



July DV

PART 1

1. Print prime numbers ending with 9 in side the range of 13-119 randomly using Verilog only.
2. There exists a data structure where we can store n numbers of physical address corresponding to a virtual address data structure looks like below,

| Virtual Address ↓ | Physical address → | | | | | | | | |
|-------------------|--------------------|------|-----|-----|-----|-----|-----|------|---------|
| 10 | 20 | 30 | 40 | 10 | | | | | |
| 50 | 1024 | 3096 | | | | | | | |
| 200 | 50 | 200 | 97 | | | | | | |
| 500 | 40 | 500 | 500 | 600 | 700 | 800 | 900 | 5000 | 4444444 |
| 800 | 2 | | | | | | | | |

- Create a task insert which takes input as 32 bit Virtual address and 32 bit physical address and when you print the table after every insert operation it should print the structure like above.
3. Explain about encapsulation, write a code in which sub-child should access parent properties make sure that all parent properties are declared by one of the encapsulation key word(hierarchy should be like parent-child-subchild).
 4. Design a digital 4x16 decoder using 2x4 decoder.

PART 2

41. Write a program in system Verilog to segregate even and odd elements on an array.

Expected Output:

The given array is:

17 42 19 7 27 24 30 54 73

The array after segregation is: 54 42 30 24 27 7 19 17 73

42. Write a program in system Verilog to find the smallest missing element from a sorted array.

Expected Output :

The given array is : 0 1 3 4 5 6 7 9

The missing smallest element is: 2

43. Write a program in system Verilog to find majority element of an array.

Expected Output :

The given array is : 1 3 3 7 4 3 2 3 3

The majority of the Element : 3

44. Write a program in system Verilog to find the two repeating elements in a given array.

Expected Output :

The given array is : 2 7 4 7 8 3 4

The repeating elements are: 7 4

45. Write a program in system Verilog to find two elements whose sum is closest to zero.

Expected Output :

The given array is : 38 44 63 -51 -35 19 84 -69 4 -46

The Pair of elements whose sum is minimum are:

[44, -46]

46. Write a program in system Verilog to find the row with maximum number of 1s.

Expected Output :

The given 2D array is :

0 1 0 1 1

1 1 1 1 1

1 0 0 1 0

0 0 0 0 0

1 0 0 0 1

The index of row with maximum 1s is: 1

47. Generate a array with random elements in range 10 to 100.

Expected Output :

The 1D array is : 13 20 12 38 48 46 30 75 11 99

48. Generate Fibonacci series where the next element is sum of previous two elements. starting elements is 0 and 1.

Expected Output :

The 1D array is : 0 1 1 2 3 5 8 13 21

