1)**Problem:**

Implement a 3 bit magnitude comparator circuit. The circuit outputs two variables x and y

X = 1 if A=B

= 0 else

Y = 1 if A < B

= 0 else

**Sol :** X = x2 . x1 .x0 (where . stands for AND) ( from 1 AND IC we get two o/p’s x2.x1 , x2.x1.x0)

x2 = A2 xnor B2;

x1 = A1 xnor B1;

x0 = A0 xnor B0; (from 1 XOR IC ,1 inverter IC we get x2 ,x1 ,x0 and also A0’,A1’,A2’)

Y = (A2’.B2 + x2.A1’.B1 + x2.x1.A0’.B0) . (1 more AND IC’s , 1 OR IC (use and gates left in previous AND IC also)).

Chips: 2 AND , 1 XOR ,1 OR ,1 Inverter.

2)**Problem :**

int sum = 0 ,i;

for(i=1;i<=5;i++)

sum += i;

Using single bus based architecture implement the following code.

At each stage the program should output previous sum and present sum.

The 1st operand (i.e., i) to the 4 bit adder comes from Tristate buffer and the second operand comes from the OR (operand) register .

**Solution:** Same as experiment 8 except that ALU chip is replaced by CD4008(4 bit adder).