Question 5

```
void SwapAndAssign(int *p,int *q)
{
        int *temp = NULL;
        temp = p;
        p = q;
        q = temp;

        *p = 8;
        *q = 4;
}
```

```
void SwapMore(int **p,int **q)
{
        int **temp = p;
        p = q;
        q = temp;
}

void SwapSomeMore(int **p,int **q)
{
        int *temp = *p;
        *p = *q;
        *q = temp;
}
```

ADDRESSES: &x= A00 &y= A04 &z=B00, B04, B08, B0B, B0F

void main(){	x	y	z (all elements)					a	b	*a	*b
			z[0]	z[1]	z[2]	z[3]	z[4]				
int x=1,y=2;	**1**	**2**	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**	**?**
int z[]={3,5,10,9,12};	**1**	**2**	**3**	**5**	**10**	**9**	**12**	**?**	**?**	**?**	**?**
int *a=&x;	**1**	**2**	**3**	**5**	**10**	**9**	**12**	**A00**	**?**	**1**	**?**
int *b=z+2;	**1**	**2**	**3**	**5**	**10**	**9**	**12**	**A00**	**A04**	**1**	**10**
b = b-1;	**1**	**2**	**3**	**5**	**10**	**9**	**12**	**A00**	**A04**	**1**	**5**
*b = 9;	**1**	**2**	**3**	**9**	**10**	**9**	**12**	**A00**	**A04**	**1**	**9**
SwapAndAssign(&x,&y);	**4**	**8**	**3**	**9**	**10**	**9**	**12**	**A00**	**A04**	**4**	**9**
x=11;y=13;b=&y;	**11**	**13**	**3**	**9**	**10**	**9**	**12**	**A00**	**A04**	**11**	**13**
SwapAndAssign(a,b);	**4**	**8**	**3**	**9**	**10**	**9**	**12**	**A00**	**A04**	**4**	**8**
SwapMore(&b,&a);	**4**	**8**	**3**	**9**	**10**	**9**	**12**	**A00**	**A04**	**4**	**8**

SwapSomeMore(&b,&a);	**4**	**8**	**3**	**9**	**10**	**9**	**12**	**A00**	**A04**	**8**	**4**

}

Explanation

1. First initialized variables x = 1, y =2. The values of x and y are shown on output.
2. We initialized the elements of z array, at zero index the 3 is placed at first index 5 is placed and so on.
3. We make pointer which stores the address of x, the all values of x, y, z is same At, the address of x is placed and *a equals to 1.
4. At b the address of y is placed, *b=z+2, the z index is incremented at 2 and the value at index 2 is shown on output.
5. B=b-1, it decrements the index and the 5 is shown which is placed on index of array.
6. *b=9, the values of array at 2nd index is updated so 9 is shown on output, on a stores address of x and b stores y address, *a points to x value which is 1 and the *b is equals to 9.
7. The &x points to *p, &y points to *q the values of p and q is swaps by using temp variable so p points y and x points q at the end values updates and x the 4 is printed and y the 8 is printed but *b equal to 9.
8. The x = 11, y=13, so the *a is 11, *b is 13.
9. The 11 placed at a and 13 placed at b, so at end value 4 and 8 is printed.
10. The value of x points &b and value of y points &a, &b points to double pointer **P, &a also points to pointer, the values is remains same.
11. In this function we swap two variables with the help of pointers the value of x is 4 and value of y is 8, z elements remain same but the value of *a is 8 and *b is 4 due to swapping.