object. What is the output?

13. Write a base class with 4 properties. Write constraints.
Derive a class from base class and add one property to it. Write constraints. Create an object for derived class and randomize for 2 times.

14.
class a;
rand string student_name;
rand real var_real;
rand int var_int;
endclass
Randomize above class. Check the output.

15.
class a;
rand int addr;
rand int data;
endclass

a. Do not write constraints and inline constraints. But while randomizing every time “addr” should get 10 as value.(use other randomize methods)
b. If addr is 10 then data should be 50.